

Beyond the usual path: Exploring childlessness and loneliness in later life

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SOCIETY & AGEING
RESEARCH LAB





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CHAPTER 1.

Introduction

CHAPTER 1. Introduction

1. Introduction

Research indicates that about one-third of older adults report feeling lonely at least sometimes, with 5-10% experiencing chronic loneliness (Martín-María et al., 2021). Loneliness among older adults is often associated with negative outcomes such as depression, anxiety, and increased mortality (Barnes et al., 2022; Holt-Lunstad et al., 2015). These factors can lead to a decrease in social interactions and support, exacerbating feelings of loneliness and isolation (Huxhold & Fiori, 2024). Chronic loneliness, in particular, has been linked to various health problems, including cardiovascular diseases, cognitive decline, and weakened immune function (Cacioppo & Cacioppo, 2014). Several factors can contribute to loneliness in older adults, including the loss of a spouse or friends, retirement, reduced mobility, and declining health (Victor & Bowling, 2012).

While loneliness is a concern for many older adults, those without children may be at a higher risk. Children often play a crucial role in providing emotional support, social interaction, and practical assistance as their parents age (Dykstra & Keizer, 2009; Huang et al., 2024). The absence of this immediate, reliable familial support can lead to fewer social interactions and a reduced network of support, which are critical for mitigating loneliness (Wenger, 2021). Moreover, childless older individuals may face additional challenges in securing care and companionship, further increasing their risk of loneliness (Albertini & Kohli, 2009).

This dissertation focusses on childlessness and loneliness in later life, to understand the relationship between both concepts. In this chapter, loneliness as a multidimensional concept is elaborated on, after which the meaning of childlessness is investigated, as well as what is already known about the relationship between childlessness and loneliness in later life. This chapter ends with an overview of the research aims, as well as an outline of this PhD dissertation.

2. Loneliness as a multidimensional concept

In this part, the focus is on loneliness. It starts with a general outline of the concept, followed by an overview of how it is measured. Next, the focus is on loneliness in later life, after which three loneliness theories are outlined, with attention for the corresponding influencing factors and consequences.

2.1. Conceptualisation of loneliness

Loneliness is a concept already studied for decades. One of the first and most frequently referenced authors, Weiss, defined loneliness as a negative feeling and abnormal experience (1973). His definition says that in contrast with social isolation which can be pleasant or desired, loneliness “is gnawing rather than ennobling, a chronic distress without redeeming features” (1973, p. 15). In 1981, Perlman & Peplau defined loneliness as “the unpleasant experience that occurs when a person’s network of social relations is deficient in some important way, either quantitatively or qualitatively” (1981, p. 31). De Jong Gierveld’s definition adds that “this includes situations, in which the number of existing relationships is smaller than is considered desirable or admissible, as well as situations where the intimacy one wishes for has not been realised” (1987, p. 120). According to these definitions, loneliness is a negative and subjective emotion, as opposed to other concepts like social isolation, which refers to an objective circumstance and the lack of interpersonal ties (De Jong Gierveld et al., 2018). While there is no universally accepted definition, most studies agree that loneliness is felt when there is a perceived gap between the desired and actual level of interaction (Perissinotto et al., 2012).

Within the unidimensional approach of loneliness, loneliness is seen as an unambiguous experience that varies mainly in intensity with feelings of loneliness being the same regardless of the circumstances (Cramer & Barry, 1999). The multidimensional approach on the other hand recognises the possible differences in loneliness regarding its intensity, nature and origin (Mund et al., 2022). Within this multidimensional approach, different types of loneliness are distinguished. The three types that are most commonly seen in literature are social, emotional (De Jong Gierveld et al., 2018; Weiss, 1973) and existential loneliness (Bolmsjö et al., 2019). According to De Jong Gierveld et al. (2018) and Weiss (1973), social loneliness is the sense of not having a larger network of family and friends with common interests, such as siblings, cousins, friends, or neighbours. Emotional loneliness refers to the feeling of lacking a close relationship (best friend, partner, etc.). The loss of a spouse through widowhood is an example of this type of loneliness, which is marked by strong emotions of emptiness, abandonment,

and forlornness (De Jong Gierveld et al., 2018; Weiss, 1973). Furthermore, the importance of existential loneliness has been highlighted by scholars who contend that other distinctions are insufficient to provide a thorough explanation of the idea of loneliness (Bolmsjö et al., 2019). Existential loneliness is defined as “the immediate awareness of being fundamentally separated from other people and from the universe, and typically, because of this awareness, experiencing negative feelings, that is, moods and emotions” (Bolmsjö et al., 2019, p. 1314).

2.2. Measurement of loneliness

Although loneliness is a concept that is hard to grasp, several measurement instruments of loneliness have been developed, mostly in the form of self-report measures (Mund et al., 2022). Some fit within the more unidimensional approach, while others underscore the importance of multidimensionality (Goossens et al., 2017).

Within the unidimensional approach, one single loneliness score is given. The most common example of this is the University of California, Los Angeles (UCLA) loneliness scale, which exists in different versions. There is a 20-item version (Russell et al., 1978) as well as a revised 20-item version to simplify the wording (Russell et al., 1980), in which respondents have to rate 20 items from ‘never’ to ‘often’. The higher the score, the more loneliness. Also a 3-item UCLA loneliness scale exists (Hughes et al., 2004). In this measurement instrument, respondents are asked how often they (1) felt they lacked companionship, (2) felt left out, and (3) felt isolated from others during the past week. Response options are “hardly ever,” “some of the time,” and “often”. Each item is scored on a scale of 1-3, with higher scores indicating higher levels of loneliness.

Within the multidimensional approach, a well-known scale is the De Jong Gierveld loneliness scale. The original scale consists of 11 items (De Jong Gierveld & van Tilburg, 1999). The design of the scale is rooted in Weiss’s (1973) theoretical framework, which distinguishes emotional loneliness from social loneliness. Out of the 11 items in the scale, 6 items, such as “I often feel rejected,” serve as indicators of emotional loneliness, while the remaining 5 items capture aspects of social loneliness (e.g. “I can call on my friends whenever I need them.”). Each item allows respondents to select a response ranging from 1 to 5 based on their agreement. Later, also a 6-item scale was developed (De Jong Gierveld & Tilburg, 2006), with 3 items measuring social loneliness and 3 items measuring emotional loneliness. For both scales, also an overall loneliness score can be calculated (De Jong Gierveld & Tilburg, 2006; De Jong Gierveld & van Tilburg, 1999).

Despite the widespread usage of scales for social and emotional loneliness, there has been little study on measurement instruments for existential loneliness (van Tilburg, 2020). The Existential Loneliness Questionnaire (ELQ) is the only scale that focuses on existential loneliness in survey research (van Tilburg, 2020) and was validated among 47 HIV-infected women (Mayers et al., 2002). The ELQ consists of 22 items (e.g. pointing to meaninglessness in life or asking about existential loneliness in relationships) and was found to be sufficiently internally consistent. However, there are critiques on this scale since it appears to overlap with measurements for social and emotional loneliness, and it therefore does not contribute fully to the conceptualisation of existential loneliness (van Tilburg, 2020). In the meantime, research on the measurement of existential loneliness is growing and new measurement instruments are making their appearance, e.g. the Existential Loneliness Scale (ELS), validated in an Iranian sample of 433 youth and adult participants aged 20 to 85 years (Hadeei, 2024). This means that in the future, there may be stronger alternatives to the ELQ.

2.3. Loneliness in later life

Globally, loneliness is gaining more public and policy attention, particularly in relation to its effects on older adults (Fried et al., 2020). Due to possible age-related losses and changes, including the death of friends or a partner, declining health, and other unfavourable life events, people are more susceptible to loneliness in later life (Vozikaki et al., 2018). Therefore, even though not all older persons experience loneliness (Newall et al., 2014), older age is often linked to an increased risk of loneliness (Cohen-Mansfield et al., 2016).

2.3.1. Prevalence of loneliness in later life

Although there are no worldwide assessments of the percentage of community-dwelling older adults who are lonely, the World Health Organization (2021) believes that between 20% and 34% of older persons in China, Europe, Latin America, and the United States experience loneliness. In comparison to their younger counterparts, i.e. young adults (18–29 years old) and middle-aged adults (30–59 years old), older adults (≥ 60 years old; not specifically living in a community) may experience a higher prevalence of loneliness, according to a recent meta-analysis based on prevalence data from 106 countries in 24 studies (Surkalim et al., 2022). However, the prevalence of loneliness between countries varies greatly nowadays (Surkalim et al., 2022). Cultural (Jylhä & Jokela, 1990), demographic (Fokkema et al., 2012), socioeconomic (Hansen & Slagsvold, 2016), and trust (Rapoliené & Aartsen, 2021) disparities are a few possible explanations for this variability. In another recent systematic review and meta-analysis on the prevalence of loneliness among older people in high-income countries

(not explicitly community-dwelling), it is hypothesised that the high variability between different prevalence studies could be influenced by variations in used measurement instruments and different modes of data collection (e.g. face-to-face, written questionnaires, etc.) (Chawla et al., 2021). Although a systematic review on the prevalence of loneliness and social isolation among older adults during the COVID-19 pandemic exists (Su et al., 2023), a study on the prevalence of loneliness among community-dwelling older adults with attention for the influence of measurement instrument and mode of data collection is missing. Community-dwelling older adults are defined as “people aged 60 years or older living independently,” and therefore not living in institutionalised settings such as nursing homes, care homes or other types of residential care (Steultjens et al., 2004). When living in an institutionalised setting, one might be more susceptible to loneliness compared to those who live at home, but a review on the prevalence of loneliness among older adults living in an institutionalised setting already exists (Gardiner et al., 2020). Therefore, there is the need to dive deeper into the prevalence of loneliness among community-dwelling older adults.

2.3.2. Consequences of loneliness in later life

Loneliness poses a significant risk for various unfavourable later-life effects. Research has identified multiple domains where loneliness exerts a detrimental impact. First of all, loneliness has a profound impact on cardiovascular health (Courtin & Knapp, 2017). This is likely due to the chronic stress and inflammation that loneliness can cause, which negatively affects the cardiovascular system. In addition to cardiovascular issues, also deteriorating physical health can result from loneliness (Clark et al., 2021): loneliness can lead to declines in physical functioning, increased pain, and greater difficulties with daily activities. These physical health challenges can create a cycle where physical limitations lead to increased loneliness, which in turn exacerbates health problems. Moreover, lonely people can be at increased risk of death as well (Elovainio et al., 2017).

Next, loneliness is also a significant risk factor for depression and anxiety (Ayalon et al., 2016; Courtin & Knapp, 2017). The persistent feeling of being isolated can lead to chronic stress and emotional distress, contributing to the onset or worsening of mental health disorders, as well as worse quality of life (Torres et al., 2024). Loneliness can also be a strong predictor of frailty in older adults (Davies et al., 2016), as well as increase the risk of suicidal ideation and attempts (Schinka et al., 2012).

Lastly, several studies have highlighted the negative impact of loneliness on overall well-being and life satisfaction (Park et al., 2020; Patel et al., 2019). The persistent state of loneliness can lead to feelings of hopelessness, decreased life satisfaction, and a reduced sense of purpose.

2.4. Theories on loneliness throughout the life course

Different aspects of an individual's life can influence feelings of loneliness. Gender plays a significant role, as that loneliness can vary substantially between men and women, with older women experiencing loneliness more often due to differing social expectations and support networks (Dahlberg et al., 2015). Age is another critical factor; loneliness tends to fluctuate across the lifespan, with peaks often occurring in adolescence and old age due to major life transitions and changes in social relationships (Surkalim et al., 2022). Partner status is also a key determinant, since individuals without a partner are generally more susceptible to loneliness, largely due to the absence of intimate companionship and emotional support (Hansen & Slagsvold, 2016). Physical functioning is essential as well, because physical impairments or chronic health conditions can limit social interactions and mobility, thereby increasing loneliness (McKenna-Plumley et al., 2023). Higher education levels often correlate with lower loneliness, possibly due to better social skills and broader social networks, therefore educational attainment can impact loneliness (Fernández-Carro & Gumà Lao, 2022). Lastly, subjective income is a significant variable: Fokkema et al. (2012) found that individuals' perceptions of their financial situation can influence their social well-being, where those feeling economically secure tend to report lower levels of loneliness compared to those feeling financially strained.

Nevertheless, not only personal characteristics play a role in one's loneliness, also life events that happened earlier throughout the life course as well as the broader context can have an impact. According to a life course perspective, experiences and events encountered earlier in life have a lasting impact on one's health and psychological well-being (Kuh, 2003; Umberson et al., 2014). This means that due to possible losses and transitions, older individuals are more vulnerable to loneliness (Morgan, 2015).

This part describes three theoretical frameworks on loneliness. Before diving into two specific loneliness theories, i.e. the cognitive discrepancy theory and the differential investment of resources model, the life course model of Giele & Elder (1998) is elaborated on. The reason for this is that this PhD dissertation adopts a life course perspective in several studies, to counteract a momentary view of events.

2.4.1. Loneliness from a life course perspective

Within ageing studies, the life course perspective has gained more attention (Alwin, 2012; Switsers, 2021). While loneliness is not exclusive to later life, the factors that contribute to

loneliness – such as life events – tend to increase as people get older (Vozikaki et al., 2018). Research regularly shows that life experiences, in addition to personal current circumstances (such as living alone or being in bad health), have an impact on older people's loneliness and social isolation (Burholt et al., 2020). Changes in their social interactions may result from these life events (Perlman & Peplau, 1981). Cross-sectional studies have been the primary focus of current research on loneliness in later life (Cohen-Mansfield et al., 2016). However, unfavourable early life experiences that resulted in poor social interactions may have an impact on why people experience loneliness in later life (Ejlskov et al., 2020). Such significant life events can imply integration and adaptation processes (Spiro et al., 2016) that last a lifetime (Taylor, 2010), and they may affect a person's health and well-being in the long run (Fredriksen-Goldsen et al., 2017). Without taking into account the earlier stages of life, studies on the present situations and conditions of older adults (such as loneliness) will overlook the complexity of loneliness (Merz & De Jong Gierveld, 2016; Nicolaisen & Thorsen, 2014). This means that studying ageing, and thus also loneliness in later life, requires a life course perspective, since one's societal and historical context can play a role in coping, human development and stress in later life (Elder & George, 2016; Kendig et al., 2016).

To encompass the life course, the life course paradigm of Giele & Elder (1998) is used (see Figure 1). This framework consists of four key elements that connect with each other, showcasing an interplay between a person and their setting. The first key element is **location in time and place** and refers to one's cultural background and the general and unique aspects of individual location that impact social and individual patterns in ways that carry through time. Second, there is the element of **linked lives**, indicating social integration. This element encompasses all levels of social interaction, which are the result of contact with others who go through similar experiences. This means that an individual's life is embedded in the lives of people surrounding them and might influence each other. The third element is **human agency**, referring to individual goal orientation. Each human being wants to meet their own needs, which leads them to making certain decisions and organising their lives following goals such as avoiding pain, gaining economical security and looking for satisfaction in different ways. Lastly, there is the fourth key element, **timing of lives**, alluding to strategic adaptation. This element is about adapting both passively and actively to reach individual or collective goals, since various events can happen at a certain point of time, on which individuals have to react with the available resources.

These four key elements are linked to each other in various ways as well as through the funnel of timing. One's social networks, cultural background and social location as well as their personal motivations come together in an individual's adaptation to concrete situations and events (Giele & Elder, 1998).

Studying loneliness in old age calls for a life course perspective (Kendig et al., 2016; Switsers, 2021). The life course paradigm as described above (Giele & Elder, 1998) can provide a comprehensive framework for understanding the complex and dynamic nature of loneliness. It highlights that loneliness is not merely a result of individual circumstances but is deeply embedded in the broader socio-historical context, the timing of life events, the interconnectedness of social relationships, and the exercise of personal agency. This framework allows us to see how early life experiences, social networks, and personal choices interact to shape loneliness throughout the life course, with significant implications for how loneliness is experienced in later life.

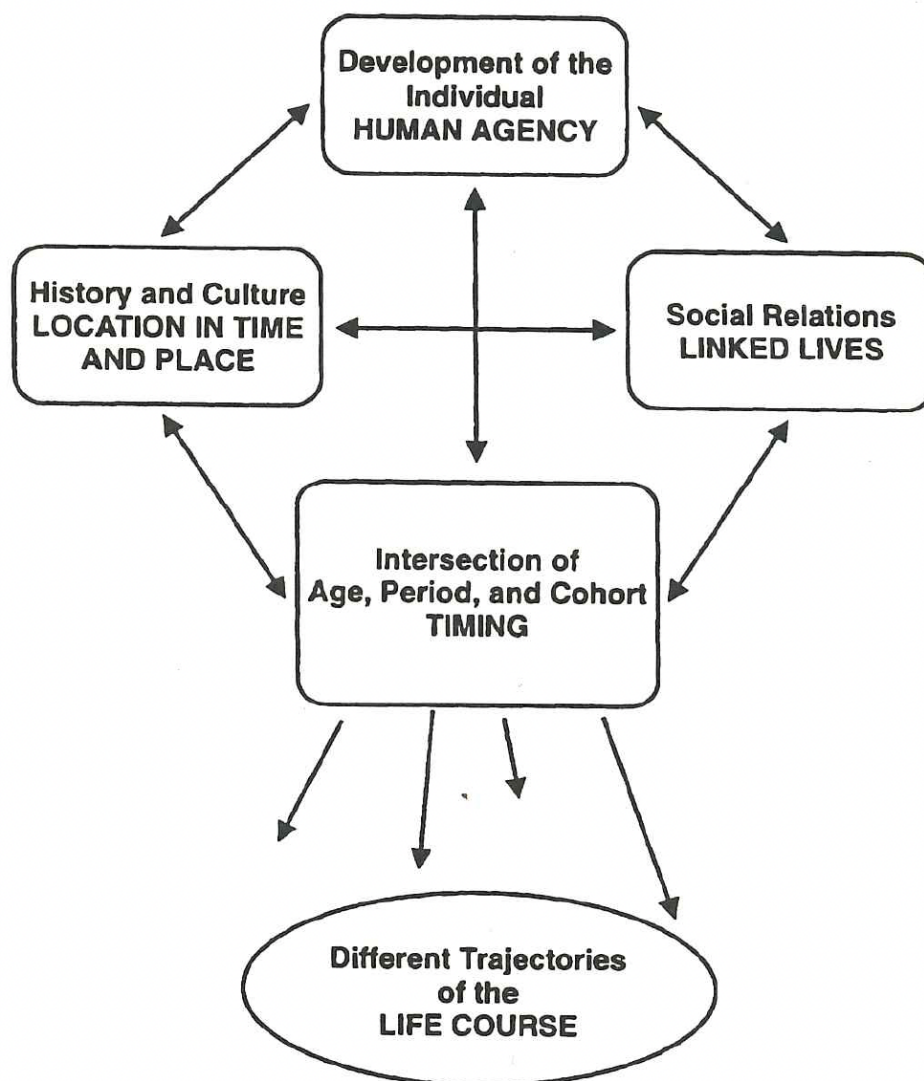


Figure 1. The life course paradigm of Giele & Elder (1998, p. 11)

2.4.2. Cognitive discrepancy theory of loneliness, from a lifecourse perspective

The cognitive discrepancy theory was founded by Perlman and Peplau (1981) and states that a mismatch between the real and expected quantity and quality of social contacts is the source of the subjective and distressing state of loneliness. Within this theory, a distinction is made between predisposing factors and precipitating events. Predisposing factors can relate to more general aspects such as cultural values and norms, as observed in individualist and communal cultures (Van Staden & Coetzee, 2010), but they are not always the cause of loneliness. Individual personality traits such as low self-esteem, anxiety, and introversion are linked to the risk of becoming lonely (Hawkey et al., 2008; Sha'ked & Rokach, 2015). Contrarily, precipitating events are particular situations or occurrences that lead to differences between an individual's actual and desired social ties, possibly leading to feelings of loneliness (Perlman & Peplau, 1981). This means that the degree of loneliness is impacted not only by the desired and undesired social ties, but also by the possibility that unpleasant relationships will change with time and by the ability to adjust to the circumstances (Perlman and Peplau, 1981).

Parts of the cognitive discrepancy theory have been the subject of several recent investigations and adaptations, which have helped to grasp the model better (see Figure 2). First, the relevance of the socio-cultural and social structural context (the social environment) as potential influencers on actual or desired social connections is one way that Burholt and colleagues (2016) extend the discrepancy theory. In terms of concerns like stigmatisation or discriminatory views, as well as economic inequality, access to education, healthcare disparities or housing and segregation, the social environment refers to the milieu in which people live, including the attitudes and values of the people and institutions they interact with (Burholt et al. 2016). Second, Switsers (2021) in her PhD added the life course viewpoint, which is a crucial component of investigating loneliness, since precipitating events as well as coping strategies throughout the life course may influence current feelings of loneliness among older adults. These additions to the model pointed not only to the long-term effects of childhood and adult events that may increase a person's susceptibility to loneliness in later life, but also to unrealised life events (such as being unable to have children) and events that seemed not relevant on a person's early experiences but were found to be significant in the development of loneliness in later life. When it comes to coping with loneliness, older adults who had experienced loneliness in the past can keep on using the same coping mechanisms throughout their lives, while other older adults might modify their coping mechanisms in light of past experiences and developed better loneliness-coping mechanisms (Switsers et al., 2023). Additionally, it seems that changes in people's resources, e.g. physical limitations, might make coping more challenging. Important here to note is that coping is contextual and

can change over time, meaning that coping preferences can differ in different contexts (Schoenmakers et al., 2015).

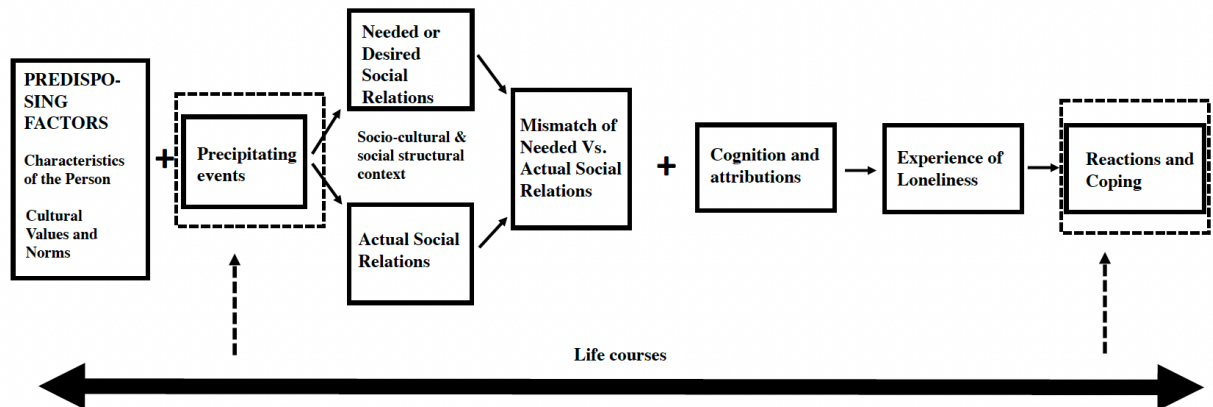


Figure 2. The cognitive discrepancy theory as updated by Burholt et al. (2016) and Switsers et al. (2021, p. 150)

2.4.3. Social networks and social support: the Differential Investment of Resources model (DIRe)

The Differential Investment of Resources Model (DIRe) (see Figure 3) describes how personal traits and environmental factors work together to influence how social bonds form across the adult life span. The fundamental idea of the DIRe model is that social relationships need time and effort; they are not "free". Loneliness arises from the interplay between personal characteristics (like personality and health) and contextual factors (such as social networks and community involvement) (Huxhold & Fiori, 2024). Moreover, loneliness occurs when existing social relationships do not meet an individual's social expectations, which corresponds to the cognitive discrepancy theory (as mentioned above).

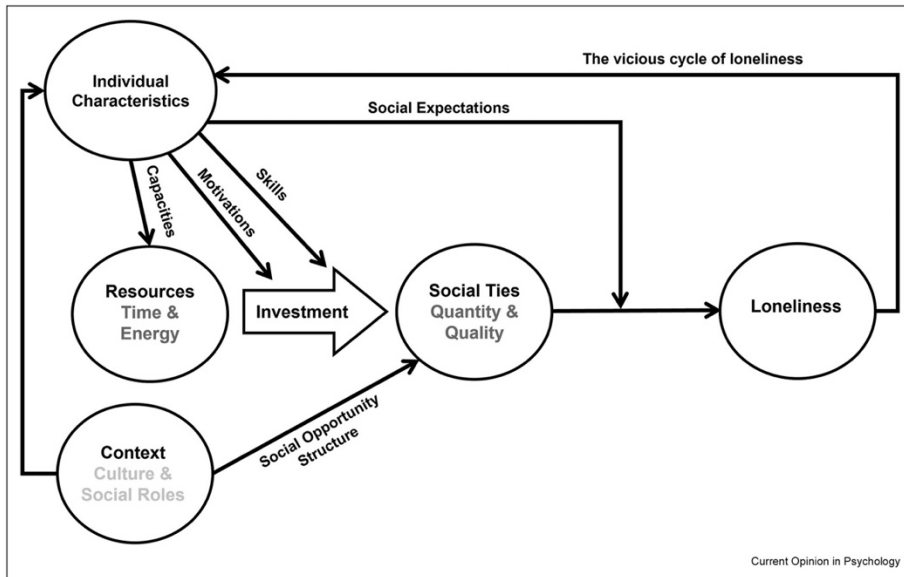


Figure 3. Differential Investment of Resources model (DIRe) (Huxhold & Fiori, 2024, p. 3)

According to the Social Relationships Expectations (SRE) framework, there are six social expectations being essential for older adults' well-being (see Figure 4): intimacy, support, proximity, fun, generativity and respect (Akhter-Khan et al., 2023).



Figure 4. Social Relationship Expectations (SRE) (Akhter-Khan et al., 2023, p. 766)

These six expectations can be fulfilled by three layers in our social structure: the close confidants provide intimacy and support, the broader network provides proximity and fun, and the community provides generativity and respect (see Figure 5) (Huxhold & Fiori, 2024).

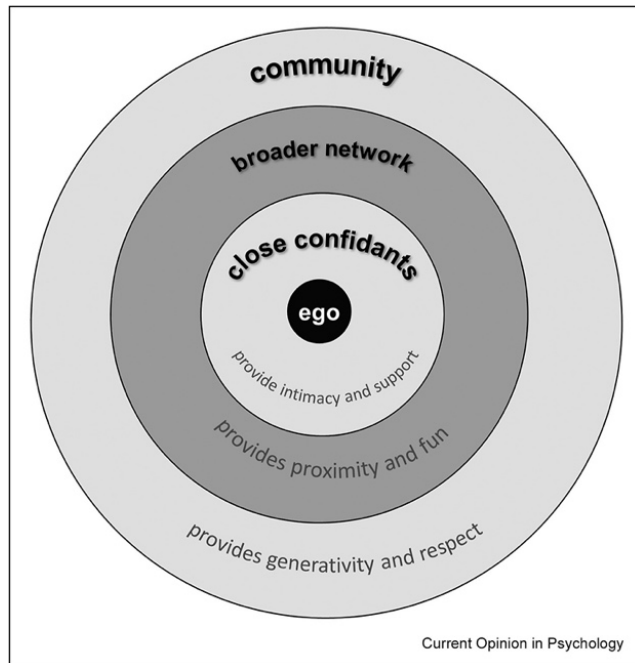


Figure 5. Layers in the social structure (Huxhold & Fiori, 2024, p. 2)

The emotional intimacy of social ties can deteriorate rapidly if adequate time is not spent together. Therefore, maintaining close confidants – the first layer of the social structure – requires a significant time investment (Roy et al., 2022). In contrast, maintaining connections with the second layer, which includes a larger network, and the third layer, the broader community, involves greater energy costs. Keeping these connections active requires frequent contact with weaker ties, as well as more active self-presentation and situational awareness (Hall et al., 2023).

According to Huxhold and Fiori's (2024) dynamic process model of loneliness (see Figure 3), changes in an adult's capacities, motivations, and skills tend to promote interactions with close ties, or first-layer connections. This is because older adults often seek support that meets social expectations of intimacy and support, which can help prevent loneliness in the face of age-related losses, particularly emotional loneliness (van Tilburg, 2020). However, focusing primarily on personal relationships may fail to meet other objectives, such as fun and generativity, which are usually fulfilled by connections in the second and third layers. If these broader social layers are neglected, older adults may find it especially difficult to overcome feelings of chronic loneliness once they arise (Huxhold & Fiori, 2024).

3. Childlessness: what's in a name?

3.1. The importance of children in later life

The role of children in the lives of their ageing parents is multifaceted and profoundly impactful. As individuals grow older, they often face numerous challenges, including declining health, reduced mobility, and the need for assistance with daily activities (Jacobs et al., 2016). In this context, children frequently serve as crucial sources of support, offering both practical and emotional aid that can significantly enhance the quality of life for their parents (Deindl & Brandt, 2017).

Practical aid includes assistance with everyday tasks such as grocery shopping, cooking, cleaning, and managing medical appointments (von Soest et al., 2020). For many older adults, the ability to rely on their children for these forms of help can mean the difference between living independently and requiring institutional care. The support provided by children can help older adults maintain their independence longer, allowing them to age in place in their own homes (Albertini & Kohli, 2013).

Children also play a significant role in the emotional well-being of their parents. Regular interactions with children and grandchildren can bring joy, a sense of purpose, and emotional fulfilment (Mansson, 2016). These relationships often provide a counterbalance to the losses and changes that accompany ageing. For instance, adult children frequently offer companionship, which can be especially valuable as social circles shrink due to retirement or the death of peers. This emotional support can be a vital component of mental health, providing older adults with the assurance that they are cared for and valued (Silverstein & Bengtson, 1997).

The implications for those who remain childless are complex and multifaceted. Without children to provide support, childless older adults may need to rely more heavily on other forms of social support and community resources. This situation underscores the importance of cultivating strong social networks outside of the immediate family. Friendships, extended family, and community engagement become critical in providing the support and companionship that children might otherwise offer (Kendig et al., 2007). Therefore, childless older adults often have to be more proactive in planning for their future needs. This can involve investing in community living arrangements that offer social interaction and support services, such as retirement communities or co-housing arrangements (Rowland, 1998). Financial planning is also a crucial aspect for childless individuals. Without the expectation of familial support, it becomes even more important to have sufficient savings and insurance to cover potential healthcare costs and long-term care needs. Planning for professional care

services and exploring options like long-term care insurance can help mitigate the uncertainties of ageing without children (Pinquart & Sörensen, 2000).

3.2. Societal evolutions leading to childlessness

In the past decades, several evolutions have been taking place which make childlessness a topic that can now be talked about more. In 2022, Leocádio summed them up in his theoretical review. One significant factor is the greater availability of contraceptive methods, which has empowered individuals to have more control over their reproductive choices (Leocádio, 2022). This accessibility allows people to delay or avoid having children until they feel ready for it, contributing to higher rates of childlessness. This made more women pursue careers, professional commitments and career aspirations, leading to the postponement or decision not to have children. This 'choice biography' (Beck & Beck-Gernsheim, 2002; Keizer et al., 2008), in combination with the greater involvement of women in the labor market, has played a crucial role in the rise of childlessness (Fiori et al., 2017; Leocádio, 2022).

Second, increasing levels of education, particularly among women, are also linked to delayed childbearing. Education often opens up greater career opportunities and aspirations, resulting in a focus on personal and professional development before considering parenthood (Leocádio, 2022). The impacts of globalisation and digitalisation cannot be overlooked either. These phenomena have transformed societal structures and lifestyles, including increased mobility, the rise of dual-career couples, and greater exposure to diverse lifestyles and norms, all of which influence decisions about family formation and childbearing (Leocádio, 2022).

Furthermore, rising rates of cohabitation reflect changing relationship dynamics (Leocádio, 2022). Many couples choose to live together without marrying or having children, either as a permanent lifestyle choice or as a step before making longer-term decisions about marriage and family. This is closely related to the trend of increasing individualisation, which emphasises personal autonomy and self-fulfilment (Keizer et al., 2008). Such cultural shifts lead to prioritising personal goals and experiences over traditional family structures, including having children.

Fourth, economic uncertainty and instability are also critical factors influencing family planning (Leocádio, 2022). Economic instability, precarious employment, and financial insecurity can deter individuals from having children due to the perceived high costs and responsibilities associated with raising a family. Fertility postponement (Peterson, 2015), a common trend in contemporary societies, is often a result of these economic conditions as well as personal and professional pursuits. Additionally, some people remain childless due to the lack of a suitable partner or for biological reasons (Leocádio, 2022).

In short, as Fiori et al. (2017) highlight, the two main reasons for the increase in childlessness are the postponement of having children and changing societal norms and values, which have led to greater social acceptance of childlessness. These evolving norms and values have shifted the perception of family life and personal fulfilment, making childlessness a more socially acceptable and often chosen path.

Despite the growing diversity in family structures, research and policy often continue to focus on "normal" families with children. This conventional perspective assumes that children will be the primary source of care and support for older adults, reflecting a longstanding societal norm (Scharlach, 2017). Children are indeed a crucial part of the intergenerational support system, providing emotional, physical, and financial assistance to ageing parents (Silverstein & Giarrusso, 2010). This expectation is deeply embedded in many cultural and policy frameworks, reinforcing the idea that family care primarily means care by one's offspring.

However, this focus overlooks older adults without children, who may face unique challenges as they age, particularly in securing the care and support typically provided by family. With increasing numbers of childless adults due to various personal, social, and economic factors, the assumption that everyone has children to rely on is becoming increasingly outdated (Dykstra & Hagestad, 2007a).

The absence of children necessitates alternative approaches to care and support. This includes broader community-based support systems, more robust public services, and policies that acknowledge and address the needs of childless older adults (Szinovacz & Davey, 2006). By expanding our perspective beyond the traditional family model, we can ensure that all individuals receive the care and support they need, regardless of their family situation. This shift requires a concerted effort in both research and policy to create inclusive frameworks that accommodate diverse family structures and address the realities of an ageing population without children.

3.3. Defining childlessness

The existing literature finds no consensus in defining what childlessness exactly entails. A common definition describes the childless as "those who have no living biological or adoptive children" (Dykstra & Hagestad, 2007b; Miettinen et al., 2015). This means that adults who only have stepchildren or foster children are considered childless, however Fiori et al. (2017) disagree, since they consider people who only have stepchildren as not childless. Additionally, Dykstra and Hagestad (2007b) bring in the discussion that someone might also be considered childless if their offspring predecease them, although this group's reasoning might be similar to that of parents since they once experienced life as a parent as well.

Recently, three alternative definitions of childlessness have been presented: (1) the biological definition, meaning that someone never fathered or gave birth to an “own” child; (2) the functional definition, indicating that one has no children who are living and in contact; and (3) the social definition, pointing to both a person and their spouse/partner who have no children or stepchildren who are living and in contact (Xu et al., 2022). Teerawichitchainan and Ha (2024) distinguish between actual childlessness, meaning that people do not have children, and defacto childlessness, which counts for older adults whose children live far away. The prevalence of childlessness, their characteristics, and their health outcomes may vary significantly depending on the used definition (Xu et al., 2022). Also the self-perception of someone considering themselves as childless can be used as a possible way to define childlessness (Gietel-Basten & Yeung, 2023).

Trying to overcome these discussion points, researchers try to characterise childlessness as voluntary or involuntary. According to Conner and Stith (2014) and Dykstra and Hagestad (2007b), individuals who choose to be childless do so because they are not interested in having children, are too preoccupied with other matters, or have other interests. They contend that involuntary childlessness is most relevant in a medical-biological setting, particularly in cases of infertility (Dykstra & Hagestad, 2007b). A third group, referred to as “postponers” (Dykstra & Liefbroer, 1998; Peterson, 2015), is mentioned in certain research. This group pertains primarily to women who delay having children due to factors related to their careers, education, or lifestyle, hence decreasing their likelihood of becoming parents.

Beyond this dichotomy of voluntary and involuntary childlessness, many reasons for childlessness exist. Possible reasons include prioritising a career over a family life (Rybińska & Morgan, 2019), having a critical perspective on society (Smith et al., 2020), having a partner who does not want children (anymore) (Riggs & Bartholomaeus, 2016), life course events that make people remain childless (Mynarska et al., 2015), or medical causes (Fieldsend & Smith, 2020).

3.4. Childlessness in later life: prevalence and characteristics of childless older adults

Today, one in six people experiences fertility problems (World Health Organization, 2023). In developed countries, childlessness has historically followed a U-shaped curve. Following peak levels (15–25%) at the start of the 1800s, it declined in the middle of the 1900s and then rose once more following the 1960s (Kreyenfeld & Konietzka, 2017; Leocádio, 2022). Since then, worldwide rates of childlessness have been trending upward in recent decades, especially

since the 1970s (Fiori et al., 2017; Kreyenfeld & Konietzka, 2017). Beginning with the birth cohort of 1950, childlessness increased in numerous European countries, including West Germany, Austria, Switzerland, and the Netherlands (Sobotka, 2017). More recently, countries in Southern and Eastern Europe saw a sharp rise in the percentage of women who completed their reproductive years without having children. In non-European nations, childlessness has also been rising among recent baby boomers, e.g. in the US (Frejka, 2017) and Japan (Raymo et al., 2015).

9.2 to 13.6% of older Americans (55 and over) were childless in 2014, depending on the criterion used (Xu et al., 2022). The frequency of childlessness among older persons varies across Europe, with SHARE data from waves 1992 to 2017 indicating that the prevalence ranges from 5.6% in Czechia to 16.2% in Ireland (Antczak et al., 2023). In Belgium, the prevalence of childlessness among older adults older than 50 is 12.2% (Antczak et al., 2023).

The community of older individuals without children is very diverse: they have a variety of reasons for not having children, different marriage histories, and unique life pathways that culminate in childlessness (Wenger et al., 2007). In several nations, the proportion of childless older women is larger than that of childless older men, e.g. in Australia (16 vs. 11%), the United States (17 vs. 11%), Finland (19 vs. 16%), the Netherlands (17 vs. 13%), and Japan (5 vs. 4%). This can be explained by women's biological limitations, as they have a smaller window of opportunity of two to three decades to become parents, compared to men, who are typically not faced with the permanent loss of fertility (Hagestad & Call, 2007). Compared to parents, older adults without children are also more likely to live alone or in institutions (Koropeckyj-Cox & Call, 2007). In terms of wealth and income, childless married couples typically have a longer educational history, a somewhat higher income, and roughly 5% more wealth than married parents (Plotnick, 2009). In terms of social networks, older persons without children have more friends and family, and compared to parents, they are more likely to view this broader network as possible emotional supporters (Schnettler & Wöhler, 2016).

4. Childlessness and loneliness in later life

There is conflicting quantitative data about childlessness and later-life well-being. First of all, research has shown that older adults without children have lower life satisfaction than older parents because they were deprived of a normative life event (Albertini & Arpino, 2018). However, other studies show that having children has no effect on life satisfaction or overall well-being (Bauer et al., 2023; Gibney et al., 2017), as older adults without children have grown to accept their situation and have strengthened their social network through other social interactions (Hadley, 2021; Stahnke et al., 2020).

In light of loneliness, certain research indicates that not having children may be associated with increased feelings of loneliness. For instance, Vozikaki et al. (2018) investigated loneliness in 11 European countries involving older persons and discovered a substantial correlation between childlessness and frequent symptoms of loneliness in later life, albeit no particular explanations were provided. Furthermore, Zoutewelle-Terovan & Liefbroer (2018) show a high correlation between childlessness and loneliness in later life, particularly in more traditional, familialist countries (e.g. Southern and Eastern European countries) where the family remains a central institution and childlessness represents the biggest departure from these norms. Additionally, qualitative studies support the significance of childlessness as a risk factor for loneliness in later life, evoking emotions of dread of being abandoned or needing care from professionals (Kafková, 2023). Also the COVID-19 pandemic made childless older adults enter loneliness more easily (Arpino et al., 2022). However, other research (Gibney et al., 2017; Hansen, 2021) suggests that the correlation between childlessness and loneliness is weak or even negative, meaning that older persons without children report feeling less lonely than older parents. As a result, there is disagreement in the scientific literature on the impact of childlessness on loneliness and well-being, despite data suggesting that it may be related to various aspects of both.

Furthermore, it is crucial to take into account the different types of loneliness in order to completely comprehend the connection between childlessness and loneliness in later life. Penning et al.'s study (2022) among older adults was one of the few that made a distinction between types of loneliness in relation to childlessness, looking at social and emotional loneliness based on data from the Canadian General Social Survey. While the strength of this relationship varies and depends on the specific social circumstances (age, gender, marital/partner status), as well as the type of loneliness (emotional versus social), the findings generally indicate that having children is important for reducing loneliness in middle and later life (Penning et al., 2022). However, being childless is more than just answering the question "do you have children?" – the path to becoming childless is at least as important (Hagestad & Call, 2007).

5. Research aims and outline of this PhD

The central aim of this doctoral dissertation is to investigate and better understand the relationship between childlessness and loneliness in later life. In doing so, two general research questions are formulated:

1. What is the relationship between childlessness and loneliness in later life?
2. What is the relationship between reasons for childlessness and loneliness in later life?

During the research, I have in-depth attention for both the concepts of childlessness and loneliness, meaning that I emphasise the heterogeneity of the childless older population on the one hand by acknowledging different reasons and contexts for childlessness, as well as taking into account different types of loneliness on the other hand, i.e. social, emotional and existential loneliness.

This multi-method research design, on which I elaborate already in Chapter 2, consists of two main parts, covering 5 papers (Chapters 3-7). The first part lays the groundwork by taking a closer look at loneliness and childlessness separately, so that in the second part, the specific research questions on the relationship between the two concepts can be answered properly. Part one is the groundwork. First of all, the prevalence and measurement of loneliness in later life is elaborated on. Since one of the core concepts is loneliness and since the aim is to measure loneliness among community-dwelling older adults without children, there is the need to understand which prevalence of loneliness can be expected among this target group, and what is the most appropriate way of measuring it, with attention for possible contextual factors such as the impact of measurement instrument, mode of data collection and the country where the study is conducted. The second core concept is childlessness. In the existing literature, childlessness among older adults is often considered as a basic concept, i.e. "not having children". But what is behind this basic definition: what are characteristics of childless older adults in terms of personal as well as social characteristics? And what reasons shape one's childlessness?

In the second part, the actual relationship between childlessness and loneliness in later life is deepened. In a quantitative way, the focus is on the link between childlessness and different types of loneliness, as well as on the relationship between different reasons for childlessness and different types of loneliness in later life. The next step is then to understand the life stories of childless older adults and how they experience their childlessness and possible loneliness feelings throughout the life course.

Table 1 gives an overview of the two parts and the consecutive research questions and studies of this dissertation.

Table 1. Overview of the two parts and the consecutive research questions and studies of this dissertation.

Chapter	Research Questions or Aims	Method	Data	Publication status
Chapter 2. Methodological approach	An overview of the used methodology as part of this PhD dissertation	-	-	-
PART 1. LAYING THE GROUNDWORK: CHILDLESSNESS AND LONELINESS IN LATER LIFE				
Chapter 3. Loneliness prevalence of community-dwelling older adults and the impact of the mode of measurement, data collection, and country: A systematic review and meta-analysis	To review the prevalence of loneliness among community-dwelling older adults in countries worldwide and to examine the study characteristics of these loneliness prevalence studies with specific attention to the influence of measurement instruments, mode of data collection, and the country where the study was conducted	Systematic review and meta-analysis	62 published research articles	Published in International Psychogeriatrics
Chapter 4. Life Stories of Voluntarily Childless Older People: A Retrospective View on Their Reasons and Experiences	<ol style="list-style-type: none"> 1. How do voluntarily childless older people perceive their life course (including their future life course)? 2. What reasons did voluntarily childless older people have for not opting for children when they were younger? 3. How do voluntarily childless older people experience their childlessness throughout their lives? 	Qualitative research	13 life story interviews with voluntarily childless older adults	Published in Journal of Family Issues
Chapter 5. Childlessness in later life: what's in a name? Results from a cross-sectional study among childless older adults	<ol style="list-style-type: none"> 1. What are the specific characteristics related to the childlessness of childless older adults? 2. What is the difference between childless older adults and older adults with children in terms of their personal and social characteristics? 3. How do childless older adults and older adults with children differ in terms of well-being? 	Quantitative research	Survey among community-dwelling older adults with and without children (N=543)	will be submitted to Research on Aging
PART 2. THE RELATIONSHIP BETWEEN (REASONS FOR) CHILDLESSNESS AND LONELINESS IN LATER LIFE				
Chapter 6. The Impact Of Childlessness and the Reasons for it On Older Adults' Loneliness And The Moderating Role Of Gender	Examine the impact of childlessness and reasons for childlessness on different types of loneliness in later life, and assess the possible moderating role of gender	Quantitative research	Survey among community-dwelling older adults with and without children (N=543)	will be submitted to European Journal on Ageing
Chapter 7. Levensverhalen van kinderloze 60-plussers: reflecties op kinderloosheid en eenzaamheid doorheen de levensloop	<p>What themes in the narratives of childless older adults can explain why this group is not lonelier than older adults with children?</p> <p>→ article in Dutch, to disseminate research insights in the Dutch-language area as well</p>	Qualitative research	12 life story interviews with childless older adults	will be submitted to Tijdschrift voor Gerontologie en Geriatrie

References

- Akhter-Khan, S. C., Prina, M., Wong, G. H.-Y., Mayston, R., & Li, L. (2023). Understanding and Addressing Older Adults' Loneliness: The Social Relationship Expectations Framework. *Perspectives on Psychological Science, 18*(4), 762-777. <https://doi.org/10.1177/17456916221127218>
- Albertini, M., & Arpino, B. (2018). *Childlessness, parenthood and subjective wellbeing: The relevance of conceptualizing parenthood and childlessness as a continuum*. [Preprint]. SocArXiv. <https://doi.org/10.31235/osf.io/xtfq6>
- Albertini, M., & Kohli, M. (2009). What childless older people give: Is the generational link broken? *Ageing and Society, 29*(8), 1261-1274. <https://doi.org/10.1017/S0144686X0999033X>
- Albertini, M., & Kohli, M. (2013). The Generational Contract in the Family: An Analysis of Transfer Regimes in Europe. *European Sociological Review, 29*(4), 828-840. <https://doi.org/10.1093/esr/jcs061>
- Alwin, D. F. (2012). Integrating Varieties of Life Course Concepts. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences, 67B*(2), 206-220. <https://doi.org/10.1093/geronb/gbr146>
- Antczak, R., Quashie, N. T., Mair, C. A., & Arpino, B. (2023). Less Is (Often) More: Number of Children and Health Among Older Adults in 24 Countries. *The Journals of Gerontology: Series B, 78*(11), 1892-1902. <https://doi.org/10.1093/geronb/gbad123>
- Arpino, B., Mair, C. A., Quashie, N. T., & Antczak, R. (2022). Loneliness before and during the COVID-19 pandemic—Are unpartnered and childless older adults at higher risk? *European Journal of Ageing, 19*(4), 1327-1338. <https://doi.org/10.1007/s10433-022-00718-x>
- Ayalon, L., Shiovitz-Ezra, S., & Roziner, I. (2016). A cross-lagged model of the reciprocal associations of loneliness and memory functioning. *Psychology and Aging, 31*(3), 255-261. <https://doi.org/10.1037/pag0000075>
- Barnes, T. L., MacLeod, S., Tkatch, R., Ahuja, M., Albright, L., Schaeffer, J. A., & Yeh, C. S. (2022). Cumulative effect of loneliness and social isolation on health outcomes among older adults. *Ageing & Mental Health, 26*(7), 1327-1334. <https://doi.org/10.1080/13607863.2021.1940096>
- Bauer, G., Brandt, M., & Kneip, T. (2023). The Role of Parenthood for Life Satisfaction of Older Women and Men in Europe. *Journal of Happiness Studies, 24*(1), 275-307. <https://doi.org/10.1007/s10902-022-00600-8>
- Beck, U., & Beck-Gernsheim, E. (2002). *Individualization: Institutionalized individualism and its social and political consequences*. SAGE.
- Bolmsjö, I., Tengland, P.-A., & Rämngård, M. (2019). Existential loneliness: An attempt at an

- analysis of the concept and the phenomenon. *Nursing Ethics*, 26(5), 1310-1325. <https://doi.org/10.1177/0969733017748480>
- Burholt, V., Winter, B., Aartsen, M., Constantinou, C., Dahlberg, L., Feliciano, V., De Jong Gierveld, J., Van Regenmortel, S., Waldegrave, C., & The Working Group on Exclusion from Social Relations, part of the COST-financed Research Network 'Reducing Old-Age Exclusion: Collaborations in Research and Policy' (ROSENet). (2020). A critical review and development of a conceptual model of exclusion from social relations for older people. *European Journal of Ageing*, 17(1), 3-19. <https://doi.org/10.1007/s10433-019-00506-0>
- Cacioppo, J. T., & Cacioppo, S. (2014). Social Relationships and Health: The Toxic Effects of Perceived Social Isolation. *Social and Personality Psychology Compass*, 8(2), 58-72. <https://doi.org/10.1111/spc3.12087>
- Chawla, K., Kunonga, T. P., Stow, D., Barker, R., Craig, D., & Hanratty, B. (2021). Prevalence of loneliness amongst older people in high-income countries: A systematic review and meta-analysis. *PLOS ONE*, 16(7), e0255088. <https://doi.org/10.1371/journal.pone.0255088>
- Clark, M., Bonnici, J., & Azzopardi, A. (2021). Loneliness in Malta: Findings from the first National Prevalence Study. *Journal of Social and Personal Relationships*, 38(9), 2751-2771. <https://doi.org/10.1177/02654075211020120>
- Cohen-Mansfield, J., Hazan, H., Lerman, Y., & Shalom, V. (2016). Correlates and predictors of loneliness in older-adults: A review of quantitative results informed by qualitative insights. *International Psychogeriatrics*, 28(4), 557-576. <https://doi.org/10.1017/S1041610215001532>
- Conner, S., & Stith, S. (2014). Childless Couples. In M. Coleman & L. H. Ganong (Red.), *The social history of the American family: An encyclopedia* (pp. 204-208). SAGE.
- Courtin, E., & Knapp, M. (2017). Social isolation, loneliness and health in old age: A scoping review. *Health & Social Care in the Community*, 25(3), 799-812. <https://doi.org/10.1111/hsc.12311>
- Cramer, K. M., & Barry, J. E. (1999). Conceptualizations and measures of loneliness: A comparison of subscales. *Personality and Individual Differences*, 27(3), 491-502. [https://doi.org/10.1016/S0191-8869\(98\)00257-8](https://doi.org/10.1016/S0191-8869(98)00257-8)
- Dahlberg, L., Andersson, L., McKee, K. J., & Lennartsson, C. (2015). Predictors of loneliness among older women and men in Sweden: A national longitudinal study. *Aging & Mental Health*, 19(5), 409-417. <https://doi.org/10.1080/13607863.2014.944091>
- Davies, N., Crowe, M., & Whitehead, L. (2016). Establishing routines to cope with the loneliness associated with widowhood: A narrative analysis. *Journal of Psychiatric and Mental Health Nursing*, 23(8), 532-539. <https://doi.org/10.1111/jpm.12339>
- de Jong Gierveld, J. (1987). Developing and testing a model of loneliness. *Journal of Personality and Social Psychology*, 53(1), 119-128. [24](https://doi.org/10.1037/0022-</p>
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- De Jong Gierveld, J., & Tilburg, T. V. (2006). A 6-Item Scale for Overall, Emotional, and Social Loneliness: Confirmatory Tests on Survey Data. *Research on Aging, 28*(5), 582-598. <https://doi.org/10.1177/0164027506289723>
- De Jong Gierveld, J., & van Tilburg, T. (1999). *Manual of the loneliness scale*. Department of Social Research Methodology, Vrije Universiteit.
- De Jong Gierveld, J., van Tilburg, T. G., & Dykstra, P. A. (2018). New Ways of Theorizing and Conducting Research in the Field of Loneliness and Social Isolation. In A. L. Vangelisti & D. Perlman (Red.), *The Cambridge Handbook of Personal Relationships* (2de dr., pp. 391-404). Cambridge University Press. <https://doi.org/10.1017/9781316417867.031>
- Deindl, C., & Brandt, M. (2017). Support networks of childless older people: Informal and formal support in Europe. *Ageing and Society, 37*(8), 1543-1567. <https://doi.org/10.1017/S0144686X16000416>
- Dykstra, P. A., & Hagestad, G. O. (2007a). Childlessness and Parenthood in Two Centuries: Different Roads—Different Maps? *Journal of Family Issues, 28*(11), 1518-1532. <https://doi.org/10.1177/0192513X07303881>
- Dykstra, P. A., & Hagestad, G. O. (2007b). Roads Less Taken: Developing a Nuanced View of Older Adults Without Children. *Journal of Family Issues, 28*(10), 1275-1310. <https://doi.org/10.1177/0192513X07303822>
- Dykstra, P. A., & Keizer, R. (2009). The wellbeing of childless men and fathers in mid-life. *Ageing and Society, 29*(8), 1227-1242. <https://doi.org/10.1017/S0144686X08008374>
- Dykstra, P. A., & Liefbroer, A. C. (1998). Kinderloos en toch gelukkig? Over de gevolgen van kinderloosheid voor de ouderdom. *Mens & Maatschappij, 73*(2), 108-129.
- Ejlskov, L., Bøggild, H., Kuh, D., & Stafford, M. (2020). Social relationship adversities throughout the lifecourse and risk of loneliness in later life. *Ageing and Society, 40*(8), 1718-1734. <https://doi.org/10.1017/S0144686X19000345>
- Elder, G. H., & George, L. K. (2016). Age, Cohorts, and the Life Course. In M. J. Shanahan, J. T. Mortimer, & M. Kirkpatrick Johnson (Red.), *Handbook of the Life Course* (pp. 59-85). Springer International Publishing. https://doi.org/10.1007/978-3-319-20880-0_3
- Elovainio, M., Hakulinen, C., Pulkki-Råback, L., Virtanen, M., Josefsson, K., Jokela, M., Vahtera, J., & Kivimäki, M. (2017). Contribution of risk factors to excess mortality in isolated and lonely individuals: An analysis of data from the UK Biobank cohort study. *The Lancet Public Health, 2*(6), e260-e266. [https://doi.org/10.1016/S2468-2667\(17\)30075-0](https://doi.org/10.1016/S2468-2667(17)30075-0)
- Fernández-Carro, C., & Gumà Lao, J. (2022). A Life-Course Approach to the Relationship Between Education, Family Trajectory and Late-Life Loneliness Among Older Women in Europe. *Social Indicators Research, 162*(3), 1345-1363.

<https://doi.org/10.1007/s11205-022-02885-x>

- Fieldsend, M., & Smith, J. A. (2020). 'Either stay grieving, or deal with it': The psychological impact of involuntary childlessness for women living in midlife. *Human Reproduction*, 35(4), 876-885. <https://doi.org/10.1093/humrep/deaa033>
- Fiori, F., Rinesi, F., & Graham, E. (2017). Choosing to Remain Childless? A Comparative Study of Fertility Intentions Among Women and Men in Italy and Britain. *European Journal of Population*, 33(3), 319-350. <https://doi.org/10.1007/s10680-016-9404-2>
- Fokkema, T., De Jong Gierveld, J., & Dykstra, P. A. (2012). Cross-National Differences in Older Adult Loneliness. *The Journal of Psychology*, 146(1-2), 201-228. <https://doi.org/10.1080/00223980.2011.631612>
- Fredriksen-Goldsen, K. I., Bryan, A. E. B., Jen, S., Goldsen, J., Kim, H.-J., & Muraco, A. (2017). The Unfolding of LGBT Lives: Key Events Associated With Health and Well-being in Later Life. *The Gerontologist*, 57(suppl 1), S15-S29. <https://doi.org/10.1093/geront/gnw185>
- Frejka, T. (2017). Childlessness in the United States. In M. Kreyenfeld & D. Konietzka (Red.), *Childlessness in Europe: Contexts, Causes, and Consequences* (pp. 159-179). Springer International Publishing. https://doi.org/10.1007/978-3-319-44667-7_8
- Fried, L., Prohaska, T., Burholt, V., Burns, A., Golden, J., Hawkey, L., Lawlor, B., Leavey, G., Lubben, J., O'Sullivan, R., Perissinotto, C., van Tilburg, T., Tully, M., & Victor, C. (2020). A unified approach to loneliness. *The Lancet*, 395(10218), 114. [https://doi.org/10.1016/S0140-6736\(19\)32533-4](https://doi.org/10.1016/S0140-6736(19)32533-4)
- Gardiner, C., Laud, P., Heaton, T., & Gott, M. (2020). What is the prevalence of loneliness amongst older people living in residential and nursing care homes? A systematic review and meta-analysis. *Age and Ageing*, 49(5), 748-757. <https://doi.org/10.1093/ageing/afaa049>
- Gibney, S., Delaney, L., Codd, M., & Fahey, T. (2017). Lifetime Childlessness, Depressive Mood and Quality of Life Among Older Europeans. *Social Indicators Research*, 130(1), 305-323. <https://doi.org/10.1007/s11205-015-1177-1>
- Giele, J. Z., & Elder, G. H. (1998). Life Course Research: Development of a Field. In J. Z. Giele & G. H. Elder, *Methods of Life Course Research: Qualitative and Quantitative Approaches* (pp. 5-27). SAGE Publications, Inc. <https://doi.org/10.4135/9781483348919.n1>
- Gietel-Basten, S., & Yeung, A. S. W. (2023). Self-Definition and Evaluation of the Term "Childfree" Among Hong Kong Women. *SAGE Open*, 13(4), 21582440231198994. <https://doi.org/10.1177/21582440231198994>
- Goossens, L., Maes, M., Danneel, S., Vanhalst, J., & Nelemans, S. A. (2017). Differential Loneliness Scale. In V. Zeigler-Hill & T. K. Shackelford (Red.), *Encyclopedia of Personality and Individual Differences* (pp. 1-4). Springer International Publishing. https://doi.org/10.1007/978-3-319-28099-8_23-1

- Hadeei, S. (2024). Development and Validation of a New Measurement Scale for Existential Loneliness. *Assessment*, 31(5), 1100-1113. <https://doi.org/10.1177/10731911231204831>
- Hadley, R. A. (2021). 'No longer invincible': The impact of involuntary childlessness on older men. *Physical Therapy Reviews*, 26(5), 328-343. <https://doi.org/10.1080/10833196.2021.1884172>
- Hagestad, G. O., & Call, V. R. A. (2007). Pathways to Childlessness: A Life Course Perspective. *Journal of Family Issues*, 28(10), 1338-1361. <https://doi.org/10.1177/0192513X07303836>
- Hall, J. A., Dominguez, J., Merolla, A. J., & Otmar, C. D. (2023). Social Bandwidth: When and Why Are Social Interactions Energy Intensive? *Journal of Social and Personal Relationships*, 40(8), 2614-2636. <https://doi.org/10.1177/02654075231154937>
- Hansen, T. (2021). Childlessness and Psychological Well-Being in Midlife and Old Age. In F. Maggino (Red.), *Encyclopedia of Quality of Life and Well-Being Research* (pp. 1-5). Springer International Publishing. https://doi.org/10.1007/978-3-319-69909-7_3710-2
- Hansen, T., & Slagsvold, B. (2016). Late-Life Loneliness in 11 European Countries: Results from the Generations and Gender Survey. *Social Indicators Research*, 129(1), 445-464. <https://doi.org/10.1007/s11205-015-1111-6>
- Hawkley, L. C., Hughes, M. E., Waite, L. J., Masi, C. M., Thisted, R. A., & Cacioppo, J. T. (2008). From Social Structural Factors to Perceptions of Relationship Quality and Loneliness: The Chicago Health, Aging, and Social Relations Study. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, 63(6), S375-S384. <https://doi.org/10.1093/geronb/63.6.S375>
- Holt-Lunstad, J., Smith, T. B., Baker, M., Harris, T., & Stephenson, D. (2015). Loneliness and Social Isolation as Risk Factors for Mortality: A Meta-Analytic Review. *Perspectives on Psychological Science*, 10(2), 227-237. <https://doi.org/10.1177/1745691614568352>
- Huang, R., Gong, R., Deng, Q., & Hu, Y. (2024). The effect of intergenerational support from children on loneliness among older adults-the moderating effect of internet usage and intergenerational distance. *Frontiers in Public Health*, 12, 1330617. <https://doi.org/10.3389/fpubh.2024.1330617>
- Hughes, M. E., Waite, L. J., Hawkley, L. C., & Cacioppo, J. T. (2004). A Short Scale for Measuring Loneliness in Large Surveys: Results From Two Population-Based Studies. *Research on Aging*, 26(6), 655-672. <https://doi.org/10.1177/0164027504268574>
- Huxhold, O., & Fiori, K. L. (2024). Understanding loneliness in late life. *Current Opinion in Psychology*, 57, 101801. <https://doi.org/10.1016/j.copsyc.2024.101801>
- Jacobs, M. T., Broese van Groenou, M. I., Aartsen, M. J., & Deeg, D. J. H. (2016). Diversity in Older Adults' Care Networks: The Added Value of Individual Beliefs and Social Network Proximity. *The Journals of Gerontology Series B: Psychological Sciences*

and Social Sciences, gbw012. <https://doi.org/10.1093/geronb/gbw012>

- Jylhä, M., & Jokela, J. (1990). Individual Experiences as Cultural – a Cross-cultural Study on Loneliness Among the Elderly. *Ageing and Society*, 10(3), 295-315. <https://doi.org/10.1017/S0144686X00008308>
- Kafková, M. P. (2023). Sources of Loneliness for Older Adults in the Czech Republic and Strategies for Coping With Loneliness. *Social Inclusion*, 11(1). <https://doi.org/10.17645/si.v11i1.6185>
- Keizer, R., Dykstra, P. A., & Jansen, M. D. (2008). Pathways into Childlessness: Evidence of Gendered Life Course Dynamics. *Journal of Biosocial Science*, 40(6), 863-878. <https://doi.org/10.1017/S0021932007002660>
- Kendig, H., Dykstra, P. A., Van Gaalen, R. I., & Melkas, T. (2007). Health of Aging Parents and Childless Individuals. *Journal of Family Issues*, 28(11), 1457-1486. <https://doi.org/10.1177/0192513X07303896>
- Kendig, H., Loh, V., O'Loughlin, K., Byles, J., & Nazroo, J. Y. (2016). Pathways to Well-Being in Later Life: Socioeconomic and Health Determinants Across the Life Course of Australian Baby Boomers. *Journal of Population Ageing*, 9(1-2), 49-67. <https://doi.org/10.1007/s12062-015-9132-0>
- Koropecj-Cox, T., & Call, V. R. A. (2007). Characteristics of Older Childless Persons and Parents: Cross-National Comparisons. *Journal of Family Issues*, 28(10), 1362-1414. <https://doi.org/10.1177/0192513X07303837>
- Kreyenfeld, M., & Konietzka, D. (Eds.). (2017). *Childlessness in Europe: Contexts, causes, and consequences*. Springer Open.
- Kuh, D. (2003). Life course epidemiology. *Journal of Epidemiology & Community Health*, 57(10), 778-783. <https://doi.org/10.1136/jech.57.10.778>
- Leocádio, V. A. (2022). Childlessness: A review of the theoretical frameworks and a proposition of general pathways. *International Journal of Population Studies*, 7(2), 352. <https://doi.org/10.36922/ijps.v7i2.352>
- Mansson, D. H. (2016). The Joy of Grandparenting: A Qualitative Analysis of Grandparents. *Journal of Intergenerational Relationships*, 14(2), 135-145. <https://doi.org/10.1080/15350770.2016.1160738>
- Martín-María, N., Caballero, F. F., Lara, E., Domènech-Abella, J., Haro, J. M., Olaya, B., Ayuso-Mateos, J. L., & Miret, M. (2021). Effects of transient and chronic loneliness on major depression in older adults: A longitudinal study. *International Journal of Geriatric Psychiatry*, 36(1), 76-85. <https://doi.org/10.1002/gps.5397>
- Mayers, A. M., Khoo, S.-T., & Svartberg, M. (2002). The Existential Loneliness Questionnaire: Background, development, and preliminary findings. *Journal of Clinical Psychology*, 58(9), 1183-1193. <https://doi.org/10.1002/jclp.10038>
- McKenna-Plumley, P. E., Turner, R. N., Yang, K., & Groarke, J. M. (2023). Experiences of Loneliness Across the Lifespan: A Systematic Review and Thematic Synthesis of

- Qualitative Studies. *International Journal of Qualitative Studies on Health and Well-Being*, 18(1), 2223868. <https://doi.org/10.1080/17482631.2023.2223868>
- Merz, E.-M., & De Jong Gierveld, J. (2016). Childhood memories, family ties, sibling support and loneliness in ever-widowed older adults: Quantitative and qualitative results. *Ageing and Society*, 36(3), 534-561. <https://doi.org/10.1017/S0144686X14001329>
- Miettinen, A., Rotkirch, A., Szalma, I., Donno, A., & Tanturri, M.-L. (2015). Increasing childlessness in Europe: Time trends and country differences. *Families and Societies*, 33, 1-46.
- Morgan, D. J. (2015). *The transient nature of loneliness and social isolation in later life: A longitudinal cohort study (doctoral dissertation)*. Swansea University.
- Mund, M., Maes, M., Drewke, P. M., Gutzeit, A., Jaki, I., & Qualter, P. (2022). Would the Real Loneliness Please Stand Up? The Validity of Loneliness Scores and the Reliability of Single-Item Scores. *Assessment*, 107319112210772. <https://doi.org/10.1177/10731911221077227>
- Mynarska, M., Matysiak, A., Rybińska, A., Tocchioni, V., & Vignoli, D. (2015). Diverse paths into childlessness over the life course. *Advances in Life Course Research*, 25, 35-48. <https://doi.org/10.1016/j.alcr.2015.05.003>
- Newall, N. E. G., Chipperfield, J. G., & Bailis, D. S. (2014). Predicting stability and change in loneliness in later life. *Journal of Social and Personal Relationships*, 31(3), 335-351. <https://doi.org/10.1177/0265407513494951>
- Nicolaisen, M., & Thorsen, K. (2014). Who are Lonely? Loneliness in Different Age Groups (18–81 Years Old), Using Two Measures of Loneliness. *The International Journal of Aging and Human Development*, 78(3), 229-257. <https://doi.org/10.2190/AG.78.3.b>
- Park, C., Majeed, A., Gill, H., Tamura, J., Ho, R. C., Mansur, R. B., Nasri, F., Lee, Y., Rosenblat, J. D., Wong, E., & McIntyre, R. S. (2020). The Effect of Loneliness on Distinct Health Outcomes: A Comprehensive Review and Meta-Analysis. *Psychiatry Research*, 294, 113514. <https://doi.org/10.1016/j.psychres.2020.113514>
- Patel, R. S., Wardle, K., & Parikh, R. J. (2019). Loneliness: The present and the future. *Age and Ageing*, 48(4), 476-477. <https://doi.org/10.1093/ageing/afz026>
- Penning, M. J., Wu, Z., & Hou, F. (2022). Childlessness and social and emotional loneliness in middle and later life. *Ageing and Society*, 1-28. <https://doi.org/10.1017/S0144686X22000824>
- Perissinotto, C. M., Stijacic Cenzer, I., & Covinsky, K. E. (2012). Loneliness in Older Persons: A Predictor of Functional Decline and Death. *Archives of Internal Medicine*, 172(14). <https://doi.org/10.1001/archinternmed.2012.1993>
- Perlman, D., & Peplau, L. A. (1981). Toward a social psychology of loneliness. In S. W. Duck & R. Gilmour (Red.), *Personal Relationships. 3: Personal relationships in disorder* (pp. 31-56). Academic Press.
- Peterson, H. (2015). Fifty shades of freedom. Voluntary childlessness as women's ultimate

- liberation. *Women's Studies International Forum*, 53, 182-191. <https://doi.org/10.1016/j.wsif.2014.10.017>
- Pinquart, M., & Sörensen, S. (2000). Influences of socioeconomic status, social network, and competence on subjective well-being in later life: A meta-analysis. *Psychology and Aging*, 15(2), 187-224. <https://doi.org/10.1037/0882-7974.15.2.187>
- Plotnick, R. D. (2009). Childlessness and the Economic Well-being of Older Americans. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, 64B(6), 767-776. <https://doi.org/10.1093/geronb/gbp023>
- Rapolienė, G., & Aartsen, M. (2021). Lonely societies: Low trust societies? Further explanations for national variations in loneliness among older Europeans. *European Journal of Ageing*. <https://doi.org/10.1007/s10433-021-00649-z>
- Raymo, J. M., Park, H., Xie, Y., & Yeung, W. J. (2015). Marriage and Family in East Asia: Continuity and Change. *Annual Review of Sociology*, 41(1), 471-492. <https://doi.org/10.1146/annurev-soc-073014-112428>
- Riggs, D. W., & Bartholomaeus, C. (2016). The desire for a child among a sample of heterosexual Australian couples. *Journal of Reproductive and Infant Psychology*, 34(5), 442-450. <https://doi.org/10.1080/02646838.2016.1222070>
- Rowland, D. T. (1998). Consequences of Childlessness in Later Life. *Australasian Journal on Ageing*, 17(1), 24-28. <https://doi.org/10.1111/j.1741-6612.1998.tb00220.x>
- Roy, C., Bhattacharya, K., Dunbar, R. I. M., & Kaski, K. (2022). Turnover in close friendships. *Scientific Reports*, 12(1), 11018. <https://doi.org/10.1038/s41598-022-15070-4>
- Russell, D., Peplau, L. A., & Cutrona, C. E. (1980). The revised UCLA Loneliness Scale: Concurrent and discriminant validity evidence. *Journal of Personality and Social Psychology*, 39(3), 472-480. <https://doi.org/10.1037/0022-3514.39.3.472>
- Russell, D., Peplau, L. A., & Ferguson, M. L. (1978). Developing a Measure of Loneliness. *Journal of Personality Assessment*, 42(3), 290-294. https://doi.org/10.1207/s15327752jpa4203_11
- Rybińska, A., & Morgan, S. P. (2019). Childless Expectations and Childlessness Over the Life Course. *Social Forces*, 97(4), 1571-1602. <https://doi.org/10.1093/sf/soy098>
- Scharlach, A. E. (2017). Aging in Context: Individual and Environmental Pathways to Aging-Friendly Communities—The 2015 Matthew A. Pollack Award Lecture. *The Gerontologist*, 57(4), 606-618. <https://doi.org/10.1093/geront/gnx017>
- Schinka, K. C., VanDulmen, M. H. M., Bossarte, R., & Swahn, M. (2012). Association Between Loneliness and Suicidality During Middle Childhood and Adolescence: Longitudinal Effects and the Role of Demographic Characteristics. *The Journal of Psychology*, 146(1-2), 105-118. <https://doi.org/10.1080/00223980.2011.584084>
- Schnettler, S., & Wöhler, T. (2016). No children in later life, but more and better friends? Substitution mechanisms in the personal and support networks of parents and the childless in Germany. *Ageing and Society*, 36(7), 1339-1363.

<https://doi.org/10.1017/S0144686X15000197>

- Schoenmakers, E. C., Van Tilburg, T. G., & Fokkema, T. (2015). Problem-focused and emotion-focused coping options and loneliness: How are they related? *European Journal of Ageing*, 12(2), 153-161. <https://doi.org/10.1007/s10433-015-0336-1>
- Sha'ked, A., & Rokach, A. (2015). *Addressing Loneliness: Coping, prevention and clinical interventions*. Routledge, Taylor & Francis group.
- Silverstein, M., & Bengtson, V. L. (1997). Intergenerational Solidarity and the Structure of Adult Child-Parent Relationships in American Families. *American Journal of Sociology*, 103(2), 429-460. <https://doi.org/10.1086/231213>
- Silverstein, M., & Giarrusso, R. (2010). Aging and Family Life: A Decade Review. *Journal of Marriage and Family*, 72(5), 1039-1058. <https://doi.org/10.1111/j.1741-3737.2010.00749.x>
- Smith, I., Knight, T., Fletcher, R., & Macdonald, J. A. (2020). When men choose to be childless: An interpretative phenomenological analysis. *Journal of Social and Personal Relationships*, 37(1), 325-344. <https://doi.org/10.1177/0265407519864444>
- Sobotka, T. (2017). Childlessness in Europe: Reconstructing Long-Term Trends Among Women Born in 1900–1972. In M. Kreyenfeld & D. Konietzka (Red.), *Childlessness in Europe: Contexts, Causes, and Consequences* (pp. 17-53). Springer International Publishing. https://doi.org/10.1007/978-3-319-44667-7_2
- Spiro, A., Settersten, R. A., & Aldwin, C. M. (2016). Long-term Outcomes of Military Service in Aging and the Life Course: A Positive Re-envisioning. *The Gerontologist*, 56(1), 5-13. <https://doi.org/10.1093/geront/gnv093>
- Stahnke, B., Blackstone, A., & Howard, H. (2020). Lived Experiences and Life Satisfaction of ChildFree Women in Late Life. *The Family Journal*, 28(2), 159-167. <https://doi.org/10.1177/1066480720911611>
- Steultjens, E. M. J., Dekker, J., Bouter, L. M., Jellema, S., Bakker, E. B., & van den Ende, C. H. M. (2004). Occupational therapy for community dwelling elderly people: A systematic review. *Age and Ageing*, 33(5), 453-460. <https://doi.org/10.1093/ageing/afh174>
- Su, Y., Rao, W., Li, M., Caron, G., D'Arcy, C., & Meng, X. (2023). Prevalence of loneliness and social isolation among older adults during the COVID-19 pandemic: A systematic review and meta-analysis. *International Psychogeriatrics*, 35(5), 229-241. <https://doi.org/10.1017/S1041610222000199>
- Surkalim, D. L., Luo, M., Eres, R., Gebel, K., van Buskirk, J., Bauman, A., & Ding, D. (2022). The prevalence of loneliness across 113 countries: Systematic review and meta-analysis. *BMJ*, e067068. <https://doi.org/10.1136/bmj-2021-067068>
- Switers, L. (2021). "Only the lonely?!" *Challenging stereotypes on loneliness among older people*. perlman.
- Switers, L., Stegen, H., Dierckx, E., Heylen, L., Dury, S., & De Donder, L. (2023). Life stories

- from lonely older adults: The role of precipitating events and coping strategies throughout the lifecourse. *Ageing and Society*, 1-24. <https://doi.org/10.1017/S0144686X23000715>
- Szinovacz, M. E., & Davey, A. (2006). Effects of Retirement and Grandchild Care on Depressive Symptoms. *The International Journal of Aging and Human Development*, 62(1), 1-20. <https://doi.org/10.2190/8Q46-GJX4-M2VM-W60V>
- Taylor, M. G. (2010). Capturing Transitions and Trajectories: The Role of Socioeconomic Status in Later Life Disability. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, 65B(6), 733-743. <https://doi.org/10.1093/geronb/gbq018>
- Teerawichitchainan, B., & Ha, J.-H. (2024). Social and psychological implications of actual and defacto childlessness among older persons in East and Southeast Asia. *The Journal of Chinese Sociology*, 11(1), 6. <https://doi.org/10.1186/s40711-024-00208-w>
- Torres, Z., Oliver, A., & Tomás, J. M. (2024). Understanding the Effect of Loneliness on Quality of Life in Older Adults from Longitudinal Approaches. *Psychosocial Intervention*, 33(3), 171-178. <https://doi.org/10.5093/pi2024a11>
- Umberson, D., Williams, K., Thomas, P. A., Liu, H., & Thomeer, M. B. (2014). Race, Gender, and Chains of Disadvantage: Childhood Adversity, Social Relationships, and Health. *Journal of Health and Social Behavior*, 55(1), 20-38. <https://doi.org/10.1177/0022146514521426>
- Van Staden, W. (Cw), & Coetzee, K. (2010). Conceptual relations between loneliness and culture. *Current Opinion in Psychiatry*, 23(6), 524-529. <https://doi.org/10.1097/YCO.0b013e32833f2ff9>
- van Tilburg, T. G. (2020). Social, Emotional, and Existential Loneliness: A Test of the Multidimensional Concept. *The Gerontologist*, gnaa082. <https://doi.org/10.1093/geront/gnaa082>
- Victor, C. R., & Bowling, A. (2012). A Longitudinal Analysis of Loneliness Among Older People in Great Britain. *The Journal of Psychology*, 146(3), 313-331. <https://doi.org/10.1080/00223980.2011.609572>
- von Soest, T., Luhmann, M., Hansen, T., & Gerstorf, D. (2020). Development of loneliness in midlife and old age: Its nature and correlates. *Journal of Personality and Social Psychology*, 118(2), 388-406. <https://doi.org/10.1037/pspp0000219>
- Vozikaki, M., Papadaki, A., Linardakis, M., & Philalithis, A. (2018). Loneliness among older European adults: Results from the survey of health, aging and retirement in Europe. *Journal of Public Health*, 26(6), 613-624. <https://doi.org/10.1007/s10389-018-0916-6>
- Weiss, R. S. (1973). *Loneliness: The experience of emotional and social isolation*. MIT Press.
- Wenger, G. C. (2021). *The Supportive Network: Coping with Old Age* (1ste dr.). Routledge. <https://doi.org/10.4324/9781003206989>

- Wenger, G. C., Dykstra, P. A., Melkas, T., & Knipscheer, K. C. P. M. (2007). Social Embeddedness and Late-Life Parenthood: Community Activity, Close Ties, and Support Networks. *Journal of Family Issues*, 28(11), 1419-1456. <https://doi.org/10.1177/0192513X07303895>
- World Health Organization. (2021). *Social isolation and loneliness among older people: Advocacy brief*. World Health Organization. <https://apps.who.int/iris/handle/10665/343206>
- World Health Organization. (2023). *Infertility*. <https://www.who.int/news-room/fact-sheets/detail/infertility>
- Xu, X., Liang, J., Raymo, J. M., Kim, B., & Ofstedal, M. B. (2022). Defining Childlessness Among Middle-Aged and Older Americans: A Research Note. *Demography*, 59(3), 813-826. <https://doi.org/10.1215/00703370-9987649>
- Zoutewelle-Terovan, M., & Liefbroer, A. C. (2018). Swimming Against the Stream: Non-normative Family Transitions and Loneliness in Later Life Across 12 Nations. *The Gerontologist*, 58(6), 1096-1108. <https://doi.org/10.1093/geront/gnx184>

CHAPTER 2.

Methodological approach

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1. Research design and paradigm

This dissertation uses a multi-method design, since we draw on both quantitative as well as qualitative research results to answer our research questions (Anguera et al., 2018; Creswell, 2015): research articles are used in Chapter 3, quantitative survey data are used in Chapters 5 and 6, and qualitative life story interviews are used in Chapters 4 and 7.

Although in the 5 different papers, we do not really ‘mix’ our data and our research thus does not really fall within mixed method research (Kasirye, 2021), we follow the mixed method division of Steinmetz-Wood et al. (2019) to position this dissertation as a combination of an exploratory and an explanatory research design (see Figure 1). The exploratory part is because we first collected research articles and qualitative life story interviews to get more insights into loneliness and the reasons of voluntary childlessness among older adults. Based on the insights from the systematic review on loneliness and the qualitative data, we designed our quantitative study, in which we included the different measurement instruments that came out of the systematic review, as well as reasons for childlessness that came out of our qualitative data. The explanatory part of our study lies within the fact that, after the survey, we used qualitative data to search for explanations. The insights from our survey raised certain questions which we wanted to explain by gathering new life story interviews.

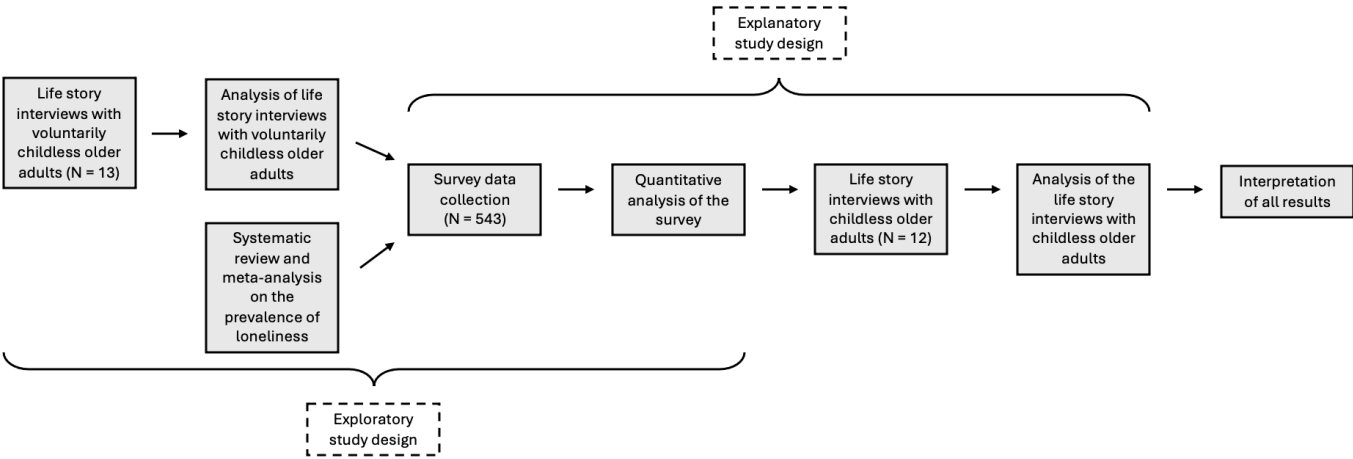


Figure 1. An overview of the exploratory and explanatory study design of this PhD dissertation

This dissertation fits partially in two research paradigms. First of all, it fits within the objectivistic approach, which is considered the oldest and most dominant paradigm in the natural sciences, but is also very popular in fields such as economics and psychology (Kivunja & Kuyini, 2017). This approach is based on the ontological assumption that the world is an objective reality unaffected by the subject. This means that reality can be objectively understood, known and described (cf. empirical analytical approach). Through observation of people and situations, we can draw general, fixed conclusions. The aim of research within this approach is to 'explain', especially by seeking causal explanations. Indeed, according to this paradigm, there are phenomena that always function in the same way. When we see that certain actions consistently produce the same results, it becomes possible to make predictions. Researchers look for patterns in data to explain and predict reality (Guba & Lincoln, 1994). The survey we conducted among older adults, fits within this objectivistic approach, since in this survey, we tried to understand the objective reality as it is and describe the relation between childlessness and loneliness.

Since the 1960s of the 20th century, however, critiques on this approach have emerged leading to a stronger recognition of the constructivist (interpretive) paradigm. Key critiques include: naive realism (i.e. the misguided belief that reality is exactly as we perceive it), ignoring human subjectivity, and the fact that reality is immediately knowable makes it predictable and controllable, and therefore manipulable (Guba & Lincoln, 1994; Kivunja & Kuyini, 2017). Therefore, the qualitative part of our research fits the most within a constructivist approach. Constructivism refers to "the understanding or meaning of phenomena, formed through participants and their subjective views" (Creswell & Clark, 2011, p. 40), in which reality is socially constructed and subject to change. Constructivism therefore holds that there are multiple, constructed realities rather than a single objective reality. Each individual's perception of reality is unique, shaped by their experiences and interactions. Researchers aim to understand the varied perspectives and interpretations that different individuals hold (Guba & Lincoln, 1994). Moreover, constructivism starts from the theoretical perspective of interpretivism, which "makes an effort to 'get into the head of the subjects being studied' so to speak, and to understand and interpret what the subject is thinking or the meaning s/he is making of the context. Every effort is made to try to understand the viewpoint of the subject being observed, rather than the viewpoint of the observer" (Kivunja & Kuyini, 2017, p. 33). Since reality is viewed as socially constructed, it is important to comprehend how each person interprets their environment. Facts are thought to have meaning only inside a network of values. Because of this, there are various realities, and context is crucial to the creation and comprehension of knowledge. Furthermore, research findings are context-specific and cannot be simply generalised to all situations (Guba & Lincoln, 1994). By using life story interviews, we frame the experiences and perspectives of childless older adults as they lived their lives, with attention for the realities they constructed throughout the life course.

2. Description of the data used for this dissertation

This dissertation uses different quantitative and qualitative datasets to answer the research questions. Chapter 3 uses empirical research articles as data as part of the systematic review and meta-analysis. Chapter 4 makes use of life story interviews among voluntarily childless older adults, while Chapters 5 and 6 use quantitative survey data among community-dwelling older adults with and without children. Lastly, Chapter 7 is based on qualitative interview data of 12 life stories of childless older adults. While every data collection method is covered in detail throughout the chapters of this dissertation, a synopsis of each methodology is given below.

2.1. Research articles as part of a systematic search

As part of our systematic review and meta-analysis, seven electronic databases were screened, i.e. Web of Science, PubMed, Sociological Abstracts, Social Services Abstracts, Embase, PsycINFO, and Cochrane Library, for eligible studies. The literature search included studies published between January 1, 1992 and October 31, 2021. "Loneliness" was used as search term for the title, and in the title and abstract, the words "community-dwelling older adults" and "prevalence" were used, as well as possible variations, keywords and MeSH headings, if applicable for the database. Research articles were considered eligible if the terms "loneliness" or "lonely" appeared in the study titles, and if data were presented on a non-clinical population of community-dwelling older adults, with a minimum age requirement of 60 years. Following the definition provided by Steultjens et al. (2004), community-dwelling older people are defined as "people aged 60 years or older living independently," meaning they do not reside in institutionalised settings like care facilities, nursing homes, or other types of residential care. The last inclusion requirement was that studies specifically had to estimate the prevalence of loneliness. Since there are documented variations in loneliness prevalence between nations and cultures, studies from every country and region of the world were included to obtain a comprehensive picture of all prevalence studies that have been conducted as well as the related loneliness measurement instruments and modes of data collection.

2,021 studies were found in the initial search. Following the removal of 925 duplicates and screening of the remaining 1,096 records, 512 records were excluded based on the title ($n = 251$) and abstract ($n = 261$). 568 records were evaluated for eligibility (since 16 records could not be retrieved), and 523 records were eventually excluded (based on language ($n = 30$), target group ($n = 110$), and the absence of a prevalence percentage ($n = 383$)), leaving 45

articles included. 17 studies were added as a result of a back and forward snowball search. In the end, 62 papers were included in the systematic review and 45 in the meta-analysis (17 studies were eliminated due to quality appraisal and double data). Numerous studies included prevalence percentages from different countries, which led to separate prevalence rates designated as "k", with k = 177 for the systematic review and k = 101 for the meta-analysis.

2.2. Life story interviews with voluntarily childless older adults

The participants in this qualitative research were 13 voluntarily childless older adults, of which six men and seven women. They all lived in Flanders or Brussels (Belgium) and were born between 1935 and 1958. We followed Conner and Stith's (2014) definition of voluntarily childless individuals, who define voluntary childlessness "not desiring to have children" (p. 205) and who, aside from involuntarily childless, opted not to have children for a variety of reasons. The data gathering process also included the so-called postponers (Dykstra & Liefbroer, 1998; Peterson, 2015), despite the fact that voluntary childlessness in the strict sense indicates a well-thought-out choice of childlessness. Operationally, this meant that the participants had to meet two requirements in order to be eligible for inclusion: (a) their childlessness should not have been linked to biological or medical factors (such as fertility problems); and (b) they had to perceive themselves as "voluntarily childless."

The McAdams life story interview (2005) was used, in which every participant was given the opportunity to share their life story. They were asked to picture their life as a book and divide this book into chapters. Next, we talked about the causes of their childlessness and the events that followed. Each interview included a hypothetical question such as, "What aspects of the participant's life would be different if they had not been childless?" Lastly, the participants were invited to add a future chapter to their life story as a way of looking ahead. The lengths of the interviews ranged from 1 hour 26 minutes to 2 hours 35 minutes, with an average duration of 1 hour 57 minutes. They were conducted between November 2018 and April 2019.

2.3. Survey among community-dwelling older adults with and without children

For the survey, data were gathered between March 1 and September 30, 2023. Purposive sampling, which uses a non-probability sample, was used for this research. In order to participate, participants had to meet two requirements: they needed to be community-dwelling (i.e. not residing in a residential care facility) and they had to be older than 60.

Furthermore, an overrepresentation of childless older adults was intended. Therefore, this group was specifically targeted in the purposive sampling in order to achieve a sufficient number of older individuals without children. Colleagues from the research group and university students who had received training in recruiting respondents and conducting surveys among older persons also assisted. Additionally, online flyers with a link to complete an online survey using the Qualtrics platform were distributed across the researchers' social networks and older people' groups in Flanders, Belgium.

Initially, 731 older individuals completed the survey; however, we removed cases where responses to the major variables were missing. This resulted in a final working sample of 543 respondents, 255 of whom were childless (47.0%). The participants' age ($M = 70.89$, $SD = 8.79$) varied from 60 to 98 years old, with 62.4% of them being female. 39.2% of the participants said they had no partner.

2.4. Life story interviews with childless older adults, with a focus on loneliness throughout the life course

The participants in this qualitative study were 12 childless older adults aged between 60 and 89, living in Flanders or Brussels (Belgium). All participants, 6 men and 6 women, had Belgian nationality and spoke Dutch. We also administered the De Jong Gierveld loneliness scale (De Jong Gierveld & van Tilburg, 1999) to each of the participants in order to assess their risk of loneliness. The reasons for childlessness varied, ranging from life events (e.g. childhood trauma, institutionalisation) to reasons related to the partner not wanting children or feeling too old. A voluntary choice and therefore not wanting to make adjustments in life for children, or biological problems in oneself and/or the partner, were also cited reasons.

Similar to Chapter 4, we used McAdams' (2005) life story interviews to interview each participant. In these life stories, the focus was, on the one hand, on the meanings people attach to their lives and, on the other hand, on the life course as a psychosocial construct that reflects personal beliefs, values and traditions in society (McAdams, 2005). During the life story interviews, each participant was given the time to tell his or her life story. The beginning of each interview focused on the participants' actual life story, asking them to think of their own life as a book and to divide this book into chapters. After going through the chapters of their life story, we discussed how they experienced life without children, what loneliness meant to them and what they thought about the possible link between childlessness and loneliness. The interviews were conducted between December 2021 and September 2023. They lasted 1 hour 41 min on average; the shortest interview lasted 54 minutes, the longest 2 hours 19 minutes.

3. Positionality statement of the researcher

As a researcher, it is important to take into account your own positionality (Bourke, 2014). Factors such as social values, education, religion, ethnicity, and gender can influence the researcher's personal values and beliefs, which can have an impact on the research results (Darwin Holmes, 2020). This part includes reflections that highlight the importance of the researcher's positionality and discuss possible implications for planning, carrying out, and publishing the research. This section is written in the first person since these reflections are personal.

I started this research out of personal and academic interest, since the idea sometimes still lives that having children is very self-evident. Yet I was curious: what if one of those typical life events does not happen throughout the life course?

Especially during the life story interviews, there may have been an impact (cfr. constructivism): my own life in terms of parenthood is not determined yet. At the moment I don't have any children myself, and I still have choices to make in this respect, which makes me not always able to fully relate to childless older adults' life story in which they look back on their childless life. This makes me an *insider* and an *outsider* at the same time. Insiders are defined as "the members of specified groups and collectives or occupants of specified social statuses; outsiders are the non-members" (Merton, 1972, p. 21). An outsider is further specified as someone without prior intimate knowledge of the group (Darwin Holmes, 2020). One could say I belong to the group as an *insider* in that sense that I also do not have children. But in these terms, I relate more to the *outsider* perspective, since I never had any idea of what a childless life looks like from a later life perspective. Nevertheless, during interviews, some participants considered me as an *insider*: I sometimes received the question 'Do you have children of your own?', on which I answered no, followed by 'Then you can probably relate'. I therefore considered not having children of my own as an advantage, since this might have helped in gaining trust of the participants. When it came to gaining trust and listening during the interviews, a middle position as an active listener was chosen. I did not take over the emotions of the participants, but was empathetic: I showed respect for the emotion by letting it happen and giving space (Switsers et al., 2021). Mutual trust and respect was thus one of the key aspects of these interviews (Knott et al., 2022).

All the above was about the life story interviews in the first place, but positionality can also be at stake in quantitative research, albeit in a lesser extent. Research questions for example are frequently shaped by the personal ideas and experiences of the researchers, which may cause them to prioritise certain concerns while ignoring others (Berger, 2015). For example, I

followed the hypotheses concerning childlessness and loneliness and therefore asked survey questions on these two topics in particular, but as a result, I might have forgotten about more positive aspects and consequences of childlessness, such as freedom or even feelings of relief. Also more practically there can be an impact, e.g. on question wording and response options (Manohar et al., 2017). For example, phrasing that conveys a negative attitude about childlessness may affect respondents' perceptions and responses, and depending on the researcher's point of view, there may be fewer alternatives available for responses, which could lead to the exclusion of significant categories that represent the range of experiences of the participants. To counteract on this, many meetings with several peer researchers took place so that the survey and its corresponding questions were considered with different perspectives.

References

- Anguera, M. T., Blanco-Villaseñor, A., Losada, J. L., Sánchez-Algarra, P., & Onwuegbuzie, A. J. (2018). Revisiting the difference between mixed methods and multimethods: Is it all in the name? *Quality & Quantity*, 52(6), 2757-2770. <https://doi.org/10.1007/s11135-018-0700-2>
- Berger, R. (2015). Now I see it, now I don't: Researcher's position and reflexivity in qualitative research. *Qualitative Research*, 15(2), 219-234. <https://doi.org/10.1177/1468794112468475>
- Bourke, B. (2014). Positionality: Reflecting on the Research Process. *The Qualitative Report*. <https://doi.org/10.46743/2160-3715/2014.1026>
- Conner, S., & Stith, S. (2014). Childless Couples. In M. Coleman & L. H. Ganong (Red.), *The social history of the American family: An encyclopedia* (pp. 204-208). SAGE.
- Creswell, J. W. (2015). *A concise introduction to mixed methods research*. SAGE.
- Creswell, J. W., & Clark, V. L. P. (2011). *Designing and conducting mixed methods research*. SAGE.
- Darwin Holmes, A. G. (2020). Researcher Positionality—A Consideration of Its Influence and Place in Qualitative Research—A New Researcher Guide. *Shanlax International Journal of Education*, 8(4), 1-10. <https://doi.org/10.34293/education.v8i4.3232>
- De Jong Gierveld, J., & van Tilburg, T. (1999). *Manual of the loneliness scale*. Department of Social Research Methodology, Vrije Universiteit.
- Dykstra, P. A., & Liefbroer, A. C. (1998). Kinderloos en toch gelukkig? Over de gevolgen van kinderloosheid voor de ouderdom. *Mens & Maatschappij*, 73(2), 108-129.
- Guba, E. G., & Lincoln, Y. S. (1994). Competing paradigms in qualitative research. In N. K. Denzin & Y. S. Lincoln, *Handbook of qualitative research* (pp. 105-117). SAGE Publications.
- Kasirye, F. (2021). *An Overview of Mixed and Multi Method Research*. <https://doi.org/10.31124/advance.14681643.v1>
- Kivunja, C., & Kuyini, A. B. (2017). Understanding and Applying Research Paradigms in Educational Contexts. *International Journal of Higher Education*, 6(5), 26. <https://doi.org/10.5430/ijhe.v6n5p26>
- Knott, E., Rao, A. H., Summers, K., & Teeger, C. (2022). Interviews in the social sciences. *Nature Reviews Methods Primers*, 2(1), 73. <https://doi.org/10.1038/s43586-022-00150-6>
- Manohar, N., Bhole, S., Liamputtong, P., & Arora, A. (2017). Researcher positionality in cross-cultural and sensitive research. In: Liamputtong P. (eds) *Handbook of Research Methods in Health Social Sciences* (pp. 1-15). Springer, Singapore. https://doi.org/10.1007/978-981-10-2779-6_35-1.
- McAdams, D. P. (2005). Studying Lives in Time: A Narrative Approach. *Advances in Life*

- Course Research*, 10, 237-258. [https://doi.org/10.1016/S1040-2608\(05\)10009-4](https://doi.org/10.1016/S1040-2608(05)10009-4)
- Merton, R. K. (1972). Insiders and Outsiders: A Chapter in the Sociology of Knowledge. *American Journal of Sociology*, 78(1), 9-47.
- Peterson, H. (2015). Fifty shades of freedom. Voluntary childlessness as women's ultimate liberation. *Women's Studies International Forum*, 53, 182-191. <https://doi.org/10.1016/j.wsif.2014.10.017>
- Steinmetz-Wood, M., Pluye, P., & Ross, N. A. (2019). The planning and reporting of mixed methods studies on the built environment and health. *Preventive Medicine*, 126, 105752. <https://doi.org/10.1016/j.ypmed.2019.105752>
- Steultjens, E. M. J., Dekker, J., Bouter, L. M., Jellema, S., Bakker, E. B., & van den Ende, C. H. M. (2004). Occupational therapy for community dwelling elderly people: A systematic review. *Age and Ageing*, 33(5), 453-460. <https://doi.org/10.1093/ageing/afh174>
- Switsers, L., Stegen, H., Van Regenmortel, S., & De Donder, L. (2021). Onderzoek naar de levensloop van ouderen: Ervaringen met het McAdams-levensverhaalinterview. *KWALON*, 26(1), 53-63. <https://doi.org/10.5117/KWA2021.1.006.SWIT>

CHAPTER 3.

Loneliness prevalence of community-dwelling older adults and the impact of the mode of measurement, data collection and country: A systematic review and meta-analysis

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CHAPTER 3. Loneliness prevalence of community-dwelling older adults and the impact of the mode of measurement, data collection and country: A systematic review and meta-analysis

Summary

Objectives: The aim of this systematic review and meta-analysis is to assess the prevalence of loneliness in many countries worldwide which have different ways of assessing it.

Design: Systematic review and meta-analysis

Setting: We searched seven electronic databases for English peer-reviewed studies published between 1992 and 2021.

Participants: We selected English-language peer-reviewed articles, with data from non-clinical populations of community-dwelling older adults (>60 years), and with 'loneliness' or 'lonely' in the title.

Measurements: A multilevel random-effects meta-analysis was used to estimate the prevalence of loneliness across studies, and to pool prevalence rates for different measurement instruments, data collection methods and countries.

Results: Our initial search identified 2,021 studies of which 45 (k=101 prevalence rates) were included in the final meta-analysis. The estimated pooled prevalence rate was 31.6% (n=168,473). Measurement instrument was a statistically significant moderator of the overall prevalence of loneliness. Loneliness prevalence was lowest for single-item questions and highest for the 20-item UCLA Loneliness Scale. Also, differences between modes of data collection were significant: the loneliness prevalence was significantly the highest for face-to-face data collection and the lowest for telephone and CATI data collection. Our moderator analysis to look at the country effect indicated that four of the six dimensions of Hofstede also caused a significant increase (Power Distance Index, Uncertainty Avoidance Index, Indulgence) or decrease (Individualism) in loneliness prevalence.

Conclusions: This study suggests that there is high variability in loneliness prevalence rates among community-dwelling older adults, influenced by measurement instrument used, mode of data collection, and country.

Keywords

loneliness; loneliness prevalence; community-dwelling older adults; systematic review; meta-analysis; loneliness measurement

1. Introduction

Lonely people can be at increased risk of death (Elovainio et al., 2017). In many countries, loneliness has arisen in the last few years on the policy agenda as an important societal challenge, which was amplified by the COVID pandemic (Lampraki et al., 2022). Moreover, socially and emotionally satisfying contacts can form a buffer against loneliness in later life when negative life events may occur (Switsers et al., 2021). Although loneliness in older adults is sometimes called a 'silent epidemic', estimates of loneliness prevalence differ widely across nations and across different assessment scales.

Perlman and Peplau defined loneliness in 1981 as 'the unpleasant experience that occurs when a person's network of social relations is deficient in some important way, either quantitatively or qualitatively' (Perlman and Peplau, 1981, 31). De Jong Gierveld's definition from 1987 adds that 'this includes situations, in which the number of existing relationships is smaller than is considered desirable or admissible, as well as situations where the intimacy one wishes for has not been realized' (de Jong Gierveld, 1987, 120). Both definitions describe loneliness as a negative and subjective feeling, which is in contrast to e.g. social isolation, which refers to the objective situation and the absence of relationships with other people (De Jong Gierveld et al., 2006).

The WHO reports that there are no global assessments of the proportion of community-dwelling older people who are experiencing loneliness, but estimates that between 20-34% of older people in China, Europe, Latin America and the United States are lonely (World Health Organization, 2021). A recent meta-analysis based on prevalence data from 106 countries in 24 studies suggests that older adults (≥ 60 years; not explicitly community-dwelling) in general have a higher prevalence of loneliness compared with their younger counterparts (i.e., young adults (18-29 years) and middle-aged adults (30-59 years)) (Surkalim et al., 2022).

Today, however, there is a high variability in loneliness prevalence (Surkalim et al., 2022). Possible explanations are differences in culture (Jylhä and Jokela, 1990), demography (Fokkema et al., 2012), socio-economic status (Hansen and Slagsvold, 2016) or trust (Rapolienė and Aartsen, 2021). Another recent systematic review and meta-analysis on the prevalence of loneliness among older people in high-income countries (not explicitly community-dwelling) hypothesizes that high variability between different prevalence studies could be influenced by differences in used measurement instruments and different modes of data collection (e.g., face-to-face, written questionnaires, etc.) (Chawla et al., 2021). Today, the use of different measurement instruments is increasing (e.g., Awad et al. (2023)) using the

De Jong Gierveld Loneliness Scale and Ost-Mor et al. (2023) using the UCLA Loneliness Scale), so the multidimensionality of loneliness is already widely recognized.

However, current research suggests that loneliness measures should be considered carefully in relation to the opposed research question(s) of a study, and encourages researchers to include multiple measures in their studies to ensure robustness and to identify potential discrepancies among measures in existing and future research (Mund et al., 2022). Su et al. (2023) published a systematic review on the prevalence of loneliness and social isolation among older adults during the COVID-19 pandemic, but the influence of measurement instrument and mode of data collection were not treated. Through a systematic literature review and meta-analysis, this study reviews the prevalence of loneliness among community-dwelling older adults in countries worldwide and examines the study characteristics of these loneliness prevalence studies with specific attention to the influence of measurement instruments, mode of data collection and the country where the study was conducted.

2. Methods

2.1. Search strategy and selection criteria

This study follows the recommendations of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement (Page et al., 2021). We screened seven electronic databases, i.e. Web of Science, Pubmed, Sociological Abstracts, Social Services Abstracts, Embase, PsycINFO and Cochrane Library, for eligible studies. The literature search included studies published between January 1st 1992 and October 31st 2021. We used 'loneliness' as a search term in the title, 'community-dwelling older adults' AND 'prevalence' as search terms in title and abstract, as well as possible variations, keywords and MeSH headings, if applicable for the database. The detailed search strategy can be found in Appendix 1 (published as supplementary material online attached to the electronic version of this paper at <https://www.cambridge.org/core/journals/international-psychogeriatrics>).

Authors HS and HC selected the studies derived from Web of Science and PubMed. HS and DD selected studies from Sociological Abstracts, Social Services Abstracts, PsycINFO, Embase and Cochrane Library. After removing duplicates for both selection processes, a random sample of 10% was assessed by HS and HC for Web of Science and Pubmed, and by HS and DD for the five other databases, to make sure the different authors selected studies based on the same benchmarks. To decide upon inclusion, the title, the abstract and eventually the full text of the study (if necessary) were screened. When one of the selection criteria was not met, the study was excluded without evaluating the other selection criteria. In

case of doubt, HP, LDD and ED decided together upon in- or exclusion. Reference lists from the included studies and studies citing our included studies were screened in the final stage to assure no further studies would be left unnoticed.

Studies were eligible if 'loneliness' or 'lonely' was mentioned in the title of English-language peer-reviewed studies and if data was reported on a non-clinical population of community-dwelling older adults where a minimum age of 60 years was specified. The definition of community-dwelling older people by Steultjens et al. was followed, stating that community-dwelling older people are 'people aged 60 years or older living independently', and therefore not living in institutionalized settings such as nursing homes, care homes or other types of residential care (Steultjens et al., 2004). The final inclusion criterion was that studies should have as an explicit aim to estimate the loneliness prevalence, since clearly outlining the explicit purpose of the study contributes to a paper of better quality (Mack, 2015). The primary objective of prevalence studies is to produce frequency estimates for the overall population, and sometimes population subgroups (Boyle, 1998). Altogether, prevalence studies about loneliness among community-dwelling older adults were selected for this study. Studies from all countries and world regions were included to get a complete image of existing prevalence studies and the corresponding loneliness measurement instruments and modes of data collection, since there are known differences between countries and cultures in terms of loneliness prevalence.

2.2 Data analysis

The following data were extracted: year of publication, year of data collection, was the study conducted pre- or during-COVID, sample size (of loneliness questions), percentage of women, type of sample, country (reclustered into region), level on which the study was conducted (national or regional), mode of data collection, data source (own or existing dataset), and used measurement instruments.

As part of the meta-analysis, the quality of the studies was appraised by HS and DD using the Joanna Briggs Institute (JBI) Critical Appraisal Checklist (Munn et al., 2020). HS and DD first appraised all studies separately, and when no initial consensus was found, they decided together upon inclusion. Following JBI Checklist guidelines, studies included for review were given a quality cut-off score (Munn et al., 2020), whereby studies with a 'low-quality' score (0-3) were excluded and studies with moderate (4-6) and high (7-9) quality scores were included for the meta-analysis. We also excluded papers in the meta-analysis if they used data that had already been used in another paper or data that originated from the same wave in the same database, and included the most complete or recent studies.

For the meta-analysis, carried out by PS and HS, supervised by LS, uniform response options were needed, and therefore we dichotomized the loneliness answers of all the studies to include them in the meta-analysis; this means that studies with more than two categories were also dichotomized. Furthermore, for articles using the De Jong Gierveld loneliness scale, when other cut-off scores than the proposed scores of De Jong Gierveld & van Tilburg (De Jong Gierveld and van Tilburg, 1999) were used, we recalculated the prevalence percentages, using the original dataset received upon request from the original authors. For the UCLA loneliness scales, we did not do this, since the authors did not propose any cut-off scores and since they indicated that there are no diagnostic criteria for being lonely (Russell, 1996). We therefore followed the cut-off that each of the studies proposed since we then had some clarity in who is considered as 'lonely' in each of the studies.

In this review, all measurement instruments capture momentary loneliness, meaning that they measure loneliness as it is 'now', at the moment of measuring (Compernelle et al., 2021). The answers of the participants, both on the De Jong Gierveld Loneliness Scale as well as on the UCLA Loneliness Scale and the single-item questions, are subjective to how people feel at the moment of answering the question(s), even if they ask about loneliness e.g. in the past week. Of all prevalence studies, none included a measurement tool that measured lifetime prevalence. This means that in this study, specifically point prevalences of loneliness are being studied. Therefore, it was appropriate to compare all the different prevalence percentages, since they all cover this momentary loneliness, mentioning a point prevalence percentage of loneliness.

Further information on the quality appraisal including the completed JBI Critical Appraisal Checklist for each study can be found in Appendix 2, as well as an overview of the classification (not/mildly lonely vs. lonely) that can be found in Appendix 3 (both published as supplementary material online attached to the electronic version of this paper at <https://www.cambridge.org/core/journals/international-psychogeriatrics>).

Following this, two steps were undertaken: the calculation of the pooled prevalence and a moderator analysis. First, a generalized linear mixed model (GLMM) was constructed. Such a model can directly model event counts with binomial likelihoods and fully account for within-study uncertainties (Lin and Xu, 2020). This approach has several advantages over the two-step meta-analysis which typically uses the Freeman-Tukey double arcsine transformation (Lin and Xu, 2020). In particular, we used a random intercept logistic regression model with a logit link function for the calculation of pooled prevalence rates (van Den Noortgate and Onghena, 2003). The outcome thus was the prevalence of loneliness (individual proportions) measured as the number of lonely older adults among the sample. A three-level meta-analytic model was used to analyze the data (Assink and Wibbelink, 2016), modelling three sources of variance: sampling variance of the observed prevalence rates (Level 1), the variance between prevalence rates from the same study (Level 2), and variance between studies (Level 3) (Van

den Noortgate et al., 2013; Cheung, 2014). Results were back-transformed for easier interpretation.

Secondly, a multilevel random effects model was used for the moderator analyses to evaluate the impact of the measurement scale, the mode of data collection and the country where a study was conducted on loneliness prevalence: the F-distribution was utilized to determine whether the pooled prevalence of loneliness was significantly affected by the moderators. Two separate one-tailed log-likelihood-ratio tests were conducted, comparing the deviance of the full model to the deviance of a model that excluded one of the variance parameters, to determine whether respectively the variance between prevalence rates within studies (Level 2) and the variance between studies (Level 3) was significant. All model parameters were estimated using the maximum likelihood estimation method. We considered p-values < .05 as statistically significant. The statistical analyses were carried out using the *dmetar* and *metafor*-packages (Viechtbauer, 2010) in R (version 4.2.1).

To look at the effect of country, we used the six dimensions of Hofstede (Hofstede, 2011), i.e., the Power Distance Index Individualism, Motivation towards Achievement and Success, the Uncertainty Avoidance Index, Long-Term Orientation, and Indulgence. Despite the fact that there are some critiques on these dimensions now because of the idea of oversimplification and the static nature of cultures that these dimensions entangle (Chun et al., 2021; Minkov, 2017), the Hofstede dimensions were used because they do provide a standardized way to compare cultures and they increase the awareness and sensitivity to cultural norms (Hofstede Insights, 2023). Moreover, this study is not necessarily about the precise meaning and labelling of the dimensions, but about comparing cultural aspects measured with the same scale in each individual country in the first place.

The Power Distance Index signifies a society's acceptance of hierarchical power distribution – a higher score indicates a greater acceptance of inequality. Second, there is the spectrum of Individualism versus Collectivism, where higher scores suggest weaker interpersonal connections beyond the core 'family,' and less responsibility for others' actions. The dimension of Motivation towards Achievement and Success is about what motivates people: wanting to be the best (Decisive; high score) or liking what you do (Consensus-oriented; low score). A high score means that the society is driven by achievement, success and competition, while a low score indicates a society that is driven by quality of life as a sign of success. The Uncertainty Avoidance Index measures a society's inclination to control unpredictability. A higher score indicates a preference for predictability and control in life. Long-Term Orientation versus Short-Term Orientation reflects a society's inclination towards pragmatism, modesty, and thriftiness with higher scores indicating a long-term focus. Finally, Indulgence versus Restraint explores how freely people gratify their desires and emotions – higher scores indicate a more permissive approach to enjoying life and expressing emotions.

Using the Country Comparison Tool of Hofstede (Hofstede Insights, 2023), we obtained a score for every included country for each of these dimensions between 0 and 100. These scores were gathered from survey responses over time, starting between 1967 and 1973 but still going on until today (Hofstede Insights, 2023). The dimension identification happens through factor analysis or other scaling methods, and next, normalization of factor scores is done to fit data from previous studies. The validity comes from correlations with dimensions of previous studies and national indices such as educational achievement or crime rates (Hofstede Insights, 2023).

We centered the continuous scores around the grand mean and used a multilevel approach, in which effect sizes are nested within studies (van Den Noortgate and Onghena, 2003) and which enables using all effect sizes in the primary studies so that maximum statistical power is achieved (Assink et al., 2015).

The protocol of this review was registered at the International Prospective Register of Systematic Reviews (PROSPERO) (registration number: CRD42021230197).

3. Results

The initial search provided 2,021 studies. After removing 925 duplicates and screening the other 1,096 records, 512 records were excluded based on title (n=251) and abstract (n=261); 568 records were assessed for eligibility (16 records could not be retrieved), 523 records were eventually excluded (based on language (n=30), target group (n=110) and the lack of a prevalence percentage (n=383)), and 45 studies were included. After the backward and forward snowball search, 17 studies were added. Ultimately, 62 studies were included in the systematic review and 45 in the meta-analysis (17 studies were excluded due to quality appraisal and double data). The Prisma flowchart is added as Figure 1.

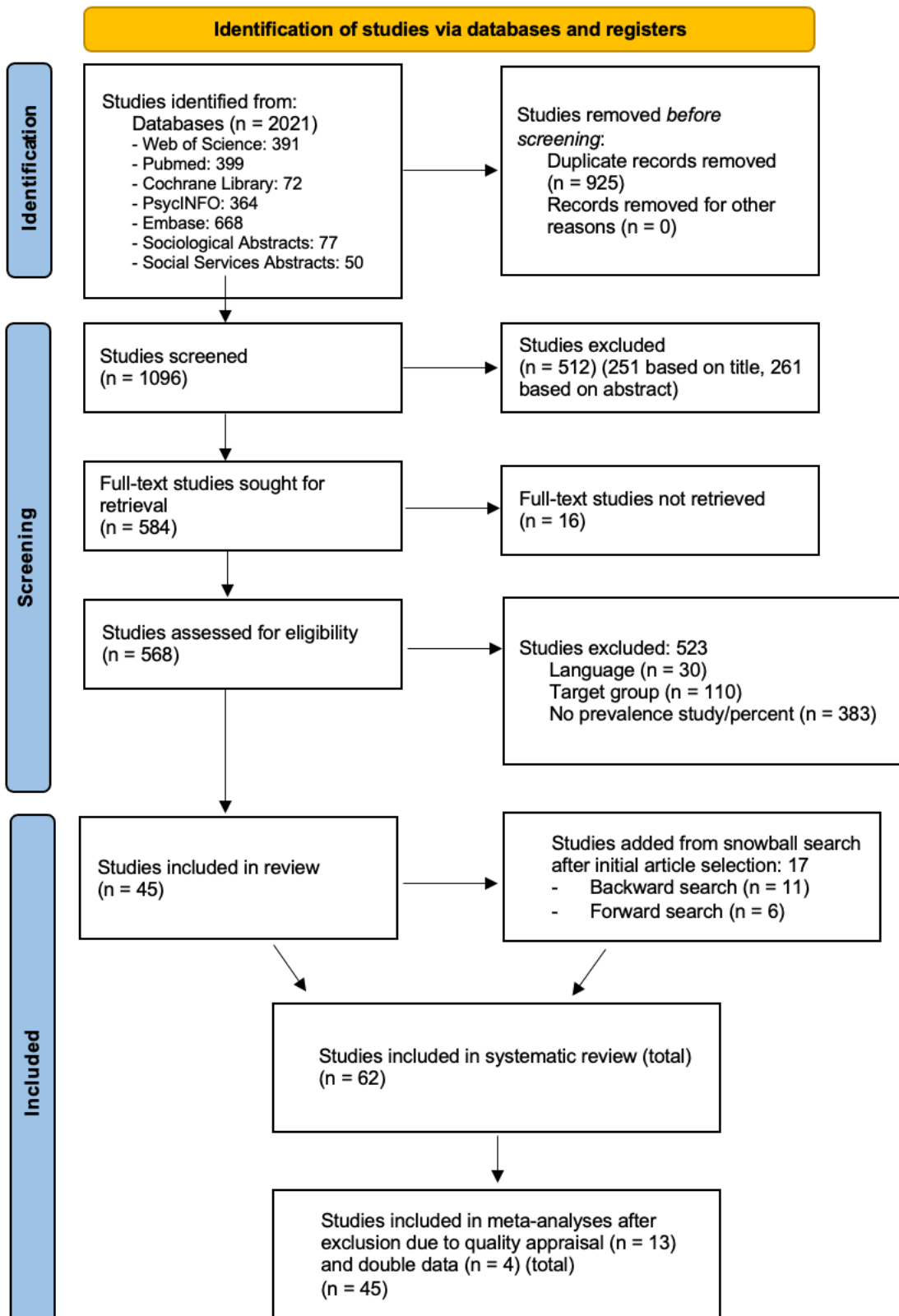


Figure 1. PRISMA flowchart of the included studies

In 33 studies (Routasalo et al., 2006; Paúl et al., 2006; Yang and Victor, 2008, 2011; Paúl and Ribeiro, 2009; Theeke, 2010; Fokkema et al., 2012; Perissinotto et al., 2012; Stickley et al., 2013; Zebhauser et al., 2014; Nicolaisen and Thorsen, 2014; Rantakokko et al., 2014; Dahlberg et al., 2015; Anil et al., 2016; Hansen and Slagsvold, 2016; van den Broek, 2017; Phaswana-Mafuya and Peltzer, 2017; Tomstad et al., 2017; Zhang et al., 2018; Vozikaki et al., 2018; Peltzer and Pengpid, 2020; Srivastava et al., 2020; Groarke et al., 2020; Chokkanathan, 2020; Igbokwe et al., 2020; Carrasco et al., 2021; Huang et al., 2021; Lay-Yee et al., 2021; Gao et al., 2021; van Tilburg, 2021; O'Shea et al., 2021; Rapolienė and Aartsen, 2021; Bao et al., 2021), the answer to the loneliness question to obtain the prevalence percentages was dichotomized (yes vs. no), while 29 studies (Holmén et al., 1992; Wang et al., 2001, 2011; Victor et al., 2005, 2006; Savikko et al., 2005; Steed et al., 2007; Sundström et al., 2009; Victor and Yang, 2012; Losada et al., 2012; Victor and Bowling, 2012; La Grow et al., 2012; Cheng et al., 2015; Stickley et al., 2015; Kearns et al., 2015; Djukanović et al., 2015; Gibney et al., 2017; Öztürk Haney et al., 2017; Susheela et al., 2018; Dahlberg et al., 2018; Devkota et al., 2019; Lee, 2020; Li and Wang, 2020; Joseph et al., 2020; Jia and Yuan, 2020; Torres et al., 2021; Ho et al., 2021; Clark et al., 2021; Chow et al., 2021) originally distinguished between different loneliness categories (e.g., never vs. seldom vs. sometimes vs. often lonely; etc.).

In our systematic review, most prevalence data (k=125, 70.6%) spanned from 2006 to 2015, and a majority (k=127, 71.8%) came from European countries. The majority of the data collection was done face-to-face (k=114, 64.4%), and through single-item questions (k=139, 78.5%). Table 1 shows an overview of the study characteristics of the included studies in both the systematic review and meta-analysis.

Table 1. Summary of the research characteristics

	SYSTEMATIC REVIEW (n=62) (k=177)	META-ANALYSIS (n=45) (k=101)
Characteristics	k (%)	k (%)
Year of publication		
Until 2005	4 (2.3%)	3 (3.0%)
2006-2010	22 (12.4%)	18 (17.8%)
2011-2015	63 (35.6%)	45 (44.6%)
2016-2021	88 (49.7%)	35 (34.7%)
Year of data collection		
Until 2005	24 (13.6%)	7 (7.0%)
2006-2010	76 (42.9%)	52 (51.5%)
2011-2015	49 (27.7%)	20 (19.8%)
2016-2021	14 (7.9%)	11 (10.9%)
Info missing	14 (7.9%)	11 (10.9%)
Research conducted pre- or during COVID?		
Before March 2020	170 (96.0%)	96 (95.0%)
After March 2020	7 (4.0%)	5 (5.0%)
Sample size (of loneliness measure)		
< 500	63 (35.6%)	39 (38.6%)
501-1000	50 (28.2%)	28 (27.7%)
1001-5000	42 (23.7%)	27 (26.7%)
> 5000	10 (5.6%)	7 (6.9%)
Info missing	12 (6.8%)	0
Percentage of women		
< 45%	1 (0.6%)	1 (1.0%)
45-55%	42 (23.7%)	33 (32.7%)
> 55%	42 (23.7%)	21 (20.8%)
Info missing	92 (52.0%)	46 (45.5%)
Type of sample		
Random	149 (84.2%)	83 (82.2%)
Not random	13 (7.3%)	12 (11.9%)
Info missing	15 (8.5%)	6 (5.9%)
Region (based on division UN (United Nations, 2021))		
Africa	2 (1.1%)	2 (2.0%)
Americas	12 (6.8%)	5 (5.0%)
Central Asia	2 (1.1%)	2 (2.0%)
Eastern Asia	13 (7.3%)	10 (9.9%)
Southern Asia	7 (4.0%)	5 (5.0%)
Western Asia	9 (5.1%)	7 (6.9%)
Eastern Europe	27 (15.3%)	17 (16.8%)
Northern Europe	45 (25.4%)	25 (24.8%)
Southern Europe	21 (11.9%)	7 (6.9%)

Western Europe	34 (19.2%)	17 (16.8%)
Oceania	5 (2.8%)	4 (4.0%)
Level on which the research was conducted		
National	145 (81.9%)	80 (79.2%)
Regional	32 (18.1%)	21 (20.8%)
Mode of data collection		
Face-to-face	114 (64.4%)	71 (70.3%)
Computer Assisted Personal Interviews (CAPI)	38 (21.5%)	12 (11.9%)
Telephone + Computer-Assisted Telephone Interviews (CATI)	6 (3.4%)	4 (4.0%)
Self-report (postal, written, online/digital)	18 (10.2%)	13 (12.9%)
Combination	1 (0.6%)	1 (1.0%)
Data source		
Own data collection	30 (16.9%)	25 (24.8%)
Use of existing data	147 (83.1%)	76 (75.2%)
Measurement instrument		
Single-item question	139 (78.5%)	66 (65.3%)
UCLA loneliness scale	19 (10.7%)	18 (17.8%)
20-item UCLA	10 (5.6%)	9 (8.9%)
Shortened UCLA (12-, 8-, 4-, 3-item)	9 (5.1%)	9 (8.9%)
De Jong Gierveld (DJG) Loneliness scale	18 (10.2%)	16 (15.8%)
11-item DJG	3 (1.7%)	2 (2.0%)
6-item DJG	15 (8.5%)	14 (13.9%)
Combination of different measures	1 (0.6%)	1 (1.0%)
	Mean (sd)	Mean (sd)
Hofstede's dimensions (0-100)		
Power Distance Index	53.16 (22.72)	55.02 (23.34)
Individualism	56.40 (21.95)	54.29 (22.80)
Masculinity	47.40 (22.72)	45.30 (22.25)
Uncertainty Avoidance Index	63.23 (23.89)	62.54 (24.00)
Long-Term Orientation	55.94 (20.87)	57.13 (20.59)
Indulgence	48.01 (21.48)	45.96 (21.80)

n = number of studies (i.e., scientific articles) included

k = number of prevalence rates (separated by country) mentioned throughout the studies

Appendix 4 specifically shows an overview of the study characteristics related to the loneliness prevalence found in the studies. While we included 62 studies in our systematic review, several studies included prevalence percentages of different countries, with corresponding differences in e.g. sample size and percentage of women (compared with men), leading to separate prevalence rates designated as 'k' (k=177 for the systematic review and k=101 for the meta-analysis). Appendix 5 (published as supplementary material online attached to the

electronic version of this paper at <https://www.cambridge.org/core/journals/international-psychogeriatrics>) gives an overview of the study characteristics per study.

3.1. Calculation of the pooled prevalence of loneliness

A total of 45 studies were included in the meta-analysis reporting on n=168 473 participants with valid prevalence percentages; n=107 267 using single-item questions, n=9795 using the University of California-Los Angeles (UCLA) 20-item scale, n=13 668 using a shortened version of the UCLA scale, n=37 339 using the De Jong Gierveld (DJG) scale and n=404 using a combination of different measures. Within these 45 studies, a total of 101 prevalence percentages were extracted. Descriptive information on the demographic and methodological characteristics is summarized in Table 1. The median of the included prevalence percentages was 26.0% (IQR 14.0% to 45.0%). Appendix 6 (published as supplementary material online attached to the electronic version of this paper at <https://www.cambridge.org/core/journals/international-psychogeriatrics>) presents four forest plots showing the prevalences of all the included studies in the meta-analysis, for each measurement instrument separately.

Table 2 presents the estimated pooled prevalence of loneliness among community-dwelling older adults based on the random-effects model. The pooled prevalence was 31.6% (95% CI 24.4-39.9) and it was statistically significant ($p < .001$). The results of the likelihood-ratio test showed there was significant within-study variance (at level 2, $X^2_{(1)} = 57.06$, $p < .001$) as well as significant between-study variance (at level 3, $X^2_{(1)} = 6221.89$, $p < .001$). From Table 2, 0.23% of the total variance could be attributed to variance at level 1 (i.e., sampling error variance), 28.03% of the total variance to differences between the prevalence of loneliness within studies at level 2 (i.e., within-study variance) and 71.74% of the total variance could be attributed to differences between studies at level 3 (i.e., between-study variance).

Table 2. Results for the overall pooled prevalence percentage

	# studies	# prevalence rates	Pooled prevalence (%)	95% CI	p-value	% Var at level 1	Level 2 variance	% Var at level 2	Level 3 variance	% Var at level 3
Overall	45	101	31.6	24.4; 39.9	<.001	0.23	0.426	28.03	1.091	71.74

3.2. Moderator analysis

We performed moderator analyses to assess the effect of measurement instruments, the mode of data collection and the country where the study was conducted on the pooled loneliness prevalence. The results of all univariate moderator analyses are presented in Table 3.

Table 3. Results for univariate moderator analysis

Moderator variables	Pooled prevalence (%)	95% CI	F (df1, df2)	p-value	Level 2 variance	Level 3 variance
<i>Measurement instrument</i>			$F(3, 96) = 11.03$	<.001	0.460	0.400
Single-item questions	21.2	(15.7; 27.9)		<.001		
20-item UCLA	59.3	(43.9; 73.0)		<.001		
Shortened UCLA	25.0	(15.1; 38.5)		0.550		
De Jong Gierveld (DJG)	55.4	(38.6; 71.1)		<.001		
<i>Mode of data collection</i>			$F(3, 96) = 3.23$	0.008	0.377	1.002
Face-to-face	39.4	(30.0; 49.6)		0.043		
Telephone + CATI	14.6	(6.3; 30.4)		0.006		
Self-report + Online	19.2	(10.5; 32.6)		0.017		
CAPI	39.8	(8.1; 83.3)		0.987		
<i>Power Distance Index (low → high)</i>	32.5	(25.5; 40.4)	$F(1, 97) = 31.75$	<.001	0.293	1.054
<i>Collectivism → Individualism</i>	30.6	(23.8; 38.4)	$F(1, 97) = 39.36$	<.001	0.262	1.105
<i>Consensus-oriented → Decisive</i>	31.6	(24.5; 39.7)	$F(1, 97) = 2.08$	0.152	0.435	1.042
<i>Uncertainty Avoidance Index (low → high)</i>	35.9	(27.4; 45.4)	$F(1, 97) = 19.5$	<.001	0.298	1.433
<i>Short-Term → Long-Term Orientation</i>	32.0	(24.8; 40.2)	$F(1, 97) = 3.29$	0.073	0.434	1.025
<i>Restraint → Indulgence</i>	34.0	(26.9; 41.9)	$F(1, 97) = 70.97$	<.001	0.198	1.065

Measurement instrument was a statistically significant moderator of the overall prevalence of loneliness ($F(3, 96) = 11.03, p < .001$). A significantly lower pooled prevalence of 21.2% (95% CI 15.7-27.9) ($p < .001$) was observed for loneliness prevalence measured using 1-item questions, compared to the 20-item UCLA loneliness scale reporting the highest pooled prevalence of 59.3% (95% CI 43.9-73.0). For the De Jong Gierveld loneliness scale, the pooled prevalence was 55.4% (95% CI 38.6-71.1) which was significantly different from 1-item questions ($p < .001$). The variance between studies (level 3) decreased by 63% from 1.091 to 0.400 after adjusting for measurement instrument as moderator.

We also found moderating effects of the mode of data collection on the overall pooled prevalence ($F(3, 96) = 3.23, p = .008$). This implied there were significant differences between the pooled prevalence from the four data collection methods. The loneliness prevalence for face-to-face data collection was 39.4% (95% CI 30.0-49.6), being significantly higher than telephone and CATI (14.6% (95% CI 6.3-30.4) and self-report (19.2% (95% CI 10.5-32.6)). However, this moderator explained the variability between studies only modestly as the level 3 variance decreased by only 8% (from 1.091 to 1.002).

Regarding the effect of country, four of the six dimensions of Hofstede were significant ($p < .001$). The prevalence of loneliness among community-dwelling older adults was significantly higher (compared to the initial 31.6% we found) in a country with the mean score of our sample on the Power Distance Index (32.5% (95% CI 25.5-40.4)), the Uncertainty Avoidance Index (35.9% (95% CI 27.4-45.4)) and the Indulgence index (34.0% (95% CI 26.9-41.9)). Countries with a mean score of our sample on the Individualism index had a significantly lower pooled prevalence of loneliness (30.6 (95% CI 23.8-38.4)). The dimension of Long-Term Orientation was not significant ($p = .073$), as well as the dimension of Motivation towards Achievement and Success ($p = .152$).

To check for residual heterogeneity, which is the remaining variability between the studies not accounted for by the moderators, we fitted a model with all the significant moderator variables. After adjusting for these variables, 0.34% of the total variance was attributed to the sampling error variance (level 1), 15.97% to differences within studies (level 2); and 83.69% of the total variance could be attributed to differences between studies (level 3).

4. Discussion

This systematic review and meta-analysis reports on the prevalence of community-dwelling older adults, as well as the impact of the used measurement instrument, mode of data collection and country on reported prevalence percentages. Using 101 prevalence percentages from 45 studies, our study demonstrates that the pooled prevalence of loneliness among community-dwelling older adults is 31.6%. This percentage corresponds greatly to the percentage of a previous systematic review and meta-analysis on the prevalence of loneliness among older people in high-income countries (not explicitly community-dwelling), which was 28.5% (Chawla et al., 2021). Our results show that the (level 3) variance of pooled loneliness prevalence that can be explained was 63% by differences in the used measurement instrument and 8% by data collection method.

The prevalence of loneliness is lower for single-item questions (21.2%) and shortened UCLA scales (25.0%), compared to the 20-item UCLA (59.3%) and the De Jong Gierveld loneliness

scale (55.4%), where the loneliness rates are significantly higher. This might be a result of the fact that single-item questions, and by extension short measurement scales, may be more vulnerable to certain biases in interpretation and meaning as well as on social desirability, and that multiple-item scales are more prone to cover the whole range of a complex construct, such as, in this case, loneliness (Hoepfner et al., 2011). Looking at the used measurement instruments, single-item questions are indeed more often used despite the existence of validated instruments and despite the critiques on single-item questions mentioning that these cannot capture a construct in all its complexity (Mund et al., 2022).

For the mode of data collection, loneliness prevalence rates vary from 14.6% for telephone interviews (including CATI) to 39.8% for CAPI. A study specifically about the De Jong Gierveld loneliness scale suggests that data collection procedures indeed can have an impact on the motivation, accuracy and self-disclosure of the participants while being subject to the data collection (van Tilburg and de Leeuw, 1991), and this is thus also visible in our review.

Regarding the country, four of the six dimensions of Hofstede (Hofstede, 2011) caused a significant increase (Power Distance Index, Uncertainty Avoidance Index, Indulgence) or a decrease (Individualism) in loneliness prevalence. Also here, we see that country, and more broadly, culture (Jylhä and Jokela, 1990), should be taken into account when making statements about loneliness prevalence among community-dwelling older adults.

The main strengths of this study are that the search strategy and the analyses were thoughtfully carried out and the choice of prevalence studies specifically on community-dwelling older people was made consciously, as we assessed the risk of bias very thoughtfully through our selection process. Moreover, despite the high heterogeneity of our pooled prevalence percentages, we assessed the quality of our studies carefully utilizing the JBI Critical Appraisal checklist (Munn et al., 2020), so that a high quality of the included studies and their data collection methods and measures was ensured.

However, results from this study should also be viewed with caution in light of its limitations. First, although a comprehensive search is seen as a potential mechanism for minimizing bias (Cooper et al., 2018), our selection criteria were rather strict. It is possible that because of this, certain percentages were excluded while they would have been included if the criteria were less rigorous. Another limitation is that the field of loneliness research is a rapidly evolving research area, certainly as a result of the COVID pandemic (Lampraki et al., 2022). This means that we could have missed certain studies published since our search was conducted. Third, not all world regions were equally represented in our study: in our systematic review, a low number of prevalence percentages obtained in Africa (k=2) and Oceania (k=5) were included, mainly due to the lack of loneliness prevalence studies from these regions, in contrast to prevalence percentages originating in Europe (k=127) or Asia (k=31). To capture the diversity in the included countries however, we used Hofstede's dimensions (Hofstede, 2011). Although we were aware of the prevailing criticisms surrounding this model (Chun et al., 2021;

Minkov, 2017), the standardised scores and the possibility of comparing countries were decisive to incorporate them in this study. Fourth, we split the UCLA scale into two groups in our analyses (i.e., the original and the shortened scale separately), but this was not done for the DJG due to an insufficient number of prevalence percentages in the two subcategories (i.e., the original vs. the shortened version) to be allowed to conduct separate statistical analyses. Possibly, more studies with the 11-item DJG could provide additional information on the differences between the original and the abbreviated scale. Furthermore, in our meta-analysis, we could not include several possible moderators because they were not consistently mentioned, such as the year of data collection ($k=11$) or the percentage of men or women ($k=46$), or because the sample size was relatively small (only $k=34$ had a sample size of >1000). Also, age was not included as a moderator because information on age in the studies was incomplete or too heterogeneous. For example, in some studies, the age classes of 60-69, 70-79, and 80+ were used, while 60-74 and 75+ were used in other studies. In addition, numerous studies simply give little or no information on age: several mention a general age range of their participants (e.g. 60-85), but there was no further information on the difference in loneliness prevalence for different ages or age groups.

Future prevalence studies are therefore recommended to comprehensively capture participants' characteristics, including potential loneliness risk factors such as education, marital status, percentage of people living alone, etc., which were frequently absent in the current studies. Additionally, while existing studies differentiate types of loneliness (social, emotional, and existential), specific prevalence percentages for these types of loneliness are often lacking.

This study reviewed the prevalence of loneliness among community-dwelling older adults. Our results show that measurement instruments, mode of data collection, and country acted as moderator variables, leading to varying loneliness prevalence percentages. Nevertheless, considerable variation within and between studies suggests the influence of other factors, such as participant age and gender. Future prevalence studies should consider the contextual impact, including respondents' personal and cultural characteristics, as well as study design, on reported loneliness prevalence rates.

References

- Anil, R., Prasad, K. and Puttaswamy, M. (2016). The prevalence of loneliness and its determinants among geriatric population in Bengaluru City, Karnataka, India. *International Journal of Community Medicine and Public Health*, 3246–3251. doi:10.18203/2394-6040.ijcmph20163944.
- Assink, M. and Wibbelink, C. J. M. (2016). Fitting three-level meta-analytic models in R: A step-by-step tutorial. *The Quantitative Methods for Psychology*, 12, 154–174. doi:10.20982/tqmp.12.3.p154.
- Assink, M., Van Der Put, C. E., Hoeve, M., De Vries, S. L. A., Stams, G. J. J. M. and Oort, F. J. (2015). Risk factors for persistent delinquent behavior among juveniles: A meta-analytic review. *Clinical Psychology Review*, 42, 47–61. doi:10.1016/j.cpr.2015.08.002.
- Awad, R., Shamay-Tsoory, S. G. and Palgi, Y. (2023). Fluctuations in loneliness due to changes in frequency of social interactions among older adults: a weekly based diary study. *International Psychogeriatrics*, 35, 293–303. doi:10.1017/S1041610223000133.
- Bao, L., Li, W.-T. and Zhong, B.-L. (2021). Feelings of loneliness and mental health needs and services utilization among Chinese residents during the COVID-19 epidemic. *Globalization and Health*, 17, 51. doi:10.1186/s12992-021-00704-5.
- Boyle, M. H. (1998). Guidelines for evaluating prevalence studies. *Evidence-Based Mental Health*, 1, 37–39. doi:10.1136/ebmh.1.2.37.
- Carrasco, M., Fernández, Mb., Alexander, E. and Herrera, Ms. (2021). Loneliness in Older Chilean People: Importance of Family Dysfunction and Depression. *International Journal of Mental Health Promotion*, 23, 99–109. doi:10.32604/IJMHP.2021.011568.
- Chawla, K., Kunonga, T. P., Stow, D., Barker, R., Craig, D. and Hanratty, B. (2021). Prevalence of loneliness amongst older people in high-income countries: A systematic review and meta-analysis. *PLOS ONE*, 16, e0255088. doi:10.1371/journal.pone.0255088.
- Cheng, P. et al. (2015). Disparities in prevalence and risk indicators of loneliness between rural empty nest and non-empty nest older adults in Chizhou, China: Loneliness in empty nest rural elderly. *Geriatrics & Gerontology International*, 15, 356–364. doi:10.1111/ggi.12277.
- Cheung, M. W.-L. (2014). Modeling dependent effect sizes with three-level meta-analyses: A structural equation modeling approach. *Psychological Methods*, 19, 211–229. doi:10.1037/a0032968.
- Chokkanathan, S. (2020). Prevalence of and risk factors for loneliness in rural older adults. *Australasian Journal on Ageing*, 39. doi:10.1111/ajag.12835.
- Chow, S. K. Y., Wong, F. M. F. and Choi, E. K. Y. (2021). Loneliness in Old Age, the Related Factors, and Its Association with Demographics and Districts of Residence. *International Journal of Environmental Research and Public Health*, 18, 9398. doi:10.3390/ijerph18179398.

- Chun, D., Zhang, Z., Cohen, E., Florea, L. and Genc, O. F. (2021). Long-term orientation and the passage of time: Is it time to revisit Hofstede's cultural dimensions? *International Journal of Cross Cultural Management*, 21, 353–371. doi:10.1177/14705958211026342.
- Clark, M., Bonnici, J. and Azzopardi, A. (2021). Loneliness in Malta: Findings from the first National Prevalence Study. *Journal of Social and Personal Relationships*, 38, 2751–2771. doi:10.1177/02654075211020120.
- Compernelle, E. L., Finch, L. E., Hawkey, L. C. and Cagney, K. A. (2021). Momentary loneliness among older adults: Contextual differences and their moderation by gender and race/ethnicity. *Social Science & Medicine*, 285, 114307. doi:10.1016/j.socscimed.2021.114307.
- Cooper, C., Booth, A., Varley-Campbell, J., Britten, N. and Garside, R. (2018). Defining the process to literature searching in systematic reviews: a literature review of guidance and supporting studies. *BMC Medical Research Methodology*, 18, 85. doi:10.1186/s12874-018-0545-3.
- Dahlberg, L., Andersson, L., McKee, K. J. and Lennartsson, C. (2015). Predictors of loneliness among older women and men in Sweden: A national longitudinal study. *Aging & Mental Health*, 19, 409–417. doi:10.1080/13607863.2014.944091.
- Dahlberg, L., Agahi, N. and Lennartsson, C. (2018). Lonelier than ever? Loneliness of older people over two decades. *Archives of Gerontology and Geriatrics*, 75, 96–103. doi:10.1016/j.archger.2017.11.004.
- de Jong Gierveld, J. (1987). Developing and testing a model of loneliness. *Journal of Personality and Social Psychology*, 53, 119–128. doi:10.1037/0022-3514.53.1.119.
- De Jong Gierveld, J. and van Tilburg, T. (1999). *Manual of the loneliness scale*. Amsterdam, Department of Social Research Methodology, Vrije Universiteit Amsterdam. doi:10.17605/osf.io/u6gck.
- De Jong Gierveld, J., van Tilburg, T. and Dykstra, P. A. (2006). Loneliness and Social Isolation, pp. 485–500 in Vangelisti, A. L. and Perlman, D. (Eds.) *The Cambridge Handbook of Personal Relationships*. Cambridge, Cambridge University Press doi:10.1017/CBO9780511606632.027.
- Devkota, R., Mishra, K. and Shrestha, S. (2019). Loneliness and Depression among Older People Living in a Community of Nepal. *Journal of Nepal Health Research Council*, 17, 185–192. doi:10.33314/jnhrc.v0i0.1561.
- Djukanović, I., Sorjonen, K. and Peterson, U. (2015). Association between depressive symptoms and age, sex, loneliness and treatment among older people in Sweden. *Aging & Mental Health*, 19, 560–568. doi:10.1080/13607863.2014.962001.
- Elovainio, M. et al. (2017). Contribution of risk factors to excess mortality in isolated and lonely individuals: an analysis of data from the UK Biobank cohort study. *The Lancet Public Health*, 2, e260–e266. doi:10.1016/S2468-2667(17)30075-0.

- Fokkema, T., De Jong Gierveld, J. and Dykstra, P. A. (2012). Cross-National Differences in Older Adult Loneliness. *The Journal of Psychology*, 146, 201–228. doi:10.1080/00223980.2011.631612.
- Gao, Q. et al. (2021). Loneliness Among Older Adults in Latin America, China, and India: Prevalence, Correlates and Association With Mortality. *International Journal of Public Health*, 66, 604449. doi:10.3389/ijph.2021.604449.
- Gibney, S., Delaney, L., Codd, M. and Fahey, T. (2017). Lifetime Childlessness, Depressive Mood and Quality of Life Among Older Europeans. *Social Indicators Research*, 130, 305–323. doi:10.1007/s11205-015-1177-1.
- Groarke, J. M., Berry, E., Graham-Wisener, L., McKenna-Plumley, P. E., McGlinchey, E. and Armour, C. (2020). Loneliness in the UK during the COVID-19 pandemic: Cross-sectional results from the COVID-19 Psychological Wellbeing Study. *PLOS ONE*, 15, e0239698. doi:10.1371/journal.pone.0239698.
- Hansen, T. and Slagsvold, B. (2016). Late-Life Loneliness in 11 European Countries: Results from the Generations and Gender Survey. *Social Indicators Research*, 129, 445–464. doi:10.1007/s11205-015-1111-6.
- Ho, K. H. M., Cheung, D. S. K., Lee, P. H., Lam, S. C. and Kwan, R. Y. C. (2021). Co-living with migrant domestic workers is associated with a lower level of loneliness among community-dwelling older adults: A cross-sectional study. *Health & Social Care in the Community* 1–11. doi:10.1111/hsc.13520.
- Hoepfner, B. B., Kelly, J. F., Urbanoski, K. A. and Slaymaker, V. (2011). Comparative utility of a single-item versus multiple-item measure of self-efficacy in predicting relapse among young adults. *Journal of Substance Abuse Treatment*, 41, 305–312. doi:10.1016/j.jsat.2011.04.005.
- Hofstede, G. (2011). Dimensionalizing Cultures: The Hofstede Model in Context. *Online Readings in Psychology and Culture*, 2. doi:10.9707/2307-0919.1014.
- Hofstede Insights (2023). <https://www.hofstede-insights.com/country-comparison-tool> (accessed 2 January 2024).
- Holmén, K., Ericsson, K., Andersson, L. and Winblad, B. (1992). Loneliness among elderly people living in Stockholm: a population study. *Journal of Advanced Nursing*, 17, 43–51. doi:10.1111/j.1365-2648.1992.tb01817.x.
- Huang, P.-H., Chi, M.-J., Kuo, C.-L., Wu, S.-F. V. and Chuang, Y.-H. (2021). Prevalence of Loneliness and Related Factors Among Older Adults in Taiwan: Evidence From a Nationally Representative Survey. *INQUIRY: The Journal of Health Care Organization, Provision, and Financing*, 58, 004695802110357. doi:10.1177/00469580211035745.
- Igbokwe, C. C., Ejeh, V. J., Agbaje, O. S., Umoke, P. I. C., Iweama, C. N. and Ozoemena, E. L. (2020). Prevalence of loneliness and association with depressive and anxiety symptoms among retirees in Northcentral Nigeria: a cross-sectional study. *BMC Geriatrics*, 20, 153. doi:10.1186/s12877-020-01561-4.

- Jia, G. and Yuan, P. (2020). The association between sleep quality and loneliness in rural older individuals: a cross-sectional study in Shandong Province, China. *BMC Geriatrics*, 20, 180. doi:10.1186/s12877-020-01554-3.
- Joseph, L., Nalini, S. and Santhi, V. (2020). Prevalence of Loneliness and Depression among Elderly in South India. *Indian Journal of Public Health Research & Development*. doi:10.37506/ijphrd.v11i11.11402.
- Jylhä, M. and Jokela, J. (1990). Individual Experiences as Cultural – a Cross-cultural Study on Loneliness Among the Elderly. *Ageing and Society*, 10, 295–315. doi:10.1017/S0144686X00008308.
- Kearns, A., Whitley, E., Tannahill, C. and Ellaway, A. (2015). Loneliness, social relations and health and well-being in deprived communities. *Psychology, Health & Medicine*, 20, 332–344. doi:10.1080/13548506.2014.940354.
- La Grow, S., Neville, S., Alpass, F. and Rodgers, V. (2012). Loneliness and self-reported health among older persons in New Zealand: Loneliness and self-reported health. *Australasian Journal on Ageing* 31, 121–123. doi:10.1111/j.1741-6612.2011.00568.x.
- Lampraki, C., Hoffman, A., Roquet, A. and Jopp, D. S. (2022). Loneliness during COVID-19: Development and influencing factors. *PLOS ONE*, 17, e0265900. doi:10.1371/journal.pone.0265900.
- Lay-Yee, R., Campbell, D. and Milne, B. (2021). Social attitudes and activities associated with loneliness: Findings from a New Zealand national survey of the adult population. *Health & Social Care in the Community* hsc.13351. doi:10.1111/hsc.13351.
- Lee, S. (2020). Loneliness among older adults in the Czech Republic: A socio-demographic, health, and psychosocial profile. *Archives of Gerontology and Geriatrics*, 90, 104068. doi:10.1016/j.archger.2020.104068.
- Li, L. Z. and Wang, S. (2020). Prevalence and predictors of general psychiatric disorders and loneliness during COVID-19 in the United Kingdom. *Psychiatry Research*, 291, 113267. doi:10.1016/j.psychres.2020.113267.
- Lin, L. and Xu, C. (2020). Arcsine-based transformations for meta-analysis of proportions: Pros, cons, and alternatives. *Health Science Reports*, 3. doi:10.1002/hsr2.178.
- Losada, A., Márquez-González, M., García-Ortiz, L., Gómez-Marcos, M. A., Fernández-Fernández, V. and Rodríguez-Sánchez, E. (2012). Loneliness and Mental Health in a Representative Sample of Community-Dwelling Spanish Older Adults. *The Journal of Psychology*, 146, 277–292. doi:10.1080/00223980.2011.582523.
- Mack, C. (2015). How to Write a Good Scientific Paper: a Reviewer's Checklist. *Journal of Micro/Nanolithography, MEMS, and MOEMS*, 14 020101. doi:10.1117/1.JMM.14.2.020101.
- Minkov, M. (2018). A revision of Hofstede's model of national culture: old evidence and new data from 56 countries. *Cross Cultural & Strategic Management*, 25, 231–256. doi:10.1108/CCSM-03-2017-0033.

- Mund, M., Maes, M., Drewke, P. M., Gutzeit, A., Jaki, I. and Qualter, P. (2022). Would the Real Loneliness Please Stand Up? The Validity of Loneliness Scores and the Reliability of Single-Item Scores. *Assessment* 107319112210772. doi:10.1177/10731911221077227.
- Munn, Z. et al. (2020). Methodological quality of case series studies: an introduction to the JBI critical appraisal tool. *JBI Evidence Synthesis*, 18, 2127–2133. doi:10.11124/JBISRIR-D-19-00099.
- Nicolaisen, M. and Thorsen, K. (2014). Who are Lonely? Loneliness in Different Age Groups (18–81 Years Old), Using Two Measures of Loneliness. *The International Journal of Aging and Human Development*, 78, 229–257. doi:10.2190/AG.78.3.b.
- O’Shea, B. Q., Finlay, J. M., Kler, J., Joseph, C. A. and Kobayashi, L. C. (2021). Loneliness Among US Adults Aged ≥ 55 Early in the COVID-19 Pandemic: Findings From the COVID-19 Coping Study. *Public Health Reports* 003335492110299. doi:10.1177/00333549211029965.
- Ost-Mor, S., Segel-Karpas, D., Palgi, Y., Yaira, H.-R., Mayan, S., Ben-Ezra, M. and Greenblatt-Kimron, L. (2023). Let there be light: The moderating role of positive solitude in the relationship between loneliness and depressive symptoms. *International Psychogeriatrics* 1–5. doi:10.1017/S1041610223000698.
- Öztürk Haney, M., Bahar, Z., Beşer, A., Açıl, D., Yardımcı, T. and Çömez, S. (2017). Factors Related to Loneliness Among the Elderly Living at Home in Turkey. *Turkish Journal of Family Medicine and Primary Care* 71–71. doi:10.21763/tjfmprc.317717.
- Page, M. J. et al. (2021). The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *BMJ* n71. doi:10.1136/bmj.n71.
- Paúl, C. and Ribeiro, O. (2009). Predicting loneliness in old people living in the community. *Reviews in Clinical Gerontology*, 19, 53–60. doi:10.1017/S0959259809990074.
- Paúl, C., Ayis, S. and Ebrahim, S. (2006). Psychological distress, loneliness and disability in old age. *Psychology, Health & Medicine*, 11, 221–232. doi:10.1080/13548500500262945.
- Peltzer, K. and Pengpid, S. (2020). Prevalence and correlates of loneliness among a nationally representative population-based sample of older adults in Mexico. *International Journal on Disability and Human Development*, 19, 581–587.
- Perissinotto, C. M., Stijacic Cenzer, I. and Covinsky, K. E. (2012). Loneliness in Older Persons: A Predictor of Functional Decline and Death. *Archives of Internal Medicine*, 172. doi:10.1001/archinternmed.2012.1993.
- Perlman, D. and Peplau, L. A. (1981). Toward a social psychology of loneliness, pp. 31–56 in Duck, S. W. and Gilmour, R. (Eds.) *Personal Relationships. 3: Personal relationships in disorder*. London, Academic Press.
- Phaswana-Mafuya, N. and Peltzer, K. (2017). Prevalence of Loneliness and Associated Factors among Older Adults in South Africa. *Global Journal of Health Science*, 9, 1. doi:10.5539/gjhs.v9n12p1.

- Rantakokko, M., Iwarsson, S., Vahaluoto, S., Portegijs, E., Viljanen, A. and Rantanen, T. (2014). Perceived Environmental Barriers to Outdoor Mobility and Feelings of Loneliness Among Community-Dwelling Older People. *The Journals of Gerontology Series A: Biological Sciences and Medical Sciences*, 69, 1562–1568. doi:10.1093/gerona/glu069.
- Rapolienė, G. and Aartsen, M. (2021). Lonely societies: low trust societies? Further explanations for national variations in loneliness among older Europeans. *European Journal of Ageing*. doi:10.1007/s10433-021-00649-z.
- Routasalo, P. E., Savikko, N., Tilvis, R. S., Strandberg, T. E. and Pitkälä, K. H. (2006). Social Contacts and Their Relationship to Loneliness among Aged People – A Population-Based Study. *Gerontology*, 52, 181–187. doi:10.1159/000091828.
- Russell, D. W. (1996). UCLA Loneliness Scale (Version 3): Reliability, Validity, and Factor Structure. *Journal of Personality Assessment*, 66, 20–40. doi:10.1207/s15327752jpa6601_2.
- Savikko, N., Routasalo, P., Tilvis, R. S., Strandberg, T. E. and Pitkälä, K. H. (2005). Predictors and subjective causes of loneliness in an aged population. *Archives of Gerontology and Geriatrics*, 41, 223–233. doi:10.1016/j.archger.2005.03.002.
- Srivastava, S., Ramanathan, M., Dhillon, P., Maurya, C. and Singh, S. K. (2020). Gender Differentials in Prevalence of Loneliness among Older Adults in India: an Analysis from WHO Study on Global AGEing and Adult Health. *Ageing International*. doi:10.1007/s12126-020-09394-7.
- Steed, L., Boldy, D., Grenade, L. and Iredell, H. (2007). The demographics of loneliness among older people in Perth, Western Australia. *Australasian Journal on Ageing*, 26, 81–86. doi:10.1111/j.1741-6612.2007.00221.x.
- Steultjens, E. M. J., Dekker, J., Bouter, L. M., Jellema, S., Bakker, E. B. and van den Ende, C. H. M. (2004). Occupational therapy for community dwelling elderly people: a systematic review. *Age and Ageing*, 33, 453–460. doi:10.1093/ageing/afh174.
- Stickley, A. et al. (2013). Loneliness: Its Correlates and Association with Health Behaviours and Outcomes in Nine Countries of the Former Soviet Union. *PLoS ONE*, 8, e67978. doi:10.1371/journal.pone.0067978.
- Stickley, A., Koyanagi, A., Leinsalu, M., Ferlander, S., Sabawoon, W. and McKee, M. (2015). Loneliness and health in Eastern Europe: findings from Moscow, Russia. *Public Health*, 129, 403–410. doi:10.1016/j.puhe.2014.12.021.
- Su, Y., Rao, W., Li, M., Caron, G., D’Arcy, C. and Meng, X. (2023). Prevalence of loneliness and social isolation among older adults during the COVID-19 pandemic: A systematic review and meta-analysis. *International Psychogeriatrics*, 35, 229–241. doi:10.1017/S1041610222000199.
- Sundström, G., Fransson, E., Malmberg, B. and Davey, A. (2009). Loneliness among older Europeans. *European Journal of Ageing*, 6, 267–275. doi:10.1007/s10433-009-0134-

8.

- Surkalim, D. L. et al. (2022). The prevalence of loneliness across 113 countries: systematic review and meta-analysis. *BMJ* e067068. doi:10.1136/bmj-2021-067068.
- Susheela, P., Valsaraj, B. P., and Savitha (2018). Depression, Perceived Loneliness and Partial Functional Impairment among Older Adults. *Journal Of Clinical And Diagnostic Research*. doi:10.7860/JCDR/2018/34086.12096.
- Switsers, L., Dierckx, E., Domènech-Abella, J., De Donder, L., Dury, S., and the D-SCOPE Consortium (2021). Negative old-age life events and well-being in later life: the moderating and mediating role of loneliness. *International Psychogeriatrics*, 33, 1265–1276. doi:10.1017/S1041610220004196.
- Theeke, L. A. (2010). Sociodemographic and Health-Related Risks for Loneliness and Outcome Differences by Loneliness Status in a Sample of U.S. Older Adults. *Research in Gerontological Nursing*, 3, 113–125. doi:10.3928/19404921-20091103-99.
- Tomstad, S., Dale, B., Sundsli, K., Saevareid, H. I. and Söderhamn, U. (2017). Who often feels lonely? A cross-sectional study about loneliness and its related factors among older home-dwelling people. *International Journal of Older People Nursing*, 12, e12162. doi:10.1111/opn.12162.
- Torres, J. L. et al. (2021). Loneliness and social disconnectedness in the time of pandemic period among Brazilians: evidence from the ELSI COVID-19 initiative. *Aging & Mental Health* 1–7. doi:10.1080/13607863.2021.1913479.
- van den Broek, T. (2017). Gender differences in the correlates of loneliness among Japanese persons aged 50-70. *Australasian Journal on Ageing*, 36, 234–237. doi:10.1111/ajag.12448.
- van Den Noortgate, W. and Onghena, P. (2003). Multilevel Meta-Analysis: A Comparison with Traditional Meta-Analytical Procedures. *Educational and Psychological Measurement*, 63, 765–790. doi:10.1177/0013164402251027.
- Van den Noortgate, W., López-López, J. A., Marín-Martínez, F. and Sánchez-Meca, J. (2013). Three-level meta-analysis of dependent effect sizes. *Behavior Research Methods*, 45, 576–594. doi:10.3758/s13428-012-0261-6.
- van Tilburg, T. G. (2021). Emotional, social, and existential loneliness before and during the COVID-19 pandemic: Prevalence and risk factors among Dutch older adults. *The Journals of Gerontology: Series B*. doi:10.1093/geronb/gbab101.
- van Tilburg, T. and de Leeuw, E. (1991). Stability of scale quality under various data collection procedures: a mode comparison on the 'De Jong Gierveld Loneliness Scale'. *International Journal of Public Opinion Research*, 3, 69–85. doi:10.1093/ijpor/3.1.69.
- Victor, C. R. and Bowling, A. (2012). A Longitudinal Analysis of Loneliness Among Older People in Great Britain. *The Journal of Psychology*, 146, 313–331. doi:10.1080/00223980.2011.609572.
- Victor, C. R. and Yang, K. (2012). The Prevalence of Loneliness Among Adults: A Case Study

- of the United Kingdom. *The Journal of Psychology*, 146, 85–104. doi:10.1080/00223980.2011.613875.
- Victor, C. R., Scambler, S. J., Bowling, A. and Bond, J. (2005). The prevalence of, and risk factors for, loneliness in later life: a survey of older people in Great Britain. *Ageing and Society*, 25, 357–375. doi:10.1017/S0144686X04003332.
- Victor, C. R., Scambler, S. J., Marston, L., Bond, J. and Bowling, A. (2006). Older People's Experiences of Loneliness in the UK: Does Gender Matter? *Social Policy and Society*, 5, 27–38. doi:10.1017/S1474746405002733.
- Viechtbauer, W. (2010). Conducting Meta-Analyses in R with the metafor Package. *Journal of Statistical Software*, 36, 1–48. doi:10.18637/jss.v036.i03.
- Vozikaki, M., Papadaki, A., Linardakis, M. and Philalithis, A. (2018). Loneliness among older European adults: results from the survey of health, aging and retirement in Europe. *Journal of Public Health*, 26, 613–624. doi:10.1007/s10389-018-0916-6.
- Wang, J.-J., Snyder, M. and Kaas, M. (2001). Stress, loneliness, and depression in Taiwanese rural community-dwelling elders. *International Journal of Nursing Studies*, 38, 339–347. doi:10.1016/S0020-7489(00)00072-9.
- Wang, G. et al. (2011). Loneliness among the rural older people in Anhui, China: prevalence and associated factors. *International Journal of Geriatric Psychiatry*. doi:10.1002/gps.2656.
- World Health Organization (2021). *Social isolation and loneliness among older people: advocacy brief*. Geneva, World Health Organization.
- Yang, K. and Victor, C. R. (2008). The prevalence of and risk factors for loneliness among older people in China. *Ageing and Society*, 28, 305–327. doi:10.1017/S0144686X07006848.
- Yang, K. and Victor, C. (2011). Age and loneliness in 25 European nations. *Ageing and Society*, 31, 1368–1388. doi:10.1017/S0144686X1000139X.
- Zebhauser, A. et al. (2014). How much does it hurt to be lonely? Mental and physical differences between older men and women in the KORA-Age Study: Gender differences of loneliness in older people. *International Journal of Geriatric Psychiatry*, 29, 245–252. doi:10.1002/gps.3998.
- Zhang, J. et al. (2018). Loneliness and Health Service Utilization among the Rural Elderly in Shandong, China: A Cross-Sectional Study. *International Journal of Environmental Research and Public Health*, 15, 1468. doi:10.3390/ijerph15071468.

Appendix 1: Search terms

Table A. General search terms

Loneliness search terms	Lonel*
Community dwelling older adults search terms	"Community dwelling" Communit* "community-dwelling" independen* home* "living at home" "independent living" "dwelling at home" "home-dwelling" "home dwelling" community setting* community environment* community network*
Older people search terms (required for some databases without age limit option)	Old* Aged* Ag?ing Elder* Senior* Geriatric* Older* Pensioner* "Later life"
Articles specific about prevalence or incidence	Prevalen* Incidence* Frequenc* Number* Level* Amount* Proportion*

Table B. Search terms Web of Science

#1	T1= (lonel*) <i>Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years</i>
#2	TS = ("community dwelling" OR communit* OR "community-dwelling" OR independen* OR home* OR "living at home" OR "independent living" OR "dwelling at home" OR "home-dwelling" OR (community setting*) OR (community environment*) OR (community network*)) <i>Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years</i>
#3	TS = (old* OR aged* OR ag?ing OR elder* OR senior* OR geriatric* OR older* OR pensioner* OR "later life") <i>Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years</i>
#4	TS = (prevalen* OR incidence* OR frequenc* OR number* OR level* OR amount* OR proportion*) <i>Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years</i>
#5	#4 AND #3 AND #2 AND #1 <i>Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years</i>

Table C. Search terms Pubmed

#1	Search: "lonel*" [Title]
#2	Search: "Aged" [Mesh] OR "Aged, 80 and over" [Mesh]
#3	Search: "prevalence" OR "incidence" OR "frequency" OR "number" OR "level" OR "amount" OR "proportion"
#4	Search: #1 AND #2 AND #3
#5	Search: #4 NOT "Nursing Homes" [Mesh] ("lonel*" [Title] AND ("Aged" [MeSH Terms] OR "aged, 80 and over" [MeSH Terms]) AND ("prevalence" [All Fields] OR "incidence" [All Fields] OR "frequency" [All Fields] OR "number" [All Fields] OR "level" [All Fields] OR "amount" [All Fields] OR "proportion" [All Fields])) NOT "Nursing Homes" [MeSH Terms]

Table D. Search terms Cochrane

#1	MeSH descriptor: [Loneliness] explode all trees
#2	MeSH descriptor: [Aged] explode all trees
#3	MeSH descriptor: [Aged, 80 and over] explode all trees
#4	#2 OR #3
#5	#1 AND #4

Table E. Search terms Sociological Abstracts

#1	ti(lonel*)
#2	noft(old* OR aged* OR ag?ing OR elder* OR senior* OR geriatric* OR older* OR pensioner* OR "later life")
#3	noft("community dwelling" OR communit* OR "community-dwelling" OR independen* OR home* OR "living at home" OR "independent living" OR "dwelling at home" OR "home-dwelling" OR (community setting*) OR (community environment*) OR (community network*))
#4	noft(frequenc* OR number* OR level* OR amount* OR proportion* OR prevalen* OR incidence*)
#5	ti(lonel*) AND noft(old* OR aged* OR ag?ing OR elder* OR senior* OR geriatric* OR older* OR pensioner* OR "later life") AND noft("community dwelling" OR communit* OR "community-dwelling" OR independen* OR home* OR "living at home" OR "independent living" OR "dwelling at home" OR "home-dwelling" OR (community setting*) OR (community environment*) OR (community network*)) AND noft(prevalen* OR incidence*)
#6	(ti(lonel*) AND noft(old* OR aged* OR ag?ing OR elder* OR senior* OR geriatric* OR older* OR pensioner* OR "later life") AND noft("community dwelling" OR communit* OR "community-dwelling" OR independen* OR home* OR "living at home" OR "independent living" OR "dwelling at home" OR "home-dwelling" OR (community setting*) OR (community environment*) OR (community network*)) AND (noft(frequenc* OR number* OR level* OR amount* OR proportion* OR prevalen* OR incidence*))) AND PEER(yes)

Table F. Search terms Social Services Abstracts

#1	ti(lonel*)
#2	noft(old* OR aged* OR ag?ing OR elder* OR senior* OR geriatric* OR older* OR pensioner* OR "later life")
#3	noft("community dwelling" OR communit* OR "community-dwelling" OR independen* OR home* OR "living at home" OR "independent living" OR "dwelling at home" OR "home-dwelling" OR (community setting*) OR (community environment*) OR (community network*))
#4	noft(frequenc* OR number* OR level* OR amount* OR proportion* OR prevalen* OR incidence*)
#5	ti(lonel*) AND noft(old* OR aged* OR ag?ing OR elder* OR senior* OR geriatric* OR older* OR pensioner* OR "later life") AND noft("community dwelling" OR communit* OR "community-dwelling" OR independen* OR home* OR "living at home" OR "independent living" OR "dwelling at home" OR "home-dwelling" OR (community setting*) OR (community environment*) OR (community network*)) AND noft(prevalen* OR incidence*)
#6	(ti(lonel*) AND noft(old* OR aged* OR ag?ing OR elder* OR senior* OR geriatric* OR older* OR pensioner* OR "later life") AND noft("community dwelling" OR communit* OR "community-dwelling" OR independen* OR home* OR "living at home" OR "independent living" OR "dwelling at home" OR "home-dwelling" OR (community setting*) OR (community environment*) OR (community network*)) AND (noft(frequenc* OR number* OR level* OR amount* OR proportion* OR prevalen* OR incidence*))) AND PEER(yes)

Table G. Search terms PsycINFO

#1	ti(lonel*)
#2	noft(old* OR aged* OR ag?ing OR elder* OR senior* OR geriatric* OR older* OR pensioner* OR "later life")
#3	noft("community dwelling" OR communit* OR "community-dwelling" OR independen* OR home* OR "living at home" OR "independent living" OR "dwelling at home" OR "home-dwelling" OR (community setting*) OR (community environment*) OR (community network*))
#4	noft(frequenc* OR number* OR level* OR amount* OR proportion OR prevalen* OR incidence*)
#5	ti(lonel*) AND noft(old* OR aged* OR ag?ing OR elder* OR senior* OR geriatric* OR older* OR pensioner* OR "later life") AND noft("community dwelling" OR communit* OR "community-dwelling" OR independen* OR home* OR "living at home" OR "independent living" OR "dwelling at home" OR "home-dwelling" OR (community setting*) OR (community environment*) OR (community network*)) AND noft(prevalen* OR incidence*)
#6	(ti(lonel*) AND noft(old* OR aged* OR ag?ing OR elder* OR senior* OR geriatric* OR older* OR pensioner* OR "later life") AND noft("community dwelling" OR communit* OR "community-dwelling" OR independen* OR home* OR "living at home" OR "independent living" OR "dwelling at home" OR "home-dwelling" OR (community setting*) OR (community environment*) OR (community network*)) AND (noft(frequenc* OR number* OR level* OR amount* OR proportion* OR prevalen* OR incidence*))) AND PEER(yes)

Table H. Search terms Embase

#1	loneliness:ti
#2	prevalence OR incidence OR frequency OR number OR level OR amount OR proportion
#3	old* OR aged* OR ag?ing OR elder* OR senior* OR geriatric* OR older* OR pensioner* OR 'later life'
#4	#1 AND #2 AND #3
#5	#4 NOT 'nursing home' (loneliness:ti AND (prevalence OR incidence OR frequency OR number OR level OR amount OR proportion) AND (old* OR aged* OR ag?ing OR elder* OR senior* OR geriatric* OR older* OR pensioner* OR 'later life')) NOT (nursing AND home)

Appendix 2 - Quality appraisal: JBI Checklist

<u>Criterion as formulated bij JBI</u>	<u>Operationalization</u>
1. Was the sample frame appropriate to address the target population?	If prevalence percentages were not given for a group of people, specifically minimum 60 years or older, the criterium was marked as "-". If this criterium was "-", we decided not to include this paper, since this was an essential criterium.
2. Were study participants sampled in an appropriate way?	If the article did not state that the sample was random, the criterium was marked as "-".
3. Was the sample size adequate?	If the sample size was < 1000 and if calculation of sample size was not shown, the criterium was marked as "-". If sample size was not mentioned, the criterium was marked as "-" (in red), and we decided not to include this paper, since this was an essential criterium.
4. Were the study subjects and the setting described in detail?	This should have been mentioned in table/results/method, otherwise the criterium was marked as "-".
5. Was the data analysis conducted with sufficient coverage of the identified sample?	If the 60+ age group we investigate was represented to a lesser extent in the total sample, the criterium was marked as "-".
6. Were valid methods used for the identification of the condition?	If there was no bibliography next to the measurement instrument/question used (and thus, if it was not possible to determine where the measurement instrument/question originated from), the criterium was marked as "-".
7. Was the condition measured in a standard, reliable way for all participants?	If a one-item-question was used, the criterium was marked as "-".
8. Was there appropriate statistical analysis?	If a confidence interval was not mentioned for the prevalence rate(s), the criterium was marked as "-".
9. Was the response rate adequate, and if not, was the low response rate managed appropriately?	If a response rate was not mentioned for our specific age group of minimum 60+, the criterium was marked as "-".

Legend

+	Yes, met the criterium
-	No, did not meet the criterium
	Low score (0-3 points)
	Moderate score (4-6 points)
	High score (7-9 points)
✘	Articles marked with a '✘', are part of the systematic review, but not of the meta-analysis due to insufficient quality.

TOTAL SCORE: OVERALL METHODOLOGICAL QUALITY: low (0-3 points), moderate (4-6 points), high (7-9 points) → We included all articles with a moderate or high score in our meta-analyses, unless if they scored "-" on criterium 1, then we did not include the article.

Included studies	1	2	3	4	5	6	7	8	9	TOTAL SCORE	Comments
1. Anil (2016)	+	-	+	+	+	+	+	-	-	6	3. Sample size was calculated, but without any further information
2. Bao et al. (2021) ✘	-	-	+	+	+	+	-	-	-	4	1. Information for 50+, not specifically 60+; 2. Convenience sample
3. Carrasco et al. (2021)	+	+	+	+	+	+	+	-	-	7	
4. Cheng et al. (2015)	+	+	+	+	+	+	+	-	+	8	
5. Chokkanathan (2020)	+	+	-	+	+	+	+	-	+	7	
6. Chow et al. (2021)	+	-	+	+	+	+	+	-	-	6	
7. Clark et al. (2021) ✘	-	+	-	-	-	+	+	-	-	2	No information about 60+ age group
8. Dahlberg et al. (2018)	+	+	+	+	+	-	-	-	+	6	
9. Dahlberg et al. (2015)	+	+	+	+	+	-	-	-	+	6	
10. Devkota et al. (2019)	+	+	+	+	+	+	+	-	-	7	3. Sample size calculation was shown
11. Djukanović et al. (2014)	+	+	+	+	+	-	-	-	+	6	
12. Fokkema et al. (2012) ✘	-	+	+	+	+	+	-	-	-	5	No information about 60+ age group
13. Gao et al. (2021) ✘	-	-	+	+	+	+	-	+	-	5	Made use of proxy interviews → not an appropriate manner to research loneliness
14. Gibney et al. ✘	-	+	+	+	+	+	+	+	+	8	No information about 60+ age group
15. Groarke et al. (2020)	+	-	-	+	-	+	+	-	-	4	2. Convenience sample; 3. No sample size calculation; 5. Older adults are under-represented (is mentioned in limits); 9. No response rate for 60+
16. Hansen et al. (2016)	+	+	+	+	+	+	+	-	-	7	
17. Ho et al. (2021)	+	-	+	+	+	+	+	+	-	7	
18. Holmén et al. (1992)	+	+	+	+	+	+	-	-	-	6	
19. Huang et al. (2021)	+	+	+	+	+	+	-	-	-	6	
20. Igbokwe et al. (2020)	+	+	+	+	+	+	+	-	-	7	
21. Jia et al. (2020)	+	+	+	+	+	+	+	-	+	8	
22. Joseph et al. (2020)	+	-	+	+	+	-	+	-	-	5	
23. Kearns et al. (2015)	+	+	+	+	+	+	-	-	-	6	
24. La Grow et al. (2012)	+	+	-	-	-	+	+	-	+	5	Is a brief report, therefore some information is missing
25. Lay-Yee et al. (2020)	+	+	+	+	+	+	+	-	-	7	
26. Lee (2020)	+	+	+	+	+	+	+	-	-	7	
27. Li et al. (2020)	+	+	+	-	-	+	-	-	+	5	4. Missing participant characteristics; 5. Unknown whether our identified sample differs from the others (since not enough characteristics were given)
28. Losada et al. (2020) ✘	+	+	-	-	-	-	-	-	-	2	Many missing information (also about the participants)
29. Nicolaisen et al. (2014)	+	-	+	+	+	+	+	-	-	6	

30. O'Shea et al. (2021)	+	-	+	+	+	+	+	+	-	7	8. One of the few studies reporting a CI for the prevalence percentages; 9. Design described elsewhere
31. Öztürk Haney et al. (2017)	+	-	-	+	+	+	+	-	-	5	
32. Paúl et al. (2006)	+	+	+	+	+	+	-	-	+	7	3. Explanation on how the sample size was obtained
33. Paúl et al. (2009)	+	+	+	+	+	+	-	-	-	6	
34. Peltzer et al. (2020)	+	-	+	+	+	-	-	-	-	4	2. Randomness described elsewhere
35. Perissinotto et al. (2012)	+	+	+	+	+	+	+	-	-	7	
36. Phaswana-Mafuya et al. (2017)	+	-	+	+	+	-	-	-	-	4	
37. Rantakokko et al. (2014)	+	+	-	+	+	-	-	-	-	4	9. Described elsewhere
38. Rapolienė et al. (2021) ✘	+	-	+	-	+	-	-	-	-	3	
39. Routasalo et al. (2006)	+	+	+	+	+	+	-	-	+	7	
40. Savikko et al. (2005)	+	+	+	+	+	+	-	-	+	7	
41. Srivastava et al. (2020) ✘	-	-	+	+	+	+	-	-	-	4	
42. Steed et al. (2007)	+	+	-	+	+	+	+	-	+	7	
43. Stickley et al. (2015) ✘	+	+	-	+	-	-	-	-	-	3	3. N = 340 60+; 5. Unknown whether 60+ age group differs significantly from other age groups; 8. There is a CI, but between age groups
44. Stickley et al. (2013)	+	+	+	+	-	-	-	-	-	4	5. Unknown whether 60+ age group differs significantly from other age groups
45. Sundström et al. (2009)	+	+	+	+	+	-	-	-	-	5	
46. Susheela et al. (2018)	+	+	+	+	+	+	+	-	-	7	
47. Theeke et al. (2010) ✘	-	+	+	+	-	+	-	-	-	4	5. Unknown whether 60+ age group differs significantly from other age groups
48. Tomstad et al. (2017)	+	+	+	+	+	-	-	-	-	5	6. No information on source loneliness question; 9. Response rate is mentioned, but is low
49. Torres et al. (2021)	+	-	+	+	+	+	-	-	-	5	2. No information about first sampling
50. van den Broek (2017) ✘	-	+	+	+	-	+	+	-	-	5	9. No response rate per age category
51. Van Tilburg (2021)	+	+	-	+	-	+	+	-	-	5	
52. Victor et al. (2012a)	+	+	-	+	+	+	-	-	+	6	
53. Victor et al. (2012b)	+	+	+	-	-	+	-	-	-	4	
54. Victor et al. (2005)	+	+	-	+	+	+	+	-	+	7	
55. Victor et al. (2006) ✘	+	-	-	-	-	-	-	-	+	2	3. N = 999; 4. Participant information is limited
56. Vozikaki et al. (2018) ✘	+	-	-	+	+	+	-	+	-	5	Many essential information (e.g., sample size) is missing, therefore we do not include this article in the meta-analyses
57. Wang et al. (2011)	+	+	+	+	+	+	+	-	+	8	
58. Wang et al. (2001)	+	-	-	+	-	+	+	-	+	5	2. No information about randomization; 3. No sample size calculation
59. Yang et al. (2011)	+	+	+	-	-	+	-	-	-	4	
60. Yang et al. (2008)	+	+	+	+	-	+	-	-	-	5	
61. Zebhauser et al. (2014)	+	+	+	+	+	+	+	-	+	8	
62. Zhang et al. (2018)	+	+	+	+	+	+	-	-	-	6	

Appendix 3 – Overview classification

Based on:

Gardiner, C., Laud, P., Heaton, T., & Gott, M. (2020). What is the prevalence of loneliness amongst older people living in residential and nursing care homes? A systematic review and meta-analysis. *Age and Ageing*, 49(5), 748–757.

<https://doi.org/10.1093/ageing/afaa049>

Valtorta, N. K., Kanaan, M., Gilbody, S., & Hanratty, B. (2016). Loneliness, social isolation and social relationships: What are we measuring? A novel framework for classifying and comparing tools. *BMJ Open*, 6(4), e010799. <https://doi.org/10.1136/bmjopen-2015-010799>

Legend

	1-item questions
	De Jong Gierveld Loneliness scale
	UCLA 20-item scale
	UCLA short version
	Combination of different measurement instruments

Various response options from self-rated measures of loneliness	Response options to be included in meta-analysis
<ul style="list-style-type: none"> - Not lonely [1, 2, 4, 7, 12, 13, 15, 16, 19, 20, 24, 25, 29, 32, 33, 34, 35, 36, 37, 38, 39, 41, 42, 44, 47, 48, 50, 51, 56, 59, 60, 61, 62] - Without loneliness [3] - Mild loneliness [4, 22, 31, 57] - Hardly lonely [5] - Almost never lonely [8, 28] - Seldom lonely [8, 11, 18] - Rarely lonely [9, 43] - No loneliness [10, 23, 46] - Never lonely [11, 18, 42, 43, 52, 53, 54, 55] - Hardly ever or never lonely [14, 26, 27] - Nil or mild loneliness [17] - Low level of loneliness experience [21] - Low loneliness [30] - Seldom or never lonely [40] - Lonely almost none of the time [45] - Hardly ever lonely [49] - Low level of loneliness [58] 	NOT/MILDLY LONELY
<ul style="list-style-type: none"> - Lonely [1, 2, 12, 13, 15, 16, 19, 20, 25, 32, 33, 34, 35, 36, 37, 38, 39, 41, 44, 47, 50, 51, 56, 60, 61, 62] - With loneliness [3] - Moderate loneliness [4, 10, 17, 22, 31, 57] - Moderate-severe loneliness [4, 57] - Severe loneliness [4, 10, 17, 22, 31, 57] - Sometimes/often lonely [5] - High level of loneliness [8, 58] - Moderately lonely [7, 24, 42] - Severely or very severely lonely [7] 	LONELY

- Often lonely	[8, 11, 14, 18, 26, 27, 42, 43, 48, 49, 52, 54, 55]
- Nearly always lonely	[8]
- Frequently lonely	[9, 59]
- Sometimes lonely	[11, 18, 28, 40, 42, 43, 52, 54, 55]
- Some of the time lonely	[14, 26, 27, 45, 49, 53]
- Moderate level of loneliness experience	[21]
- High level of loneliness experience	[21]
- Occasional loneliness	[23]
- Frequent loneliness	[23]
- Severely lonely	[24, 42]
- Quite often lonely	[28]
- With feelings of loneliness	[29]
- High loneliness	[30]
- Often or always lonely	[40]
- Always lonely	[42, 52, 54, 55]
- Very severely lonely	[42]
- Lonely most of the time	[45]
- Lonely almost all the time	[45]
- Moderately high degree of loneliness	[46]
- Lonely all or most of the time	[53]
- Medium level of loneliness	[58]

Appendix 4. Measurement and prevalence of loneliness in the included studies, sorted by measurement instrument

Author	Country	Loneliness measures (+ cut-offs)	Cronbach's alpha	Prevalence of loneliness %							
				Categories	Total %	Gender %		Age %			
20-ITEM UCLA LONELINESS SCALE											
1. Anil (2016)	India (regional: Bengaluru)	Revised 20-item UCLA Loneliness Scale (no score range mentioned) * - 50 and above: "lonely"	/			<u>Women</u>	<u>Men</u>	<u>60-69</u>	<u>70-79</u>	<u>≥80</u>	
				Not/mildly lonely	62.4	57.3	70.4	68.2	52	50	
				Lonely	37.6	42.7	29.6	31.8	48	50	
4. Cheng et al. (2015)	China (regional: Chizhou province)	Revised 20-item UCLA Loneliness Scale (score: 20-80) * 20-34: mild loneliness → Not/mildly lonely 35-49: moderate loneliness → lonely 50-64: moderate-severe loneliness → lonely 65-80: severe loneliness → lonely	0.94	Not/mildly lonely	14.39	/	/	/	/	/	
				Lonely	85.61 ²						
10. Devkota et al. (2019)	Nepal (regional: ward no. 8, Gokarneshwor, Kathmandu, Nepal)	20-item UCLA Loneliness Scale (version 3) (score: 20-80) * No cut-off mentioned, three categories: - no loneliness → Not/mildly lonely - moderate loneliness → lonely - severe loneliness → lonely	0.813			<u>Women</u>	<u>Men</u>	<u>60-75</u>	<u>75+</u>		
				Not/mildly lonely	44.4	36.8	53.6	47.4 ¹	34.5 ¹		
				Lonely	55.6 ²	63.2 ²	46.4 ²	52.6 ^{1,2}	65.5 ^{1,2}		
21. Jia et al. (2020)	China (regional: Shandong province)	20-item UCLA Loneliness Scale (version 3) (score: 20-80) * - 20-34: low level of loneliness experience → Not/mildly lonely - 35-49: moderate level of loneliness experience → lonely - 50-80: high level of loneliness experience → lonely	0.860	Not/mildly lonely	18.4	/	/	/	/	/	
				Lonely	81.6 ²						
22. Joseph et al. (2020)	India (regional: Annaikattucherry, Sorancherry and Amudurmedu villages, Thiruvallur district)	20-item UCLA scale (not specified which version) (score: 0-60) * - 0-20: mild loneliness → Not/mildly lonely - 21-40: moderate loneliness → lonely - 41-60: severe loneliness → lonely	/					<u>60-64</u>	<u>65-69</u>	<u>70-74</u>	<u>75+</u>
				Not/mildly lonely	15.3	/	/	25.0	16.7	11.9	0
				Lonely	84.7 ²			75.0 ²	83.3 ²	88.1 ²	100.0 ²

31. Öztürk Haney et al. (2017)	Turkey (regional: Izmir)	20-item UCLA Loneliness Scale (Turkish version) (score 20-80) * - 20-34: mild loneliness → Not/mildly lonely - 35-48: moderate loneliness → lonely - 49-80: severe loneliness → lonely	0.89	Not/mildly lonely Lonely	53.1 46.9 ²	/	/				
46. Susheela et al. (2018)	India (regional: Anjaru, Moodubelle and Kudi, Udipi Taluk)	Revised 20-item UCLA Loneliness Scale (score: 0-60) * No cut-off mentioned - No loneliness → Not/mildly lonely - Mild degree of loneliness → lonely - Moderately high degree of loneliness → lonely	/	Not/mildly lonely Lonely	95.2 4.8 ²	<i>Women</i> 95.1 ²	<i>Men</i> 95.3 ²	<u>60-70</u> 94.6 ²	<u>71-80</u> 94.7 ²	<u>81-90</u> 94.1 ²	<u>>90</u> 100.0 ²
57. Wang et al. (2011)	China (regional: Anhui province)	Revised 20-item UCLA Loneliness Scale (score: 20-80) * 20-34: mild loneliness → Not/mildly lonely 35-49: moderate loneliness → lonely 50-64: moderate-severe loneliness → lonely 65-80: severe loneliness → lonely	0.94	Not/mildly lonely Lonely	21.9 78.1 ²	/	/				
58. Wang et al. (2001)	Taiwan (regional, not specified)	20-item UCLA Loneliness Scale (version 3) (score: 20-80) * - 20-40 = low level of loneliness → Not/mildly lonely - 41-60 = medium level of loneliness → lonely - 61-80 = high level of loneliness → lonely	/	Not/mildly lonely Lonely	39.8 60.2 ²	/	/				
3-ITEM UCLA LONELINESS SCALE											
3. Carrasco et al. (2021)	Chile (regional: Santiago)	3-item UCLA Loneliness Scale * - without loneliness (answering "hardly ever" on all three questions) → not lonely - with loneliness (answering "some of the time" or "often" on at least one question) → lonely	0.84	Not/mildly lonely Lonely	55.0 45.0	<i>Women</i> 50.9	<i>Men</i> 61.8	<u>60-74</u> 54.1	<u>75+</u> 56.7		
5. Chokkanathan (2020)	India (regional, not specified)	3-item UCLA Loneliness Scale * (score 3-9) No cut-off mentioned Hardly lonely → not lonely Sometimes/often lonely → lonely	0.92	Not/mildly lonely Lonely	52.0 ² 48.0	/	/				
15. Groarke et al. (2020)	UK (national)	3-item UCLA Loneliness Scale (score 3-9) * 3-6: not lonely 7-9: lonely	0.83	Not/mildly lonely Lonely	96.7 3.3	/	/				
25. Lay-Yee et al. (2020)	New Zealand (national)	3-item UCLA Loneliness Scale * - 'never' (1), 'rarely' (2) or 'sometimes' (3): not lonely - 'often' (4) or 'very often' (5): lonely	/	Not/mildly lonely Lonely	91.0 ^{2,W} 9.0 ^{2,W}	/	/	<u>61-75</u> 91.6 ²	<u>76+</u> 89.8 ²		
								8.4	10.2		

30. O'Shea et al. (2021)	USA (national)	3-item UCLA Loneliness Scale (score: 3-9)★ 3-5: low loneliness → not lonely 6-9: high loneliness → lonely	/										60-64	65-69	70-74	75-79	80-84	≥85	
				Not/mildly lonely	72.8 ^{2,W}	/							66.5 ²	70.9 ²	74.6 ²	79.7 ²	80.3 ²	77.3 ²	
				Lonely	27.2 ^{2,W}								33.5	29.1	25.4	20.3	19.7	22.7	
35. Perissinotto et al. (2012)	United States (national)	3-item UCLA Loneliness Scale (3 items, with 3 possible answers: "hardly ever (or never)", "some of the time", "often")★ - not lonely = answering "hardly ever (or never)" to all 3 components - lonely = answering "some of the time" or "often" to any of the 3 items	/	Not/mildly lonely	56.8 ²	/													
				Lonely	43.2														
OTHER SHORTENED VERSIONS OF THE UCLA LONELINESS SCALE																			
20. Igbokwe et al. (2020)	Nigeria (regional: Kogi State)	8-item UCLA Loneliness Scale (ULS-8) (score: 8-32)★ ((1) Never, (2) Rarely, (3) Sometimes, and (4) Always) 8-23: not lonely 24-32: lonely	0.76			<i>Women</i>	<i>Men</i>	<i>65-69</i>	<i>70-74</i>	<i>75+</i>									
				Not/mildly lonely	78.2	74.5	81.3	78.0	76.0	81.8									
				Lonely	21.8	25.5	18.7	22.0	24.0	18.2									
26. Lee (2020)	Czech Republic (national)	4-item UCLA Loneliness Scale ★ No cut-off mentioned; categories: - "hardly ever or never lonely" → Not/mildly lonely - "some of the time lonely" → lonely - "often lonely" → lonely	0.805			<i>Women</i>	<i>Men</i>	<i>65-74</i>	<i>75-84</i>	<i>84+</i>									
				Not/mildly lonely	71	71	70	71	69	76									
				Lonely	29 ²	28 ²	31 ²	29 ²	32 ²	25 ²									
61. Zebhauser et al. (2014)	Germany (regional, Augsburg region)	12-item UCLA Loneliness Scale (German version) (score: 0-36)★ 0-20: not lonely 21-36: lonely	0.82			<i>Women</i>	<i>Men</i>	<i><75</i>	<i>75-85</i>	<i>>85</i>									
				Not/mildly lonely	79.5 ²	78 ²	81 ²	83.8 ²	78.4 ²	66.7 ²									
				Lonely	20.5 ²	22	19	16.2 ²	21.6 ²	33.3 ²									
11-ITEM DE JONG GIERVELD LONELINESS SCALE																			
7. Clark et al. (2021) ✗	Malta (national)	11-item De Jong Gierveld Loneliness Scale (score 0-11)★ - 0-2: not lonely → Not/mildly lonely - 3-8: moderately lonely → lonely - 9-11: severely or very severely lonely → lonely	/	Not/mildly lonely	40 ²	/													
				Lonely	60 ²														
24. La Grow et al. (2012)	New Zealand (national)	11-item De Jong Gierveld Loneliness Scale (score 0-11)★ - 0-2: not lonely → Not/mildly lonely - 3-8: moderately lonely → lonely - 9-11: severely lonely → lonely	/			<i>Women</i>	<i>Men</i>												
				Not/mildly lonely	48	52.7 ²	41.1 ²	/											
				Lonely	52 ²	47.3 ²	58.9 ²												

6-ITEM DE JONG GIERVELD LONELINESS SCALE								
6. Chow et al. (2021)	Hong Kong (regional: Wong Tai Sin, Kwun Tong, Island East, Kwai Tsing, Central and Island West, and Sha Tin)	6-item De Jong Gierveld Loneliness Scale (score 0-6) ⁺ - 0-1: not lonely → Not/mildly lonely - 2-4: <not named explicitly> → lonely - 5-6: high level of loneliness → lonely	0.76	Not/mildly lonely	8.4	/		/
				Lonely	91.7 ²			
16. Hansen et al. (2016)		6-item De Jong Gierveld Loneliness Scale (score: 0-6) [★] 0-2: not lonely 3-6: lonely				<i>Women</i>	<i>Men</i>	
	Norway (national)		/	Not/mildly lonely	71.2 ³	70.6 ³	71.7 ³	/
				Lonely	28.8 ³	29.4 ³	28.3 ³	
	Belgium (national)		/	Not/mildly lonely	58.77 ³	56.80 ³	60.80 ³	/
				Lonely	41.23 ³	43.20 ³	39.20 ³	
	Germany (national)		/	Not/mildly lonely	55.3 ³	54.10 ³	56.50 ³	/
				Lonely	44.7 ³	45.90 ³	43.50 ³	
	Poland (national)		/	Not/mildly lonely	50.52 ³	49.90 ³	51.50 ³	/
				Lonely	49.48 ³	50.10 ³	48.50 ³	
	France (national)		/	Not/mildly lonely	54.92 ³	52.50 ³	57.90 ³	/
				Lonely	45.08 ³	47.50 ³	42.10 ³	
	Czech Rep. (national)		/	Not/mildly lonely	31.03 ³	30.80 ³	31.30 ³	/
				Lonely	68.97 ³	69.20 ³	68.70 ³	
	Russia (national)		/	Not/mildly lonely	27.86 ³	27.10 ³	29.60 ³	/
				Lonely	72.14 ³	72.90 ³	70.40 ³	
	Lithuania (national)		/	Not/mildly lonely	22.93 ³	23.50 ³	22.30 ³	/
				Lonely	77.07 ³	76.50 ³	77.70 ³	
	Romania (national)		/	Not/mildly lonely	18.57 ³	17.70 ³	19.60 ³	/
		Lonely	81.43 ³	82.30 ³	80.40 ³			
Bulgaria (national)	/	Not/mildly lonely	20.25 ³	19.50 ³	21.00 ³	/		

	Georgia (national)		/	Lonely	79.75 ³	80.50 ³	79.00 ³	
				Not/mildly lonely	12.52 ³	11.80 ³	13.60 ³	/
				Lonely	87.48 ³	88.20 ³	86.40 ³	
17. Ho et al. (2021)	Hong Kong (national)	6-item De Jong Gierveld Loneliness Scale (score 0-6) * 0-2: nil or mild loneliness → Not/mildly lonely 3-4: moderate loneliness → lonely 5-6: severe loneliness → lonely	0.76	Not/mildly lonely	48.40 ³	/	/	/
				Lonely	51.60 ³			
50. van den Broek (2017) ✘	Japan (national)	6-item De Jong Gierveld Loneliness Scale (score: 0-6) * 0-1: not lonely 2-6: lonely	/			<u>Women</u>	<u>Men</u>	
				Not/mildly lonely	/	48 ^{1,2,W}	36 ^{1,2,W}	/
				Lonely	/	52 ^{1,W}	64 ^{1,W}	
1-ITEM QUESTION: Timeframe specified: e.g., How often do you feel lonely? (recent days, past week, ...)								
2. Bao et al. (2021) ✘	China (national)	1-item question: "How often did you feel lonely in recent days?" (1 = never, 2 = seldom, 3 = sometimes, 4 = often, 5 = always) * - 1 or 2: not lonely - 3, 4 or 5: lonely	NA	Not/mildly lonely	81.4 ²	/	/	/
				Lonely	18.6			
12. Fokkema et al. (2012) ✘	Denmark (national)	1-item question: 'Did you feel lonely much of the time during the past week?' * 'no': not lonely 'yes': lonely	NA	Not/mildly lonely	93.7 ²	/	/	/
				Lonely	6.3			
	Switzerland (national)		NA	Not/mildly lonely	92.0 ²	/	/	/
				Lonely	8.0			
	Netherlands (national)		NA	Not/mildly lonely	91.7 ²	/	/	/
				Lonely	8.3			
	Germany (national)		NA	Not/mildly lonely	91.5 ²	/	/	/
				Lonely	8.5			
	Sweden (national)		NA	Not/mildly lonely	89.9 ²	/	/	/
				Lonely	10.1			
	Austria (national)		NA	Not/mildly lonely	88.8 ²	/	/	/
				Lonely	11.2			
	Ireland (national)		NA	Not/mildly lonely	88.2 ²	/	/	/
				Lonely	11.8			

	Belgium (national)		NA	Not/mildly lonely	86.6 ²	/	/
				Lonely	13.4		
	Czech Rep. (national)		NA	Not/mildly lonely	84.4 ²	/	/
				Lonely	15.6		
	Greece (national)		NA	Not/mildly lonely	84.4 ²	/	/
				Lonely	15.6		
	Spain (national)		NA	Not/mildly lonely	84.1 ²	/	/
				Lonely	15.9		
	France (national)		NA	Not/mildly lonely	82.2 ²	/	/
				Lonely	17.8		
	Poland (national)		NA	Not/mildly lonely	80.0 ²	/	/
				Lonely	20.0		
	Italy (national)		NA	Not/mildly lonely	74.6 ²	/	/
				Lonely	25.4		
19. Huang et al. (2021)	Taiwan (national)	1-item question: "Did you feel lonely in the last week?" ("never," "rarely," "sometimes," or "often") ★ - "Lonely": "sometimes" or "often" - "Not lonely": "never" or "rarely"	NA	Not/mildly lonely	89.5	/	/
				Lonely	10.5		
23. Kearns et al. (2015)	UK (regional, focusing on people living in deprived areas across Glasgow)	1-item question: 'How often have you been feeling lonely over the last two weeks?' † - No loneliness: "rarely"/"never" → Not/mildly lonely - Occasional loneliness: "some of the time" → lonely - Frequent loneliness: "all of the time"/"often" → lonely	NA	Not/mildly lonely	60.8	/	/
				Lonely	39.3 ²		
27. Li et al. (2020)	UK (national)	1-item question: 'In the last 4 weeks, how often did you feel lonely?' (adapted from ELSA) † - "hardly ever or never lonely" → Not/mildly lonely - "some of the time lonely" → lonely - "often lonely" → lonely	NA	Not/mildly lonely	73.48	/	/
				Lonely	26.52 ²		

34. Peltzer et al. (2020)	Mexico (national)	1-item question: "Did you feel lonely for much of the day yesterday?" ★ - "no": not lonely - "yes": lonely	NA				<u>60-69</u>	<u>70+</u>
				Not/mildly lonely	84.4 ²	/	88.4 ²	82.3 ²
				Lonely	15.6 ²		11.6	17.7
36. Phaswana-Mafuya et al. (2017)	South Africa (national)	1-item question: "Did you feel lonely for much of the day yesterday?" ★ - no: not lonely - yes: lonely	NA				<u>60-69</u>	<u>70+</u>
				Not/mildly lonely	90.1 ²	/	91.6 ²	87.5 ²
				Lonely	9.9 ²		8.4	12.5
38. Rapolienė et al. (2021) ✕	Albania (national)	1-item question: "Please tell me how much of the time during the past week... you felt lonely?" ★ - not lonely: none or almost none of the time (1), some of the time (2) - lonely: most of the time (3), all or almost all of the time (4)	NA	Not/mildly lonely	71.88 ²	/	/	/
			Lonely	28.12				
	Bulgaria (national)		NA	Not/mildly lonely	73.98 ²	/	/	/
				Lonely	26.02			
	Czechia (national)		NA	Not/mildly lonely	76.35 ²	/	/	/
				Lonely	23.65			
	Estonia (national)		NA	Not/mildly lonely	83.72 ²	/	/	/
				Lonely	16.28			
	Hungary (national)		NA	Not/mildly lonely	75.9 ²	/	/	/
				Lonely	24.1			
	Lithuania (national)		NA	Not/mildly lonely	81.02 ²	/	/	/
				Lonely	18.98			
	Poland (national)		NA	Not/mildly lonely	81.87 ²	/	/	/
				Lonely	18.13			
	Russian Federation (national)		NA	Not/mildly lonely	68.29 ²	/	/	/
				Lonely	31.71			
	Slovenia (national)		NA	Not/mildly lonely	85.55 ²	/	/	/
				Lonely	14.45			
	Slovakia (national)		NA	Not/mildly lonely	83.38 ²	/	/	/
				Lonely	16.62			

	Ukraine (national)		NA	Not/mildly lonely	63.91 ²	/	/
	Lonely			36.09			
	Kosovo (national)		NA	Not/mildly lonely	81.46 ²	/	/
	Lonely			18.54			
	Belgium (national)		NA	Not/mildly lonely	86.23 ²	/	/
	Lonely			13.77			
	Switzerland (national)		NA	Not/mildly lonely	95.75 ²	/	/
	Lonely			4.25			
	Cyprus (national)		NA	Not/mildly lonely	81.86 ²	/	/
	Lonely			18.14			
	Germany (national)		NA	Not/mildly lonely	94.89 ²	/	/
	Lonely			5.11			
	Denmark (national)		NA	Not/mildly lonely	95.88 ²	/	/
	Lonely			4.12			
	Spain (national)		NA	Not/mildly lonely	87.87 ²	/	/
	Lonely			12.13			
	Finland (national)		NA	Not/mildly lonely	92.41 ²	/	/
	Lonely			7.59			
	France (national)		NA	Not/mildly lonely	81.46 ²	/	/
	Lonely			18.54			
United Kingdom (national)	NA	Not/mildly lonely	91.27 ²	/	/		
Lonely		8.73					
Ireland (national)	NA	Not/mildly lonely	94.71 ²	/	/		
Lonely		5.29					
Israel (national)	NA	Not/mildly lonely	87.11 ²	/	/		
Lonely		12.89					

	Iceland (national)		NA	Not/mildly lonely	97.5 ²	/	/
				Lonely	2.5		
	Italy (national)		NA	Not/mildly lonely	85.03 ²	/	/
				Lonely	14.97		
	Netherlands (national)		NA	Not/mildly lonely	92.48 ²	/	/
				Lonely	7.52		
	Norway (national)		NA	Not/mildly lonely	97.83 ²	/	/
				Lonely	2.17		
	Portugal (national)		NA	Not/mildly lonely	81.89 ²	/	/
				Lonely	18.11		
	Sweden (national)		NA	Not/mildly lonely	93.59 ²	/	/
				Lonely	6.41		
41. Srivastava et al. (2020) ✘	India (national)	1-item question: "Did you feel lonely for much of the day yesterday?" ★ - no: not lonely - yes: lonely	NA			<u>Women</u>	<u>Men</u>
				Not/mildly lonely	82.1 ²	79.7 ²	84.5 ²
				Lonely	17.9 ²	20.3	15.5
45. Sundström et al. (2009)	Austria (national)	1-item question: "How often have you experienced the feeling of loneliness over the last week?" † - Almost none of the time → Not/mildly lonely - Some of the time → lonely - Most of the time → lonely - Almost all the time → lonely	NA	Not/mildly lonely	54	/	/
				Lonely	46 ²		
	Belgium (national)		NA	Not/mildly lonely	58	/	/
				Lonely	41 ²		
	Denmark (national)		NA	Not/mildly lonely	75	/	/
				Lonely	25 ²		
	France (national)		NA	Not/mildly lonely	55	/	/
				Lonely	45 ²		
	Germany (national)		NA	Not/mildly lonely	63	/	/
				Lonely	37 ²		
	Greece (national)		NA	Not/mildly lonely	38	/	/

	Israel (national)		NA	Lonely	63 ²				
	Italy (national)		NA	Not/mildly lonely	52	/	/		
	Netherlands (national)		NA	Lonely	48 ²				
	Spain (national)		NA	Not/mildly lonely	53	/	/		
	Sweden (national)		NA	Lonely	47 ²				
	Switzerland (national)		NA	Not/mildly lonely	65	/	/		
			NA	Lonely	34 ²				
			NA	Not/mildly lonely	60	/	/		
			NA	Lonely	40 ²				
			NA	Not/mildly lonely	70	/	/		
			NA	Lonely	30 ²				
			NA	Not/mildly lonely	74	/	/		
			NA	Lonely	26 ²				
47. Theeke et al. (2010) ✘	USA (national)	1-item question: "Have you been feeling lonely for most of the past week?" ★ - "no": not lonely - "yes": lonely	NA	Not/mildly lonely	83.1	/	/		
				Lonely	16.9				
49. Torres et al. (2021)	Brazil (national)	1-item question: "In the past 30 days, how often did you feel alone/lonely?" + - hardly ever → Not/mildly lonely - some of the time → lonely - often → lonely	NA				<u>60-69</u>	<u>70-79</u>	<u>≥80</u>
				Not/mildly lonely	76.5 ²	/	79.4	73.6	68.9
				Lonely	23.5 ²		20.6 ²	26.4 ²	31.1 ²
53. Victor et al. (2012b) Δ	UK (national)	1-item question: self-rating of loneliness: "Using this card, please tell me how much of the time during the past week you felt lonely?" + - 'never lonely' → Not/mildly lonely - 'lonely some of the time' → lonely - 'lonely all or most of the time' → lonely	NA	Not/mildly lonely	74.2	/	/		
				Lonely	25.8 ²				
56. Vozikaki et al. (2018) ✘	Austria (national)	1-item question: "How often have you experienced the following feelings over the last week?: I felt lonely." ★ - 'almost none of the time' and 'some of the time' → not lonely	NA	Not/mildly lonely	88.1 ²	/	/		
	Belgium (national)		NA	Lonely	11.9				
			NA	Not/mildly lonely	87.8 ²	/	/		
				Lonely	12.2				

	Denmark (national)	- 'most of the time' and 'almost all of the time': severely lonely → lonely	NA	Not/mildly lonely	94.0 ²	/	/
				Lonely	6.0		
	France (national)		NA	Not/mildly lonely	86.8 ²	/	/
				Lonely	13.2		
	Germany (national)		NA	Not/mildly lonely	86.3 ²	/	/
				Lonely	13.7		
	Greece (national)		NA	Not/mildly lonely	73.9 ²	/	/
				Lonely	26.1		
	Italy (national)		NA	Not/mildly lonely	72.2 ²	/	/
			Lonely	27.8			
	Netherlands (national)	NA	Not/mildly lonely	89.5 ²	/	/	
			Lonely	10.5			
	Spain (national)	NA	Not/mildly lonely	86.2 ²	/	/	
			Lonely	13.8			
	Sweden (national)	NA	Not/mildly lonely	92.2 ²	/	/	
			Lonely	7.8			
	Switzerland (national)	NA	Not/mildly lonely	95.0 ²	/	/	
			Lonely	5.0			
59. Yang et al. (2011)	Bulgaria (national)	1-item question: "Using this card, please tell me how much of the time during the past week you felt lonely." ★ - Not lonely = 1 ('None or almost none of the time') or 2 ('Some of the time') - Frequently lonely: 3 ("Most of the time") or 4 ("All or almost all the time") → lonely	NA	Not/mildly lonely	81.1 ²	/	/
				Lonely	18.9		
	Hungary (national)		NA	Not/mildly lonely	78.9 ²	/	/
				Lonely	21.1		
	Latvia (national)		NA	Not/mildly lonely	81.2 ²	/	/
				Lonely	18.8		
	Poland (national)		NA	Not/mildly lonely	79.9 ²	/	/
				Lonely	20.1		

	Romania (national)		NA	Not/mildly lonely	81.2 ²	/	/
	Lonely			18.8			
	Russia (national)		NA	Not/mildly lonely	75.6 ²	/	/
	Lonely			24.4			
	Slovakia (national)		NA	Not/mildly lonely	80.4 ²	/	/
	Lonely			19.6			
	Ukraine (national)		NA	Not/mildly lonely	66.0 ²	/	/
	Lonely			34.0			
	Belgium (national)		NA	Not/mildly lonely	91.3 ²	/	/
	Lonely			8.7			
	Denmark (national)		NA	Not/mildly lonely	96.8 ²	/	/
	Lonely			3.2			
	Finland (national)		NA	Not/mildly lonely	93.9 ²	/	/
	Lonely			6.1			
	Germany (national)		NA	Not/mildly lonely	93.0 ²	/	/
	Lonely			7.0			
	Ireland (national)		NA	Not/mildly lonely	94.6 ²	/	/
	Lonely			5.4			
	Netherlands (national)		NA	Not/mildly lonely	94.0 ²	/	/
	Lonely			6.0			
Norway (national)	NA	Not/mildly lonely	95.0 ²	/	/		
Lonely		5.0					
Sweden (national)	NA	Not/mildly lonely	92.6 ²	/	/		
Lonely		7.4					
Switzerland (national)	NA	Not/mildly lonely	95.2 ²	/	/		
Lonely		4.8					

	United Kingdom (national)		NA	Not/mildly lonely	92.6 ²	/	/
	Austria (national)		NA	Not/mildly lonely	89.5 ²	/	/
	Cyprus (national)		NA	Not/mildly lonely	89.8 ²	/	/
	Estonia (national)		NA	Not/mildly lonely	86.0 ²	/	/
	France (national)		NA	Not/mildly lonely	88.6 ²	/	/
	Portugal (national)		NA	Not/mildly lonely	85.1 ²	/	/
	Slovenia (national)		NA	Not/mildly lonely	84.8 ²	/	/
	Spain (national)		NA	Not/mildly lonely	88.5 ²	/	/
				Lonely	7.4		
				Lonely	10.5		
				Lonely	10.2		
				Lonely	14.0		
				Lonely	11.4		
				Lonely	14.9		
				Lonely	15.2		
				Lonely	11.5		
1-ITEM QUESTION: No timeframe specified: e.g., Do you (ever) feel lonely?							
8. Dahlberg et al. (2018)	Sweden (national)	1-item question: 'Are you ever bothered by feelings of loneliness?'; 4 response categories * - almost never lonely → Not/mildly lonely - seldom lonely → Not/mildly lonely - often lonely → lonely - nearly always lonely → lonely	NA	Not/mildly lonely	87.5 ²	/	/
				Lonely	12.46 ²		
9. Dahlberg et al. (2015)	Sweden (national)	1-item question: 'Are you ever bothered by feelings of loneliness?'; 4 response categories, transformed into dichotomous variable * - rarely lonely ("seldom" or "almost never") → not lonely - frequently lonely ("nearly always" or "often") → lonely	NA			<u>Women</u>	<u>Men</u>
				Not/mildly lonely	92.84 ²	90.08 ²	97.32 ²
				Lonely	7.16	9.92	2.68
			NA			<u>Women</u>	<u>Men</u>
						/	/

11. Djukanović et al. (2014)	Sweden (national)	1-item question: 'Do you ever feel lonely?'; 4 response categories + - no, never → Not/mildly lonely - no, seldom → Not/mildly lonely - yes, sometimes → lonely - yes, often → lonely		Not/mildly lonely	72.5 ²	63.9 ^{1,2}	81.6 ^{1,2}	
				Lonely	27.5 ²	36.1 ^{1,2}	18.4 ^{1,2}	
13. Gao et al. (2021) ✕	Cuba (regional: Havana/ Matanzas)	1-item question: "Do you feel lonely?" ★ - "Yes, but mild to moderate intensity, infrequent or fleeting"/"yes and severe, frequent or persistent": lonely - "No": not lonely	NA	Not/mildly lonely	73.8 ²	/	/	/
				Lonely	26.2			
	Dominican Republic (regional: Santo Domingo)		NA	Not/mildly lonely	68.1 ²	/	/	/
				Lonely	31.9			
	Peru (regional: Lima, Canete Province)		NA	Not/mildly lonely	70.2 ²	/	/	/
				Lonely	29.8			
	Venezuela (regional: Caracas)		NA	Not/mildly lonely	75.3 ²	/	/	/
				Lonely	24.7			
	Mexico (regional: Mexico City, Morelos state)		NA	Not/mildly lonely	65.1 ²	/	/	/
				Lonely	34.9			
	Puerto Rico (regional: Bayamon)		NA	Not/mildly lonely	70.1 ²	/	/	/
				Lonely	29.9			
	China (regional: Xicheng, Daxing)		NA	Not/mildly lonely	97.1 ²	/	/	/
				Lonely	2.9			
India (regional: Chennai, Vellore)	NA	Not/mildly lonely	73.1 ²	/	/	/		
		Lonely	26.9					
14. Gibney et al. (2019) ✕	Ireland (national)	1-item question: "How often do you feel lonely?" + 0 = "hardly ever or never" → Not/mildly lonely 1 = "some of the time" → lonely	NA	Not/mildly lonely	74.7	/	/	/
				Lonely	25.3 ²			

		2 = "often" → lonely											
18. Holmén et al. (1992)	Sweden (regional: Kungsholmen parish)	1-item question: "Do you experience loneliness?" (4 answer categories) * - never → Not/mildly lonely - seldom → Not/mildly lonely - sometimes → lonely - often → lonely	NA				<i>Women</i>	<i>Men</i>	<u>75-79</u>	<u>80-84</u>	<u>85-89</u>	<u>90-94</u>	<u>95-101</u>
				Not/mildly lonely	62 ²	58 ²	73 ²	70 ²	65 ²	54 ²	44 ²	47 ²	
				Lonely	35 ²	38 ²	24 ²	29 ²	32 ²	42 ²	48 ²	50 ²	
28. Losada et al. (2012) ✕	Spain (national)	1-item question: "Do you find yourself feeling lonely?" * - 0: "almost never lonely" → Not/mildly lonely - 1: "sometimes lonely" → lonely - 2: "quite often lonely" → lonely	NA	Not/mildly lonely	76.9 ²	/		/					
				Lonely	23.1 ²								
32. Paúl et al. (2006)	UK (national)	1-item question: "Would you say that you (1) always feel lonely, (2) often feel lonely, (3) sometimes feel lonely, (4) or, never feel lonely"? * - "3" or "4": not lonely - "1" or "2": lonely	NA				<i>Women</i>	<i>Men</i>	<u>65-69</u>	<u>70-79</u>	<u>80+</u>		
				Not/mildly lonely	93 ²	92 ²	95 ²	97 ²	93 ²	87 ²			
				Lonely	7	8	5	3	7	13			
33. Paúl et al. (2009)	Portugal (national)	1-item question: "Would you say that you (1) always feel lonely, (2) often feel lonely, (3) sometimes feel lonely, (4) or, never feel lonely"? * - "3" or "4": not lonely - "1" or "2": lonely	NA						<u>65-74</u>	<u>75-84</u>	<u>85+</u>		
				Not/mildly lonely	81.3 ²	/		83.7 ²	79.1 ²	73.2 ²			
				Lonely	18.7 ²			16.3	20.9	26.8			
37. Rantakokko et al. (2014)	Finland (regional: Jyväskylä and Muurame)	1-item question: "Do you feel lonely?" * - not lonely: seldom or never - lonely: sometimes or often	NA	Not/mildly lonely	72 ²	/		/					
				Lonely	28								
39. Routasalo et al. (2006) Δ	Finland (national)	1-item question: "Do you suffer from loneliness?" (1: seldom or never, 2: sometimes, 3: often or always) * - "1": not lonely - "2" or "3": lonely	NA				<i>Women</i>	<i>Men</i>					
				Not/mildly lonely	60.6	56.9 ²	69.9 ²	/					
				Lonely	39.4	43.1 ²	30.1 ²						
40. Savikko et al. (2005)	Finland (national)	1-item question: "Do you suffer from loneliness?" * - 1: seldom or never → Not/mildly lonely - 2: sometimes → lonely - 3: often or always → lonely	NA				<i>Women</i>	<i>Men</i>	<u>≤79</u>	<u>80-89</u>	<u>≥90</u>		
				Not/mildly lonely	61 ¹	57 ¹	69 ¹	65 ¹	58 ¹	51 ¹			
				Lonely	39 ^{1,2}	43 ^{1,2}	31 ^{1,2}	35 ^{1,2}	42 ^{1,2}	49 ^{1,2}			

43. Stickley et al. (2015) ✘	Russia (regional: Moscow)	1-item question: 'How often do you feel lonely?' + - never → Not/mildly lonely - rarely → Not/mildly lonely - sometimes → lonely - often → lonely	NA	Not/mildly lonely	59.3 ²	/		/
				Lonely	40.7 ²			
44. Stickley et al. (2013)	Armenia (national)	1-item question: 'How often do you feel lonely?' ★ - not lonely: never/rarely/sometimes - lonely: often	NA	Not/mildly lonely	79.4 ²	/		/
	Azerbaijan (national)			Lonely	20.6			
			Belarus (national)	Not/mildly lonely	89.8 ²	/		/
	Lonely			10.2				
	Georgia (national)		Not/mildly lonely	79.7 ²	/		/	
			Lonely	20.3				
	Kazakhstan (national)		Not/mildly lonely	74.7 ²	/		/	
			Lonely	25.3				
	Moldova (national)		Not/mildly lonely	89.1 ²	/		/	
			Lonely	10.9				
	Russia (national)		Not/mildly lonely	65.1 ²	/		/	
			Lonely	34.9				
	Ukraine (national)		Not/mildly lonely	82.2 ²	/		/	
			Lonely	17.8				
	Kyrgyzstan (national)		Not/mildly lonely	77.0 ²	/		/	
			Lonely	23.0				
48. Tomstad et al. (2017)	Norway (regional, not specified)	1-item question: "Do you often feel lonely?" ★ - "no": not lonely - "yes": often lonely → lonely	NA			<u>Women</u>	<u>Men</u>	/
				Not/mildly lonely	88.4	84.6 ²	92.2 ²	
				Lonely	11.6	15.4 ²	7.8 ²	
52. Victor et al. (2012a) Δ	UK (national)		NA	Not/mildly lonely	61	/		/

		1-item question: self-rating of loneliness: 'Are you...': ⁺ - 'never lonely' → Not/mildly lonely - 'sometimes lonely' → lonely - 'often lonely' → lonely - 'always lonely' → lonely		Lonely	41 ²					
54. Victor et al. (2005) Δ	UK (national)	1-item question: self-rating of loneliness: 'Are you...': ⁺ - 'never lonely' → Not/mildly lonely - 'sometimes lonely' → lonely - 'often lonely' → lonely - 'always lonely' → lonely	NA	Not/mildly lonely Lonely	61 38 ²	/				
55. Victor et al. (2006) \times	UK (national)	1-item question: self-rating of loneliness: 'Are you...': ⁺ - 'never lonely' → Not/mildly lonely - 'sometimes lonely' → lonely - 'often lonely' → lonely - 'always lonely' → lonely	NA			<u>Women</u>	<u>Men</u>	<u>65-74</u>	<u>75-84</u>	<u>85+</u>
				Not/mildly lonely Lonely	61 38 ²	48 52 ^{1,2}	66 34 ^{1,2}	55 44 ²	49 51 ²	58 42 ²
60. Yang et al. (2008)	China (SSSE-total)	1-item question: "Do you feel lonely?" [★] - "no": not lonely - "hard to say": left out of the analyses - "yes": lonely	NA	Not/mildly lonely Lonely	77.9 15.6	/				
	China (SAP-total)	1-item question: "I often feel lonely." [★] - "no": not lonely - "hard to say": left out of the analyses - "yes": lonely	NA	Not/mildly lonely Lonely	57.8 29.6	/				
62. Zhang et al. (2018)	China (regional: Shandong province)	1-item question: "'I feel lonely'": 'never', 'rarely', 'sometimes' or 'always' [★] - 'Never': not lonely - 'Rarely'/'sometimes'/'always': lonely	NA			<u>Women</u>	<u>Men</u>			
				Not/mildly lonely Lonely	75.0 25.0	74.5 ² 25.5 ²	75.5 ² 24.5 ²	/		
COMBINATION OF DIFFERENT MEASUREMENT INSTRUMENTS										
29. Nicolaisen et al. (2014)	Norway (national)	29(1). 1-item question: 'Do you feel lonely?' ((1) Often, (2) Sometimes, (3) Seldom or (4) Never) [★] - Not lonely: "seldom" or "never" - Lonely ("with feelings of loneliness"): "sometimes" or "often"	NA	Not/mildly lonely Lonely	74.4 ² 25.6	/				
	Norway (national)	29(2). 6-item De Jong Gierveld Loneliness Scale (score: 0-6) [★] - 0-1: not lonely - 2-6: lonely ("with feelings of loneliness")	0.63	Not/mildly lonely Lonely	69.8 ² 30.2	/				

42. Steed et al. (2007)	Australia (regional: Perth)	1-item question: 'How often do you feel lonely?' + - never lonely → Not/mildly lonely - sometimes lonely → lonely - often lonely → lonely - always lonely → lonely	NA	Not/mildly lonely	61.5	/	/
				Lonely	38.5 ²		
	Australia (regional: Perth)	20-item UCLA Loneliness Scale (version 3) (score 20-80)	/	/	/	/	/
	Australia (regional: Perth)	11-item De Jong Gierveld Loneliness Scale (score 0-11) + - 0-2: not lonely → Not/mildly lonely - 3-8: moderately lonely → lonely - 9-10: severely lonely → lonely - 11: very severely lonely → lonely	/	Not/mildly lonely	52.0	/	/
				Lonely	48.0 ²		
51. Van Tilburg (2021)	The Netherlands (national)	Combination: * - 3 direct loneliness questions - emotional loneliness: 6 items (cfr. 11-item De Jong Gierveld Loneliness Scale) - social loneliness: 5 items (cfr. 11-item De Jong Gierveld Loneliness Scale) - existential loneliness: 7 items → 1 total loneliness prevalence rate	/	Not/mildly lonely	72 ²	/	/
				Lonely	28		

Legend

¹ Mentioned significance

² Self-calculated with available information

³ This percentage was re-calculated, due to the fact that the original loneliness percentages were calculated with other cut-offs as defined by De Jong Gierveld & van Tilburg (1999), who validated the De Jong Gierveld Loneliness Scale.

^w Population-weighted percentage

NA: Not applicable

/ : not mentioned

✗ not in meta-analyses as a result of quality appraisal

Δ not in meta-analyses because of double data

★ originally in the paper dichotomous

+ originally in the paper not dichotomous, own recalculation

Appendix 5. Description of the study characteristics of the included studies

Author	Year of publication	Year of data collection	Country of data collection	Sample							
				N (total)	N (loneliness question)	Response rate % (total)	Minimum age	% women loneliness sample	Type of sample	Type of data collection	Data source
1. Anil	2016	2015	India (regional: Bengaluru)	370	370	/	60	60.8	Not specified	Face-to-face	Own data collection
2. Bao et al. ✕	2021	2020	China (national)	590	590	/	50	/	Not random	Self-report	Own data collection
3. Carrasco et al.	2021	2013	Chile (regional: Santiago)	1217	1217	/	60	63	Random	Face-to-face	Own data collection
4. Cheng et al.	2015	2010	China (regional: Chizhou province)	730	730	97.33	60	55.5 ²	Random	Face-to-face	Own data collection
5. Chokkanathan	2020	/	India (regional, not specified)	901	897	97 ²	61	52.6	Random	Face-to-face	Own data collection
6. Chow et al.	2021	/	Hong Kong (regional: Wong Tai Sin, Kwun Tong, Island East, Kwai Tsing, Central and Island West, and Sha Tin)	143	143	/	65	54.5	Not random	Face-to-face	Own data collection
7. Clark et al. ✕	2021	2019	Malta (national)	/	/	/	65 ³	/	Random	CATI	Own data collection
8. Dahlberg et al.	2018	1992	Sweden (national)	537	466	95.4	77	59.4	Random	Face-to-face	SWEOLD ¹
9. Dahlberg et al.	2015	2004	Sweden (national)	613	587	87.3	70	61.8	Random	Telephone	SWEOLD ¹
10. Devkota et al.	2019	2018	Nepal (regional: ward no. 8, Gokarneshwor, Kathmandu, Nepal)	124	124	/	60	54.8	Not random	Face-to-face	Own data collection
11. Djukanović et al.	2014	/	Sweden (national)	6659	6659	67	65	52.0	Random	Self-report	Own data collection
12. Fokkema et al. ✕	2012	2006-2007	Denmark (national)	965	965	/	50	54.3	Random	CAPI	SHARE ¹ Wave 2
			Switzerland (national)	511	511	/	50	54.6	Random	CAPI	SHARE ¹ Wave 2
			Netherlands (national)	930	930	/	50	54.0	Random	CAPI	SHARE ¹ Wave 2

			Germany (national)	920	920	/	50	55.7	Random	CAPI	SHARE ¹ Wave 2
			Sweden (national)	1018	1018	/	50	52.5	Random	CAPI	SHARE ¹ Wave 2
			Austria (national)	517	517	/	50	57.3	Random	CAPI	SHARE ¹ Wave 2
			Ireland (national)	382	382	/	50	56.8	Random	CAPI	SHARE ¹ Wave 2
			Belgium (national)	1055	1055	/	50	56.3	Random	CAPI	SHARE ¹ Wave 2
			Czech Republic (national)	1117	1117	/	50	55.3	Random	CAPI	SHARE ¹ Wave 2
			Greece (national)	1037	1037	/	50	55.7	Random	CAPI	SHARE ¹ Wave 2
			Spain (national)	744	744	/	50	55.7	Random	CAPI	SHARE ¹ Wave 2
			France (national)	1090	1090	/	50	59.3	Random	CAPI	SHARE ¹ Wave 2
			Poland (national)	975	975	/	50	56.1	Random	CAPI	SHARE ¹ Wave 2
			Italy (national)	987	987	/	50	56.3	Random	CAPI	SHARE ¹ Wave 2
13. Gao et al. ✘	2021	2003-2007	Cuba (regional: Havana/Matanzas)	2944 ²	2897	/	65	64.9	Not specified	Face-to-face	10/66 DRG Project ¹
			Dominican Republic (regional: Santo Domingo)	2011 ²	2000	/	65	65.9	Not specified	Face-to-face	10/66 DRG Project ¹
			Peru (regional: Lima, Canete Province)	1905 ²	1884	/	65	60.9	Not specified	Face-to-face	10/66 DRG Project ¹
			Venezuela (regional: Caracas)	1965 ²	1944	/	65	63.8	Not specified	Face-to-face	10/66 DRG Project ¹
			Mexico (regional: Mexico City, Morelos state)	2003 ²	1992	/	65	63.3	Not specified	Face-to-face	10/66 DRG Project ¹
			Puerto Rico (regional: Bayamon)	2009 ²	1914	/	65	67.3	Not specified	Face-to-face	10/66 DRG Project ¹
			China (regional: Xicheng, Daxing)	2162 ²	2101	/	65	56.5	Not specified	Face-to-face	10/66 DRG Project ¹
			India (regional: Chennai, Vellore)	2004 ²	1953	/	65	56.0	Not specified	Face-to-face	10/66 DRG Project ¹
14. Gibney et al. ✘	2019	2016	Ireland (national)	10540	10540	56	55	52.7	Random	CAPI	Healthy and Positive Ageing Initiative Age friendly Cities and Counties Survey
15. Groarke et al.	2020	2020	UK (national)	61 ²	61 ²	/	65 ³	/	Not random	Self-report	Own data collection: COVID-19 Psychological Wellbeing Study
16. Hansen et al.	2016		Norway (national)	3684	3684	/	60	49.5	Random	CATI	GGs ¹

		2004-2011	Belgium (national)	1729	1729	/	60	50.8	Random	Face-to-face	GGS ¹
			Germany (national)	2647	2647	/	60	50.1	Random	Face-to-face	GGS ¹
			Poland (national)	6228	6228	/	60	61.4	Random	Face-to-face	GGS ¹
			France (national)	2546	2546	/	60	55.1	Random	Face-to-face	GGS ¹
			Czech Rep. (national)	2294	2294	/	60	54.8	Random	Face-to-face	GGS ¹
			Russia (national)	2821	2821	/	60	69.5	Random	Face-to-face	GGS ¹
			Lithuania (national)	2781	2781	/	60	52.9	Random	Face-to-face	GGS ¹
			Romania (national)	3508	3508	/	60	54.4	Random	Face-to-face	GGS ¹
			Bulgaria (national)	2494	2494	/	60	49.9	Random	Face-to-face	GGS ¹
			Georgia (national)	2277	2277	/	60	60.2	Random	Face-to-face	GGS ¹
17. Ho et al.	2021	2019	Hong Kong (national)	380	380	/	60	51.3	Not random	Face-to-face	Own data collection
18. Holmén et al.	1992	/	Sweden (regional: Kungsholmen parish)	1803	1725	/	75	75	Not random	Face-to-face	Kungsholmen project 'Ageing and dementia'
19. Huang et al.	2021	2015	Taiwan (national)	4588	4096	/	65	/	Random	Face-to-face	TLISA ¹
20. Igbokwe et al.	2020	2019	Nigeria (regional: Kogi State)	1104	1099	/	65	45.6	Not random	Face-to-face	Own data collection
21. Jia et al.	2020	2016-2017	China (regional: Shandong province)	1658	1658	94.27	60	50.7	Not random	Face-to-face	Own data collection
22. Joseph et al.	2020	/	India (regional: Annaikattucherry, Sorancherry and Amudurmedu villages, Thiruvallur district)	300	300	/	60	56.7	Not random	Face-to-face	Own data collection
23. Kearns et al.	2015	2011	UK (regional, focusing on people living in deprived areas across Glasgow)	/	951	/	65 ³	/	Random	Face-to-face	Own data collection
24. La Grow et al.	2012	/	New Zealand (national)	412	332	59	65	57.0	Random	Self-report	Own data collection
25. Lay-Yee et al.	2020	2017	New Zealand (national)	376 ²	376 ²	/	61 ³	/	Random	Self-report	NZSAS ¹
26. Lee	2020	2015	Czech Republic (national)	2129	2129	/	65	54.0	Random	Face-to-face	SHARE ¹ Wave 6

27. Li et al.	2020	2020	UK (national)	/	3993 ²	/	65 ³	/	Not specified	Self-report	Understanding Society COVID-19 Study (as part of UKHLS ¹)
28. Losada et al. ✘	2012	/	Spain (regional: Salamanca)	199	199	/	65	61.3 ²	Random	Face-to-face	Own data collection
29. Nicolaisen et al.	2014	2007-2008	Norway (national)	2299	2299	/	65 ³	/	Not specified	CATI	LOGG study ¹
30. O'Shea et al.	2021	2020	USA (national)	5263 ²	5263 ²	/	60 ³	/	Not random	Self-report	COVID-19 Coping Study
31. Öztürk Haney et al.	2017	2013	Turkey (regional: Izmir)	160	160	/	60	47.5 ²	Not random	Face-to-face	Own data collection
32. Paúl et al.	2006	2000-2001	UK (national)	999	999	77	65	48.2	Random	Face-to-face	ESRC-MRC HSRC Quality of Life Survey (Omnibus) ¹
33. Paúl et al.	2009	/	Portugal (national)	/	932 ²	/	65 ³	/	Random	Face-to-face	Own data collection (DIA Project ¹)
34. Peltzer et al.	2020	2014-2015	Mexico (national)	2918 ²	2918 ²	/	60 ³	/	Random	Face-to-face	SAGE ¹
35. Perissinotto et al.	2012	2002	United States (national)	1604	1604	/	60	59.4	Random	Face-to-face	U.S. HRS ¹
36. Phaswana-Mafuya et al.	2017	2008	South Africa (national)	2062 ²	2062 ²	/	60 ³	/	Random	Self-report	SAGE Wave 1 ¹
37. Rantakokko et al.	2014	/	Finland (regional: Jyväskylä and Muurame)	848	847	/	75	62	Random	Face-to-face	LISPE ¹
38. Rapolienè et al. ✘	2021	2012	Albania (national)	192	192	/	65	/	Random	Face-to-face	ESS ¹ Round 6
			Bulgaria (national)	711	711	/	65	/	Random	Face-to-face	ESS ¹ Round 6
			Czechia (national)	389	389	/	65	/	Random	Face-to-face	ESS ¹ Round 6
			Estonia (national)	602	602	/	65	/	Random	Face-to-face	ESS ¹ Round 6
			Hungary (national)	390	390	/	65	/	Random	Face-to-face	ESS ¹ Round 6
			Lithuania (national)	511	511	/	65	/	Random	Face-to-face	ESS ¹ Round 6
			Poland (national)	342	342	/	65	/	Random	Face-to-face	ESS ¹ Round 6
			Russian Federation (national)	432	432	/	65	/	Random	Face-to-face	ESS ¹ Round 6
			Slovenia (national)	263	263	/	65	/	Random	Face-to-face	ESS ¹ Round 6
			Slovakia (national)	373	373	/	65	/	Random	Face-to-face	ESS ¹ Round 6
			Ukraine (national)	471	471	/	65	/	Random	Face-to-face	ESS ¹ Round 6
			Kosovo (national)	151	151	/	65	/	Random	Face-to-face	ESS ¹ Round 6
Belgium (national)	385	385	/	65	/	Random	Face-to-face	ESS ¹ Round 6			

			Switzerland (national)	306	306	/	65	/	Random	Face-to-face	ESS ¹ Round 6
			Cyprus (national)	237	237	/	65	/	Random	Face-to-face	ESS ¹ Round 6
			Germany (national)	665	665	/	65	/	Random	Face-to-face	ESS ¹ Round 6
			Denmark (national)	388	388	/	65	/	Random	Face-to-face	ESS ¹ Round 6
			Spain (national)	371	371	/	65	/	Random	Face-to-face	ESS ¹ Round 6
			Finland (national)	540	540	/	65	/	Random	Face-to-face	ESS ¹ Round 6
			France (national)	534	534	/	65	/	Random	Face-to-face	ESS ¹ Round 6
			United Kingdom (national)	664	664	/	65	/	Random	Face-to-face	ESS ¹ Round 6
			Ireland (national)	529	529	/	65	/	Random	Face-to-face	ESS ¹ Round 6
			Israel (national)	450	450	/	65	/	Random	Face-to-face	ESS ¹ Round 6
			Iceland (national)	120	120	/	65	/	Random	Face-to-face	ESS ¹ Round 6
			Italy (national)	187	187	/	65	/	Random	Face-to-face	ESS ¹ Round 6
			Netherlands (national)	479	479	/	65	/	Random	Face-to-face	ESS ¹ Round 6
			Norway (national)	277	277	/	65	/	Random	Face-to-face	ESS ¹ Round 6
			Portugal (national)	646	646	/	65	/	Random	Face-to-face	ESS ¹ Round 6
			Sweden (national)	437	437	/	65	/	Random	Face-to-face	ESS ¹ Round 6
39. Routasalo et al. Δ	2006	/	Finland (national)	4113	3915 ²	72	75	69.4	Random	Self-report	Own data collection
40. Savikko et al.	2005	2002	Finland (national)	4113	3915	71.8	75	69	Random	Self-report	Own data collection
41. Srivastava et al. ✘	2020	2007-2008	India (national)	6532	6532	/	50	49.4	Not specified	Self-report	SAGE ¹
42. Steed et al.	2007	/	Australia (regional: Perth)	353	353	64.5 ²	65	47.3	Random	Self-report	Own data collection
43. Stickley et al. ✘	2015	2004	Russia (regional: Moscow)	317 ²	317 ²	/	60 ³	/	Random	Face-to-face	Moscow Health Survey
44. Stickley et al.	2013	2010	Armenia (national)	256 ²	256 ²	/	60 ³	/	Random	Face-to-face	HITT study ¹
			Azerbaijan (national)	176 ²	176 ²	/	60 ³	/	Random	Face-to-face	HITT study ¹
			Belarus (national)	376 ²	376 ²	/	60 ³	/	Random	Face-to-face	HITT study ¹
			Georgia (national)	528 ²	528 ²	/	60 ³	/	Random	Face-to-face	HITT study ¹
			Kazakhstan (national)	266 ²	266 ²	/	60 ³	/	Random	Face-to-face	HITT study ¹
			Moldova (national)	355 ²	355 ²	/	60 ³	/	Random	Face-to-face	HITT study ¹
			Russia (national)	702 ²	702 ²	/	60 ³	/	Random	Face-to-face	HITT study ¹
		Ukraine (national)	554 ²	554 ²	/	60 ³	/	Random	Face-to-face	HITT study ¹	
	2011	Kyrgyzstan (national)	200 ²	200 ²	/	60 ³	/	Random	Face-to-face	HITT study ¹	

45. Sundström et al.	2009	2004-2006	Austria (national)	900	765	/	65	60	Random	CAPI	SHARE ¹ Wave 1
			Belgium (national)	1752	1145	/	65	53	Random	CAPI	SHARE ¹ Wave 1
			Denmark (national)	699	479	/	65	55	Random	CAPI	SHARE ¹ Wave 1
			France (national)	1425	482	/	65	55	Random	CAPI	SHARE ¹ Wave 1
			Germany (national)	1372	846	/	65	52	Random	CAPI	SHARE ¹ Wave 1
			Greece (national)	1230	845	/	65	57	Random	CAPI	SHARE ¹ Wave 1
			Israel (national)	1159	708	/	65	50	Random	CAPI	SHARE ¹ Wave 1
			Italy (national)	1166	648	/	65	52	Random	CAPI	SHARE ¹ Wave 1
			Netherlands (national)	1172	791	/	65	51	Random	CAPI	SHARE ¹ Wave 1
			Spain (national)	1274	813	/	65	58	Random	CAPI	SHARE ¹ Wave 1
			Sweden (national)	1408	949	/	65	50	Random	CAPI	SHARE ¹ Wave 1
Switzerland (national)	455	316	/	65	51	Random	CAPI	SHARE ¹ Wave 1			
46. Susheela et al.	2018	2015	India (regional: Anjaru, Moodubelle and Kudi, Udupi Taluk)	600	600	/	60	57.8	Not random	Self-report	Own data collection
47. Theeke et al. ✘	2010	2002	USA (national)	13812	13812	/	50	61.3	Random	Telephone	U.S. HRS ¹
48. Tomstad et al.	2017	2010	Norway (regional, not specified)	2052	2052	34.0	65	50.6	Random	Self-report	Own data collection
49. Torres et al.	2021	2020	Brazil (national)	2268 ²	2268 ²	/	60 ³	/	Random	Telephone	Own data collection
50. van den Broek ✘	2017	2005	Japan (national)	4272	4057	/	50	/	Random	Self-report	GGs ¹ (Japanese version)
51. Van Tilburg	2021	2020-2021	The Netherlands (national)	404	404	/	74	53.0	Random	Combination: - face to face: n=91 - telephone: n=181 - self-report: written (n=85) + digital (n=47)	LASA ¹
52. Victor et al. (a) Δ	2012	2000-2001	UK (national)	999	999	77	65	52	Random	Face-to-face	ESRC-MRC HSRC Quality of Life Survey (Omnibus) ¹
53. Victor et al. (b) Δ	2012	2006	UK (national)	690	690	/	60 ³	/	Random	Face-to-face	ESS ¹
54. Victor et al. Δ	2005	2000-2001	UK (national)	999	999	77	65	/	Random	Face-to-face	ESRC-MRC HSRC Quality of Life Survey (Omnibus) ¹
55. Victor et al. ✘	2006	2000-2001	UK (national)	999	999	77	65	53	Random	Face-to-face	ESRC-MRC HSRC Quality of Life Survey (Omnibus) ¹

56. Vozikaki et al. ✘	2018	2004-2005	Austria (national)	/	/	/	65	/	Random	CAPI	SHARE ¹ Wave 1
			Belgium (national)	/	/	/	65	/	Random	CAPI	SHARE ¹ Wave 1
			Denmark (national)	/	/	/	65	/	Random	CAPI	SHARE ¹ Wave 1
			France (national)	/	/	/	65	/	Random	CAPI	SHARE ¹ Wave 1
			Germany (national)	/	/	/	65	/	Random	CAPI	SHARE ¹ Wave 1
			Greece (national)	/	/	/	65	/	Random	CAPI	SHARE ¹ Wave 1
			Italy (national)	/	/	/	65	/	Random	CAPI	SHARE ¹ Wave 1
			Netherlands (national)	/	/	/	65	/	Random	CAPI	SHARE ¹ Wave 1
			Spain (national)	/	/	/	65	/	Random	CAPI	SHARE ¹ Wave 1
			Sweden (national)	/	/	/	65	/	Random	CAPI	SHARE ¹ Wave 1
Switzerland (national)	/	/	/	65	/	Random	CAPI	SHARE ¹ Wave 1			
57. Wang et al.	2011	2009	China (regional: Anhui province)	5652	5652	91.56	60	38.3	Random	Face-to-face	Own data collection
58. Wang et al.	2001	/	Taiwan (regional, not specified)	201	201	93	65	57.2	Not random	Face-to-face	Own data collection
59. Yang et al.	2011	2006-2007	Bulgaria (national)	412 ²	412 ²	/	60 ³	/	Random	Face-to-face	ESS ¹ Round 3
			Hungary (national)	450 ²	450 ²	/	60 ³	/	Random	Face-to-face	ESS ¹ Round 3
			Latvia (national)	471 ²	471 ²	/	60 ³	/	Random	Face-to-face	ESS ¹ Round 3
			Poland (national)	387 ²	387 ²	/	60 ³	/	Random	Face-to-face	ESS ¹ Round 3
			Romania (national)	618 ²	618 ²	/	60 ³	/	Random	Face-to-face	ESS ¹ Round 3
			Russia (national)	556 ²	556 ²	/	60 ³	/	Random	Face-to-face	ESS ¹ Round 3
			Slovakia (national)	387 ²	387 ²	/	60 ³	/	Random	Face-to-face	ESS ¹ Round 3
			Ukraine (national)	620 ²	620 ²	/	60 ³	/	Random	Face-to-face	ESS ¹ Round 3
			Belgium (national)	459 ²	459 ²	/	60 ³	/	Random	Face-to-face	ESS ¹ Round 3
			Denmark (national)	483 ²	483 ²	/	60 ³	/	Random	Face-to-face	ESS ¹ Round 3
			Finland (national)	609 ²	609 ²	/	60 ³	/	Random	Face-to-face	ESS ¹ Round 3
			Germany (national)	860 ²	860 ²	/	60 ³	/	Random	Face-to-face	ESS ¹ Round 3
			Ireland (national)	452 ²	452 ²	/	60 ³	/	Random	Face-to-face	ESS ¹ Round 3
			Netherlands (national)	480 ²	480 ²	/	60 ³	/	Random	Face-to-face	ESS ¹ Round 3
			Norway (national)	417 ²	417 ²	/	60 ³	/	Random	Face-to-face	ESS ¹ Round 3
			Sweden (national)	538 ²	538 ²	/	60 ³	/	Random	Face-to-face	ESS ¹ Round 3
			Switzerland (national)	496 ²	496 ²	/	60 ³	/	Random	Face-to-face	ESS ¹ Round 3
United Kingdom (national)	685 ²	685 ²	/	60 ³	/	Random	Face-to-face	ESS ¹ Round 3			
Austria (national)	395 ²	395 ²	/	60 ³	/	Random	Face-to-face	ESS ¹ Round 3			

			Cyprus (national)	207 ²	207 ²	/	60 ³	/	Random	Face-to-face	ESS ¹ Round 3
			Estonia (national)	458 ²	458 ²	/	60 ³	/	Random	Face-to-face	ESS ¹ Round 3
			France (national)	453 ²	453 ²	/	60 ³	/	Random	Face-to-face	ESS ¹ Round 3
			Portugal (national)	693 ²	693 ²	/	60 ³	/	Random	Face-to-face	ESS ¹ Round 3
			Slovenia (national)	404 ²	404 ²	/	60 ³	/	Random	Face-to-face	ESS ¹ Round 3
			Spain (national)	501 ²	501 ²	/	60 ³	/	Random	Face-to-face	ESS ¹ Round 3
60. Yang et al. (1)	2008	1992	China (national-urban)	9889	20083 ²	/	60	52.3 ²	Not specified	Face-to-face	SSSE ¹
			China (national-rural)	10194							
60. Yang et al. (2)	2008	2000	China (national-urban)	10171	19857 ²	/	60	47.1 ²	Not specified	Face-to-face	SAP ¹
			China (national-rural)	10084							
61. Zebhauser et al.	2014	2008-2009	Germany (regional: Augsburg region)	1079	1022	69.0	64	49.5	Random	Face-to-face	KORA-Age Study ¹
62. Zhang et al.	2018	2017	China (regional: Shandong province)	5514	5514	/	60	57.1	Random	Face-to-face	Own data collection (Survey of the Shandong Elderly Family Health Service)

Legend

✘ not in meta-analyses as a result of quality appraisal

Δ not in meta-analyses because of double data

¹ SWEOLD = Swedish Panel Study of Living Conditions of the Oldest Old / SHARE = Survey of Health, Ageing and Retirement in Europe / DRG = Dementia Research Group project / GGS = Generations and Gender Survey / TLSA = Taiwan Longitudinal Survey on Aging / NZSAS = New Zealand Social Attitudes Survey / UKHLS = UK Household Longitudinal Study / LOGG = Life Course, Generation, and Gender / ESRC-MRC HSRC = Economic and Social Research Council-Medical Research Council, Human Sciences Research Council / DIA = extensive Portuguese project on active ageing / SAGE = Study on Global Ageing and Adult Health / U.S. HRS = U.S. Health and Retirement Study / LISPE = Life-Space Mobility in Old Age / ESS = European Social Survey / HITT = Health in Times of Transition / LASA = Longitudinal Aging Study Amsterdam / SSSE = Survey of the Support System for the Elderly in China / SAP = Survey of the Aged Population in China / KORA = KOoperativen Gesundheitsforschung in der Region Augsburg

² Self-calculated with available information

³ Also younger age categories came across in the article, but this was the minimum age of the age category in which people younger than 60 are not incorporated

Appendix 6. Forest plots - Prevalence of loneliness for prevalence percentages measured using a single-item question, the 20-item UCLA loneliness scale, a shortened version of the UCLA loneliness scale, and the De Jong Gierveld Loneliness Scale

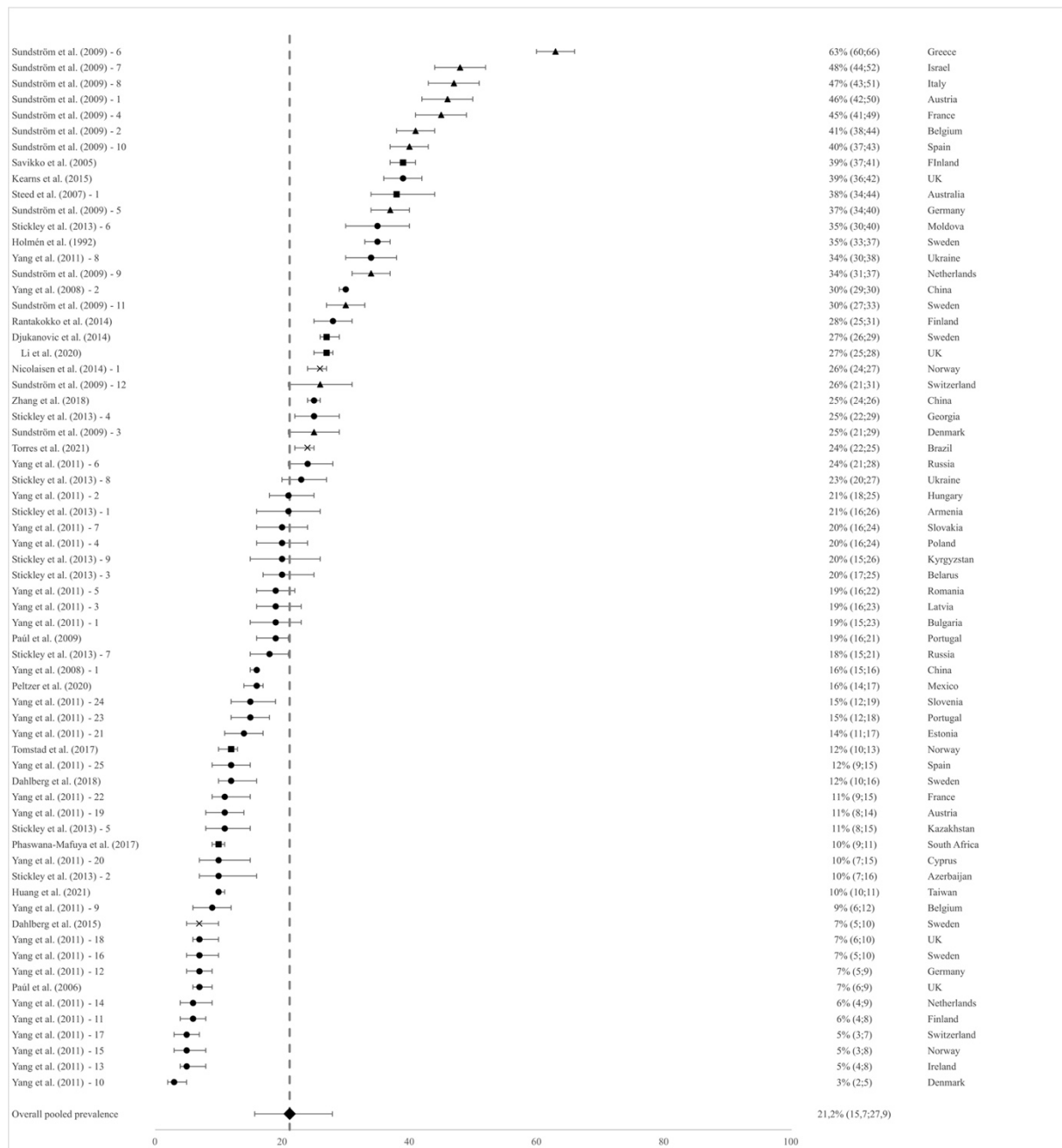


Figure A. Prevalence of loneliness for prevalence percentages measured using a single-item question

×: Telephone + CATI / ■: Self-report (postal, written, online/digital) / ●: Face-to-face /

▲: CAPI

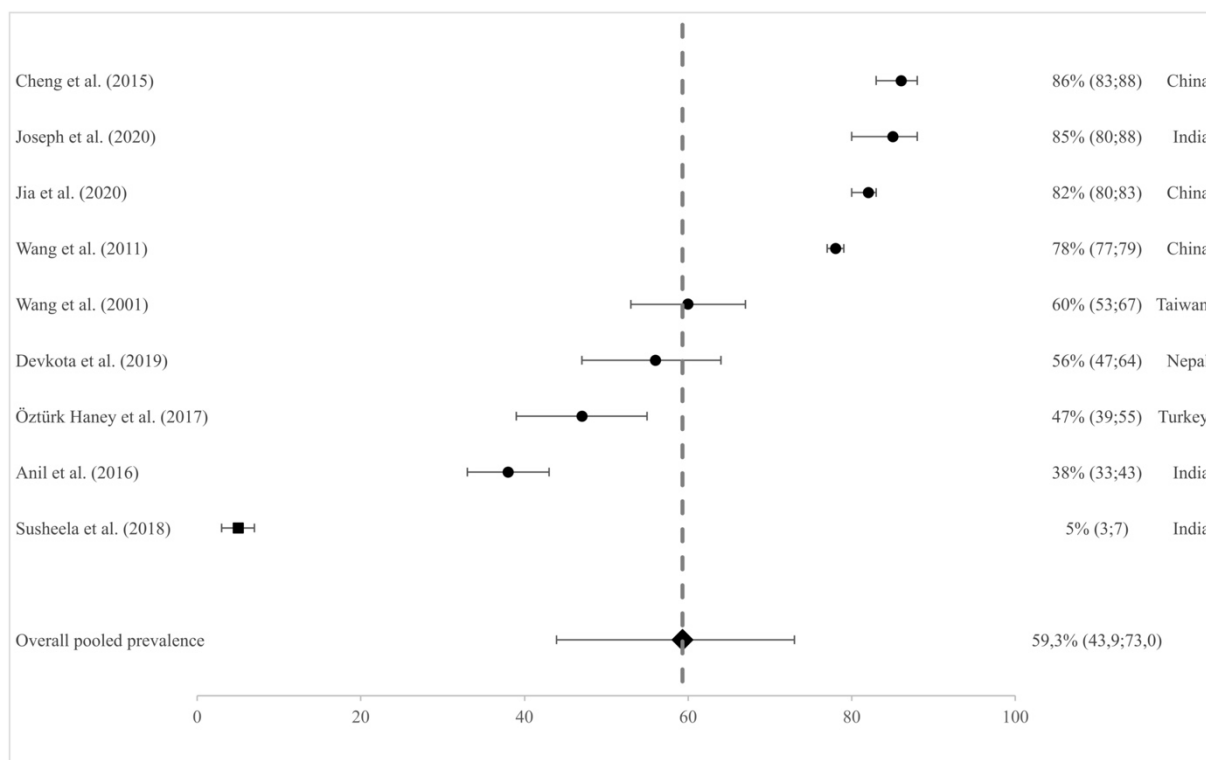


Figure B. Prevalence of loneliness for prevalence percentages measured using the 20-item UCLA loneliness scale

■: Self-report (postal, written, online/digital) / ●: Face-to-face

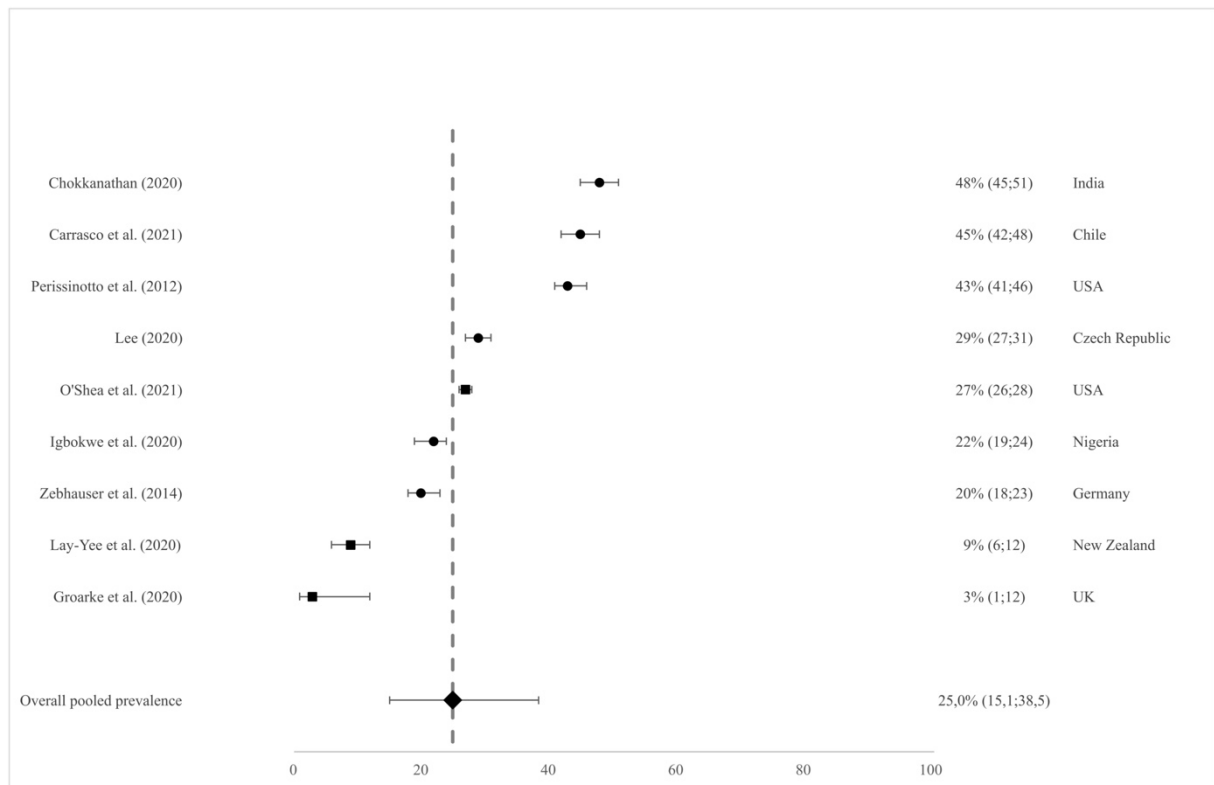


Figure C. Prevalence of loneliness for prevalence percentages measured using a shortened version of the UCLA loneliness scale

■: Self-report (postal, written, online/digital) / ●: Face-to-face

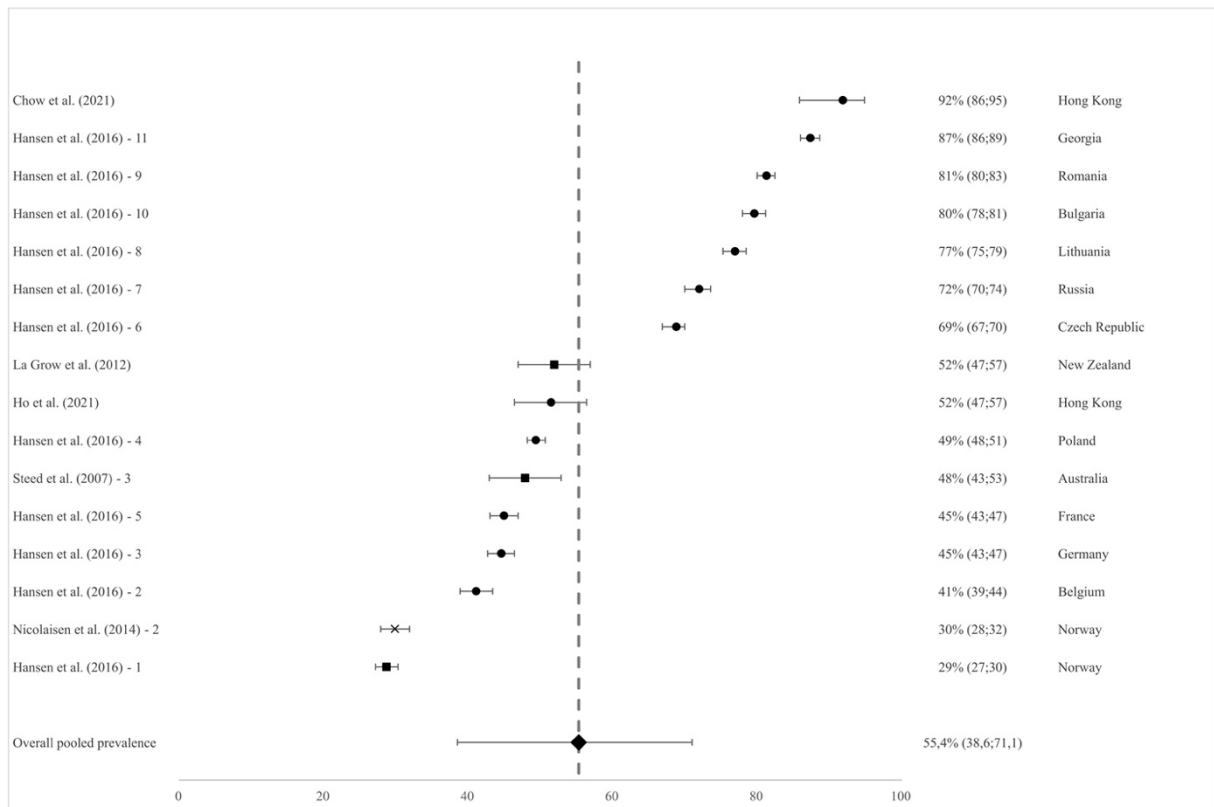


Figure D. Prevalence of loneliness for prevalence percentages measured using the De Jong Gierveld Loneliness Scale

x: Telephone + CATI / ■: Self-report (postal, written, online/digital) / ●: Face-to-face

CHAPTER 4.

Life stories of voluntarily childless older people:
a retrospective view on their reasons and
experiences

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CHAPTER 4. Life stories of voluntarily childless older people: a retrospective view on their reasons and experiences.

Abstract

This article investigates the reasons for and experiences of voluntary childlessness throughout the life course. Thirteen voluntarily childless people aged 60 years and older (Belgium) were interviewed using the McAdams approach (2005). Four profiles were derived from the reasons given for voluntary childlessness: the “liberated careerist,” the “social critic,” the “acquiescent partner,” and “voluntarily childless because of life course circumstances.” Results further indicate that older people experience feelings of acceptance, loss (missing familiarity with current trends, being helped, and children’s company), and relief concerning their voluntary childlessness. Moreover, they rarely seem to regret their choice. The discussion indicates the existence of voluntary childlessness among older people, a phenomenon sometimes questioned in the existing scientific literature. As part of a diverse target group, these older adults each have their personal reasons and experiences regarding childlessness.

Keywords

life course, qualitative, voluntary childlessness, older people, life story interview

1. Evolutions and Trends Regarding Permanent Childlessness

Permanent childlessness in Europe has risen in recent decades, especially since the 1970s (Fiori et al., 2017; Kreyenfeld & Konietzka, 2017). In western European countries (such as Belgium, France, Ireland, the Netherlands, England and Wales), trends in childlessness follow an asymmetric U-shaped pattern: around 25% of the women remained childless in the first quarter of the twentieth century, followed by a decline to 10-14% of women born in the 1940s (because of the Baby Boom around the 1960s (Van Bavel, 2014)). From the 1960s birth cohorts onward, we see that number went up again and 16-19% of women in these countries never had children (Kreyenfeld & Konietzka, 2017). For later birth cohorts, the trend towards increasing childlessness in western Europe has generally been stabilizing until now (Kreyenfeld & Konietzka, 2017). There are no current exact statistics on childlessness for Belgium, but according to Statbel, the Belgian statistical office, the crude birth rate decreased in 2019 for the seventh year in a row and stood then at 10.5 per mille (Statbel, 2019). In the United States, the percentage of women without children by the end of their reproductive years doubled from about 10 to 20% between the mid-1970s and the mid-2000s (Kreyenfeld & Konietzka, 2017). Since then, there was a small decline to around 15% in 2010-2012. For other countries such as Canada and Australia, there are similar trends because they also had the same Baby Boom in the 1950s and 1960s (McDonald & Belanger, 2016). Historically, overall fertility was higher in Canada than in Australia, but since the 1960s, the fertility rates of the most recent birth cohorts are higher in Australia, possibly because of the stronger Australian economy and family policy (McDonald & Belanger, 2016).

Despite the ups and downs in childlessness levels, there is thus an increase of childlessness since the 1960s. Fiori et al. (2017) indicate that this increase in childlessness is mainly the result of two trends. On the one hand, there is a decrease in fertility because women are increasingly postponing having children. On the other hand, there is a greater social acceptance of childlessness due to changing norms and values. Since the 1960s, the possibility to choose whether or not to have children has also led to an upward trend in the number of people who voluntarily opt for childlessness (Kreyenfeld & Konietzka, 2017). A result of this increase in childlessness is the increased number of older adults who are voluntarily childless.

Although childlessness is often used in a dichotomized way (having children or not), research points out that reasons for childlessness vary greatly. Deindl and Brandt (2017) state that "childlessness may, for example, result from a free decision or it might be the involuntary

consequence of not having a partner or due to biological problems" (p. 1545), making a distinction between voluntary and involuntary childlessness. With regard to the reasons for voluntary childlessness in general, there are several reasons for childlessness among younger people that are expected to be reflected in this study as well: one may prefer a career to a family (Ireland, 1993; Rybińska & Morgan, 2019), the choice may have been made in agreement with the partner (Riggs & Bartholomaeus, 2016; Veevers, 1980), one may be skeptical about society, resulting in a preference not to have children (Ireland, 1993; Smith et al., 2020), or there may be external circumstances leading to the permanent postponement of children (Rowlands & Lee, 2006; Stahnke et al., 2020).

Many studies on older people refer to infertility as the main cause of childlessness (Dykstra & Wagner, 2007). More recent research, however, acknowledges that childless older people form a heterogeneous group with various reasons for being childless (Wenger et al., 2007), both voluntary and involuntary. Tanturri and Mencarini (2008) state that such "a careful evaluation of the reasons behind voluntary childlessness is clearly relevant in a context where the consensus in the literature is that almost all women want at least one child" (p. 56). Women born since the 1950s and 1960s have perceived less pressure to have children as religiosity has declined in Western countries (Kreyenfeld & Konietzka, 2017; Tanturri & Mencarini, 2008). Moreover, other interests, such as careers or leisure activities, are considered more important than children (Kreyenfeld & Konietzka, 2017; Tanturri & Mencarini, 2008).

As the number of voluntarily childless older adults is expected to increase in the coming years (Fiori et al., 2017), this research is interested in the life stories of voluntarily childless older people, in particular, in the reasons voluntarily childless older people had for making this choice and their experience of childlessness during the life course.

2. Defining Voluntary Childlessness

There is no clear consensus on the meaning of childlessness in the existing literature. Dykstra and Hagestad (2007), for example, define the childless as "those who have no living biological or adoptive children" (pp. 1295-1296). According to them, those who only have stepchildren or foster children are also considered childless, while Fiori et al. (2017) consider people who only have stepchildren as not childless. Moreover, people can also be defined as childless if their children predecease them (Dykstra & Hagestad, 2007). However, Dykstra and Hagestad (2007) argue that this group is very similar to parents in terms of reasoning because they have experienced what it is like to be a parent. In trying to overcome these

discussion points, researchers attempt to define voluntary and involuntary childlessness. Conner and Stith (2014) describe voluntarily childless people as “those who do not desire to have children” (p. 205), and Dykstra and Hagestad (2007) describe this group as people who did not want children, who were too busy with other things, or had interests other than having children. According to them, involuntary childlessness is mainly applicable in a medical-biological context, especially when fertility problems occur (Dykstra & Hagestad, 2007). Some studies mention a third category, the so-called postponers (Dykstra & Liefbroer, 1998; Peterson, 2015), who can be seen as inadvertently childless. This third group refers to women who postpone having children for career, education, and lifestyle reasons, which ultimately limits their chance of having children.

There have always been older childless adults. However, the question remains as to whether a distinction between voluntary and involuntary childlessness is interesting. Older adults grew up with different norms and values, so looking at their reasons for childlessness from a contemporary perspective must be done very carefully (Dykstra & Hagestad, 2007). Young people today for example sometimes doubt their choice to remain childless (Ahmadi et al., 2019), or already experienced a stigma at an early age as a result of their voluntary childlessness (Ashburn-Nardo, 2017). Also the fear of regret in the future sometimes plays a role in the decision-making process (Parlak & Tekin, 2020). Therefore, it is interesting to examine how older people look back on their voluntary childlessness, to determine whether the assumptions or fear of younger generations are correct.

Even in today’s older age cohorts, there were already pioneers in making individual decisions, who therefore attached more importance to education and work than to parenthood (Hagestad & Call, 2007). Especially among women, there is generally a strong positive relationship between education and childlessness (Keizer et al., 2008).

3. Theories and Concepts Explaining Voluntary Childlessness

A common theory in this context is the “choice biography” of the German sociologist Ulrich Beck, as opposed to the “normal biography” (Keizer et al., 2008). Since the 1970s, people have had more opportunities to make individual choices, and childlessness has increasingly been seen as a deliberate individual choice, in part due to the availability of contraceptives (Dykstra & Hagestad, 2007; Peterson, 2015). This tendency is in line with Hakim’s preference theory (1998), in which women increasingly follow their personal preferences without being

stigmatized. Their decisions affect their desire to have children. Hakim's theory arose from the idea that, from the mid-1960s onwards, contraceptives gave women more independent control over their own lives. Since then, women have been able to choose between career and motherhood or a combination of both (Hakim, 1998).

Peterson's freedom versus risk discourse (2015) is another way of looking at voluntary childlessness. People who choose not to have children can consider this as a freedom, wherein autonomy and independence predominate. Following the risk discourse, they see children as a barrier to their personal development (Peterson, 2015).

Finally, not only personal reasons but also context can play a role in choosing childlessness. Factors such as cultural differences (Gibney et al., 2017; Peterson, 2015) and the historical context (Hagestad & Call, 2007; Koropecj-Cox & Call, 2007) can explain the choice of childlessness. Voluntary childlessness is more common in countries with a highly developed welfare state, such as Sweden (Peterson, 2015) or Norway (Gibney et al., 2017). Modernization and emancipation have led to strong gender equality in Sweden, making it easier to accept voluntary childlessness (Peterson, 2015). Also, in the Norwegian welfare state, children are no longer seen as so-called insurance for old age (Gibney et al., 2017). Historically, events such as the Second World War and the Great Depression could have had a negative impact on the number of children (Hagestad & Call, 2007). Koropecj-Cox and Call (2007) add that the generation of older people who were children during the Second World War have more children than the generation before. However, Dykstra and Hagestad (2007) point out that, from the 1970s onwards, due to the importance of Beck's choice biography, more and more people were able to choose childlessness. The result was that having children was no longer a foregone conclusion.

In conclusion, a review of the relevant literature indicates that voluntary childlessness among older people has not been widely investigated. Most studies deal either with childlessness in general among older people or with voluntary childlessness in general, but not both in combination. There is still a great deal of uncertainty about the existence of voluntary childlessness among older people. The circumstances in which older people grew up differ from those of younger age cohorts, and the question remains as to whether a voluntary choice of childlessness was possible at that time (Dykstra & Hagestad, 2007). The perception of one's own childlessness also determines a great deal, since the specific reasons for childlessness also determine the description that people give to their own childlessness (Connidis & McMullin, 1996). This research, therefore, focuses on the specific target group of voluntarily childless older people. Three major components are researched:

1. How do voluntarily childless older people perceive their life course (including their future life course)?
2. What reasons did voluntarily childless older people have for not opting for children when they were younger?
3. How do voluntarily childless older people experience their childlessness throughout their lives?

4. Method

4.1. Participants

The participants in this qualitative research were 13 voluntarily childless people, born between 1935 and 1958, living in Flanders or Brussels (Belgium). All participants, six men and seven women, have Belgian nationality. Participants were married (1), living together (4), widowed (5), divorced (1), or single (2). Eleven participants were retired while two were still at work. Eleven participants lived at home, and two lived in a residential care center. All participants spoke Dutch, which is the first author's native language (and it was the first author who conducted the interviews).

In terms of inclusion criteria, the older participants had to be voluntarily childless. We followed the delineation of Conner and Stith (2014), who describe voluntarily childless people as "those who do not desire to have children" (p. 205) and thus chose not to have children for various reasons, exclusive of involuntarily childless. Although voluntary childlessness in the narrow sense implies a well-considered choice of childlessness, the so-called postponers (Dykstra & Liefbroer, 1998; Peterson, 2015) were also included in the data collection. Operationally this meant that the inclusion criteria were: (1) the childlessness of the participants could not be attributed to medical-biological causes (e.g., fertility problems) and (2) they perceived themselves as "voluntarily childless."

In this study, 8 participants considered their childlessness as a result of their own choice, and 5 of them postponed having children for career, education, and lifestyle reasons, which ultimately limited their chance of having children. Despite this differentiation, participants from both categories considered themselves as 'voluntarily childless'.

4.2. Interview Protocol

McAdams' life story approach (2005) was used to interview each participant. Life stories have previously been used as a research method in discussions of personal matters, for example, among financially excluded older adults (e.g., Van Regenmortel et al., 2019). The life story method was considered appropriate for interviewing voluntarily childless older people because the participants were encouraged to talk about personal matters (Van Regenmortel et al., 2019). In these life stories, the focus was, on the one hand, on the meanings that people assign to their lives, and, on the other hand, on the life course as a psychosocial construct reflecting personal convictions, values, and traditions in society (McAdams, 2005). During the life story interviews, each participant was given the time to tell their life story. The beginning of each interview focused on the participants' actual life story, asking them to consider their own life as a book and divide this book into chapters (between two and seven for practical reasons). After reviewing the chapters of their life, we discussed the reasons for their childlessness and the corresponding experiences throughout their lives. There was also a hypothetical section in each interview: if the participant had not been childless, what aspects of their lives would be different? Finally, the participants were asked to look ahead by adding a future chapter to their life story. The main questions asked during the interviews are as follows:

1. Suppose you had to divide your life into chapters, just like a book. Into which chapters would you divide your life? What would the titles of these chapters be? Describe the chapters of your life story.
2. Why do you not have children?
3. Tell me something about how you experienced your life without children. Was the experience different across the different chapters of your life?
4. If you had children, would your life have been different?
5. You have already described your chapters and the important scenes of your life story. Please describe how you see the next chapter in your life. What does your future chapter consist of?

4.3. Procedures

The interviews were conducted between November 2018 and April 2019 and lasted on average 1hr 57min; the shortest interview lasted 1hr 26 min and the longest 2hr 35min. To reach participants, the personal network of the first author was consulted. Several organizations working with older people also sourced interviewees (e.g., via newsletter or Facebook). Fifty recruitment posters were distributed throughout Flanders and Brussels (e.g.,

in residential care centers, cultural centers, community centers, and local service centers), and the snowball method was used. When a potentially interested participant contacted the first author (via email or telephone), the aim of the research and the eligibility of the participant (e.g., voluntary childlessness) were discussed. Then, the information letter was sent by email so that each participant had the opportunity to ask questions in advance or to choose not to participate in the study. When the participant did not have an email address, the first author visited the participant to personally deliver the information letter with some explanations. Each participant was free to choose where and when the interview would be conducted. Twelve interviews took place in the home environment (at home or in the participant's residential care center), and one interview was conducted at the university, at the request of the participant involved. At the start of the interview, each participant signed an informed consent form, and the structure and purpose of the interview were briefly discussed before the actual interview.

4.4. Analyses

During the analysis procedure, all interviews were transcribed verbatim and anonymized. The MAXQDA analysis program was used to analyze the data. A thematic analysis was executed to explore themes such as the reasons and the experiences related to voluntary childlessness. Thematic analysis is "a method for identifying, analysing and reporting patterns (themes) within data" (Braun & Clarke, 2006, p. 79). The reasons for voluntary childlessness were analyzed inductively. In the inductive analysis of the reasons, three steps (Kaiser & Presmeg, 2019) were followed: (1) open coding (i.e., all possible answers to the question about the reasons for childlessness were indicated with the corresponding label); (2) axial coding, to relate codes to each other (e.g., "reducing the ecological footprint" and "the fear of overpopulation" fitted within the label "environment"); (3) selective coding (i.e., to derive a number of typologies of voluntarily childless older people from their reasons to remain childless, different labels from the previous steps were linked with each other in order to arrive at four profiles). For the experiences, the analysis started with a deductive approach. Some labels were determined in advance, based on the literature, for example, "regret" (Wenger et al., 2007), "acceptance" (Dykstra & Hagestad, 2007), and "loss" (Rowland, 2007).

The results section includes quotations to support the findings. These quotations have been translated from Dutch to English, and their expression was clarified. The first author, who also followed a course on Academic English, was responsible for these translations, and the translations have been reviewed by English language editing services.

5. Results

5.1. How Voluntarily Childless Older People Experience their Life Course

The interviews for this study were conducted using the McAdams' life story approach (McAdams, 2005). An overview of the results is presented in table 1 below, which will be discussed in more detail further on.

Table 1. Overview of the 13 participants of this study

Participant	Demographics			Life story		Profile each participant belongs the most to*
	Age	Gender (M/F/X)	Partnership	Number of chapters	Categories? (chronological / themes)	
1	68	F	Divorced	6	Chronological	1
2	67	M	Divorced	7	Chronological	2
3	70	M	Divorced	4	Chronological	3
4	83	F	Widowed	3	Themes	1
5	61	M	Single	6	Chronological	3
6	72	M	Cohabiting	4	Chronological	4
7	62	F	Cohabiting	6	Chronological	1
8	84	F	Single	5	Chronological	4
9	71	M	Widowed	5	Chronological	3
10	62	M	Single	7	Chronological	2
11	67	F	Married	7	Chronological	4
12	82	F	Widowed	5	Chronological	4
13	77	F	Widowed	6	Chronological	1

* 1 = liberated careerist, 2 = social critic, 3 = acquiescent partner, 4 = voluntarily childless because of life course circumstances

First, each participant was asked to divide their life into a number of chapters with a description of each chapter and the reason(s) for choosing this specific subdivision. The various chapters reflected their life story up to the time of the interview.

Almost all participants chose to divide their lives chronologically. Moreover, the division among these participants was quite similar: most of the participants started with their youth in the first chapter, followed by a chapter about secondary school, and sometimes university studies. For many participants, these first chapters were followed by the so-called adult life. This period often consisted of two, three, or more chapters. Some participants categorized their lives based on their careers (different jobs, for example), different residences, or the number of relationships they had. For many participants, the final chapter was the retirement chapter, where participants indicated that they were living their lives at their own pace after the end of their careers. One participant divided her life into three main themes, namely "work," "holidays," and "sports." By dividing life into themes, events from the entire life course eventually emerged.

5.2. Reasons for Being Voluntarily Childless: Four Profiles Derived

The analysis resulted in four profiles of voluntarily childless older people: "the liberated careerist," "the social critic," "the acquiescent partner," and "voluntarily childless because of life course circumstances."

The first profile is the so-called liberated careerist. Although men can also prioritize their careers over a family life, in our participant group, only women gave explicitly their careers as a reason. These participants never wanted to stay at home and take care of the children while their husbands provided the family income. In other words, maintaining independence from their partners was an important motivation. These participants expressed the importance of the period in which they were born. They mentioned that they grew up in a period characterized by the availability of contraception and the emergence of feminism, giving them an increasingly critical view of society. One participant, for example, was voluntarily sterilized at a young age and said the following:

I absolutely wanted to continue working; there was no way that I would stay at home as a mother.... Just, yes, a free woman, and yes, feminism, I am from that period.
(woman, 68 years old)

The liberated careerists were often characterized by the absence of the sense of being a parent (cf. the sense of motherhood). They said they did not experience the feeling of longing to have biological children and to take care of them. One participant even indicated that the relationship with her husband might not have lasted if he had wanted children.

A second profile distinguished is the social critic. Those in this category of voluntarily childless older people had typically developed specific socio-critical ideas from an early age, which later contributed to their childlessness. The most common concerns were about ecology, climate, overpopulation, global warming, politics, and events such as wars and famines, as well as their consequences. The following statement explains this:

Now, the toughest ecological footprint you can make on this world is, in my opinion, having a child. I know that what I'm saying may be very controversial, but every descendant is someone who is going to pollute again. Due to the fact that I don't have any descendants, I didn't participate in that part of the pollution of the planet.
(man, 67 years old)

These participants saw themselves as rebels, in the sense that they sometimes had ideas that could seem controversial. These social critics also took issue with people who have children without considering the consequences of having a child. Their critical view of society even made them anxious about the fact that something bad might happen to their own child.

The acquiescent partner is a third type of voluntarily childless older people. They ascribed their childlessness largely to their partner's initial choice, with which they agreed. The partner's reasons for remaining childless varied. In the interviews, the partners themselves were voluntarily childless from an early age, though in some cases a pregnancy would have entailed too many health risks.

A final, broader category of voluntarily childless older people covers the whole of life course circumstances. These older people experienced situations throughout their lives that led to the choice of childlessness. Advice from others, events in their youth, or particular life choices they made reinforced the idea of remaining childless. They differ from the acquiescent partner in that, to a certain extent, the life course circumstances choice was that of the older person themselves, while acquiescent partners made the choice with their partners. Some examples of this fourth profile are explained in the following quotations:

So in primary school, I had, um, good friends and their parents were divorced.... But a divorce at the time affected the children. The children were judged for that, very much so.... And, I was like, "I don't want to see my children making choices." (man, 61 years old)

It's always the right time, in the right place, it's just what it is in general, and so, I don't think I've met the right man in the right place. (woman, 67 years old)

Other events, such as having a grandfather who advised against having children or making the choice of monastic life, were also circumstances that negated the wish to have children.

5.3. Experiences of Being Voluntarily Childless

The participants were asked about their experience of voluntary childlessness. The main responses were acceptance, loss, regret, and relief. In table 2 below, the most mentioned experiences are shown for every participant, as well as the demographics and the profile they belong to the most. It is interesting to note that these experiences do not seem to depend on the profile to which the older person belongs (no trend is visible). This means that the feelings older people experience, might depend on the individual personality of each older person, and not on the profile they belong to.

Table 2. Overview of the 13 participants and their mentioned experiences

Participant	Demographics			Profile each participant belongs the most to*	Mentioned experience			
	Age	Gender (M/F/X)	Partnership		Acceptance	Loss	Relief	Regret
1	68	F	Divorced	1		X	X	
2	67	M	Divorced	2		X	X	
3	70	M	Divorced	3	X	X	X	
4	83	F	Widowed	1		X	X	X
5	61	M	Single	3		X	X	
6	72	M	Cohabiting	4		X	X	
7	62	F	Cohabiting	1			X	
8	84	F	Single	4	X			
9	71	M	Widowed	3	X	X	X	
10	62	M	Single	2	X	X	X	
11	67	F	Married	4	X		X	
12	82	F	Widowed	4	X	X	X	
13	77	F	Widowed	1	X	X		

* 1 = liberated careerist, 2 = social critic, 3 = acquiescent partner, 4 = voluntarily childless because of life course circumstances

The first feeling that some participants expressed was a feeling of acceptance, namely the feeling that, after an initial period of doubt and coping with the stigma of voluntary childlessness, they were convinced that childlessness was the right choice for them. These participants embraced their childlessness more and more throughout their lives, and happily accept their current situation.

Among some participants, a sense of acceptance was accompanied by a sense of loss associated with voluntary childlessness (namely missing some familiarity with current trends, missing being helped, and missing the company of children). Although the choice of childlessness was voluntary, some participants still experienced gaps in their lives. The loss referred, for example, to lack of familiarity with the world of today's younger generations,

such as recent evolutions in technology or the educational sector. A participant explained this as follows:

Everything about education, I'm not sure about that, also about study choices and so on, that's one point. Then everything that, um... has to do with IT, I'm very sure that children would have kept me more up to date. (man, 61 years old)

Not receiving help (e.g., to go shopping) was also sometimes cited as something lacking, although several participants added that this should not be a reason to have children. Missing the company of children was also a factor. This includes not having someone with mental or physical similarities, not being able to transfer their knowledge, insights, and skills (i.e., a lack of generativity), and the occasional lack of company and the network of friends that children tend to have. One participant explained this as follows:

On the other hand, you don't have that coziness either. When my sister's children come over, you feel more like having a family, a feeling you don't have at other moments. (man, 62 years old)

Nevertheless, many participants reported filling the possible gap due to their childlessness with other activities or persons. Some participants, for example, filled their time without children by engaging in other activities, such as working, playing sports, or traveling. Sometimes, other young people in the participant's immediate vicinity, such as foster children, stepchildren, nephews, nieces, godchildren, or the children of friends, performed the children's role. However, this substitution was often only partial, mainly because the participants were not the parents of these children. This means that the parental role did not belong to them.

In addition to acceptance and loss, participants also talked about the feeling of not having any regrets. Many participants agreed on this aspect: they did not regret choosing a life without children. One of the participants indicated that at the beginning she regretted a little that she had made this choice, but this feeling quickly passed away. The following participant never experienced a sense of motherhood, and therefore she did not regret her choice to remain childless:

I've never regretted that we don't have children, because I've always said, and I still often say this now, the older I got or am getting, the more important it is, I think, that we don't have children. (woman, 62 years old)

Besides lack of regret, some participants also explicitly mentioned a sense of relief. This relief was often a result of not experiencing the possible misery that children could have brought (due to illness, poor school results, puberty issues, or difficulties in later life).

The hypothetical question of how their life would have been with children proved difficult to answer for most participants, despite some having been in close contact with children (e.g., foster children, stepchildren, godchildren). Some female participants said they would have been a proud mother, but their careers would still play an important role, whether adapted to a life with children or not. Also, several participants suspected that their social network might have been more extensive, through contact with the parents of their children's friends.

Some participants mentioned that they would have passed on to their children some of their personal values, norms, and lifestyle. They would have encouraged them to take an interest in sports, to choose a career in youth work, not to smoke, or they would have taught them to drive. Of course, these values and norms were strongly related to the interests of each participant. In any case, all participants agreed that having children would undeniably have had a significant impact on their lives.

During the interviews, the question of whether the participants had ever considered having children was discussed. The answers varied: some participants firmly answered no, while others admitted that they had considered having children of their own.

5.4. Vision of Future Life Course

Each participant was asked to add one more chapter to their life story to highlight their vision of the future. Themes covered by the participants were: health and care, financial prospects, and anticipation of the deaths of people around them.

Health was the first theme for many participants in their chapter on the future. Participants wished to enjoy their lives with the best possible health and, where possible, with their partners. Usually, they no longer had any big plans or dreams, although, in some cases, travel was still a realistic option. Some participants were a little concerned about the future. Often these fears were related to their view of aging and the additional need for care because they had no children on which to rely. A female participant, for example, linked her concerns to whether or not she regretted her choice of childlessness. At the time of the interview, she had no regrets about her decision. However, she indicated that the absence of urgent health problems played an important role in her attitude. If the need for care were to become pressing, she believed that a sense of regret could still arise:

As long as you're in good health, you're active, and you don't have any problems, then you don't think about anything, right? And as long as you have your partner. But it's after that; maybe I won't feel this way in ten years' time? (woman, 67 years old)

However, several participants indicated that they were quite independent and that they wanted to burden as few people as possible when the time came that they needed care. That is why a number of participants had already made the necessary arrangements for a Physician-assisted Death¹ to be a real possibility when the need for care became too urgent. Formal care was also an option for some participants, but only to a limited extent (unless the participant was already living in a residential care center).

Having sufficient financial resources was sometimes a second concern. For example, one participant was worried about what would happen to his property after his death because he did not have children who would inherit it. Although this participant did have stepchildren, he was not married to his current partner, and Belgian law does not consider the stepchildren to be *his* children. As he explains here:

My biggest concern, that was, I have... I'm not really impecunious. I have a nice house. I have some money. I have a pension and all of it, but what will happen when I die?
(man, 67 years old)

Lastly, the fear of losing people also played a role for some participants, as the following quotation makes clear:

That's the worst thing about getting old, isn't it, seeing all those people you love disappear and have to miss them, yeah.... But yes, that's life, isn't it? (woman, 82 years old)

6. Discussion

This study used the life story approach of McAdams (2005) to examine the life stories of voluntarily childless older people. The focus was on the reasons for their voluntary childlessness and their experiences of childlessness throughout their life course.

First, concerning the life story, the interviewer requested the participants to divide their lives into chapters. Almost all participants divided their lives chronologically into chapters, but a division into themes was also possible. The fact that most participants divided their life story in different chapters following a similar pattern, i.e. in (often chronological) chapters with a

¹ In Belgium, a Physician-assisted Death is legally allowed for patients in a state that, medically, has no prospect of improvement (Cohen-Almagor & Ely, 2018).

clear starting and ending point (new job, new place of residence, new partner), can be explained by the fact that human lives consist of a series of events and circumstances which, although specific, are all part of archetypal experiences common to every human being. Atkinson (2001) calls this an 'innate blueprint', and refers to the idea that telling a life story in this way is characteristic of human nature, as part of a timeless and universal context. Nevertheless, there are studies, such as the one of Van Regenmortel (2017), that show that older people might also compose their life stories following different (and thus not similar) patterns. Much depends on the interview guidelines given by the interviewer, the context and the older person who was interviewed.

Second, regarding reasons for childlessness, four profiles of voluntarily childless older people can be distinguished from the data. Nevertheless, these profiles and their meaning are not completely new: preferring a career to a family life (Ireland, 1993; Rybińska & Morgan, 2019), not following the norm by rejecting fixed gender roles (Ireland, 1993) and having a critical view on society (Smith et al., 2020), having a partner who would rather not have children (Riggs & Bartholomaeus, 2016; Veevers, 1980) and, due to circumstances, finding it too late to have children (Rowlands & Lee, 2006; Stahnke et al., 2020) were already discussed in older and new existing research on voluntary childlessness (in general, not only among older adults).

The first profile discussed in this study is the liberated careerist. This profile describes women who did not wish to stay at home and take care of children while their husbands provided the family income. In earlier studies, Ireland (1993) and recently Rybińska and Morgan (2019) described a similar profile with resembling characteristics. A period effect partly explains this profile (Kowske et al., 2010, p. 268); the rise of feminism and the increasing availability of contraception made it possible for women to prioritize their careers. On the one hand, these findings accord with Hakim's (1998) preference theory, which indicates that women are increasingly able to follow their personal preferences (including having children or not); on the other hand, they accord with Beck's choice biography (Keizer et al., 2008), in which people have more opportunities to make individual choices.

The second profile is the social critic. This type of voluntarily childless older person looks critically at society from an early age, including in the field of ecology. According to them, the world in which we live is not ideal for raising children because of problems concerning ecology, climate, overpopulation, global warming, politics, and events such as wars and famines. These older people want to avoid the responsibility that comes with caring for a child. All these insights fit within the so-called risk discourse, in which humanitarian and ecological risks can also play a role (Moore, 2017; Peterson, 2015). It also matches with a similar profile description discussed by Smith et al. (2020), albeit among younger men.

The third profile is the acquiescent partner. Characteristics of this profile were already mentioned in 1980 by Veevers (1980), but also in more recent research by Riggs and Bartholomaeus (2016). These older people attribute their choice of childlessness to their partner, who, in their opinion, took the initial decision. However, they agreed with this choice, and their acquiescence increased throughout their lives. Lee and Zvonkovic (2014) talk about an evolution from agreement to acceptance when choosing voluntary childlessness, with the emphasis on the couple that makes the decision, and not on one of the two partners. Although acquiescent partners can sometimes make it seem that the decision was entirely their partner's, it is often the case that the voluntary choice to remain childless comes from both partners (Lee & Zvonkovic, 2014).

Finally, the fourth profile covers the broader scope of the life course circumstances that have led to voluntary childlessness (i.e. voluntarily childless because of life course circumstances). Also Rowlands and Lee (2006) and Stahnke et al. (2020) indicated that circumstances in youth, advice from a close relative, or particular life choices can strongly influence the choice to remain childless. Connidis and McMullin (1996) prefer to distinguish between childlessness as a choice and childlessness due to circumstances, as opposed to the dichotomy of voluntary versus involuntary childlessness. This shows that it is not always easy to state clearly whether childlessness is voluntary or involuntary, especially when triggered by a life event (Dykstra, 2009; Dykstra & Liefbroer, 1998).

Third, regarding experiences, voluntarily childless older people experience feelings ranging from acceptance to a feeling of (no) regret, relief, and loss (namely missing some familiarity with current trends, missing being helped, and missing children's company). Missing the company of children was recognized as early as 1980: in Baum and Cope's study, voluntarily childless people expressed that not having children means missing their company. Nevertheless, voluntarily childless older people do not often regret their choice to remain childless, and some even explicitly experience a feeling of relief. Young people today indicate that they sometimes doubt whether they would remain childless or not (Ahmadi et al., 2019), but the experiences of the older generations make clear that the fear of regret experienced by young people today when choosing for childlessness (Parlak & Tekin, 2020) is thus not always appropriate. Jeffries and Konnert furthermore indicated in 2002 that "those who do not perceive their childlessness as a choice are more likely to express regret, and these regrets are typically more serious and sustained" (p. 103). The interviews also showed that older people's lives could have been different if they had children, for example, in terms of the size of their social networks (parents of their children's friends). The gap that may arise as a result of childlessness is sometimes partly filled, either by other (sometimes young) people in their immediate surroundings (Albertini & Kohli, 2009) or by spending more time working, playing sports, or traveling. Despite everything, the stigma of voluntary childlessness is still

palpable for the voluntarily childless older people until today, something that also the younger generations experience (Ashburn-Nardo, 2017).

Lastly, some participants were a little concerned about the future, but they also cherished some dreams. In accordance with McAdams' life story approach (2005), each participant was asked to add one more chapter to their life story to highlight their vision of the future. Themes covered by the participants were health and care, financial prospects, and anticipation of the deaths of people around them. Concerning financial prospects, older people in general (not just the voluntarily childless) have concerns about being able to make ends meet at the end of the month (Litwin & Meir, 2013). Concerns regarding coping strategies for health and death are also common among older adults in general, and not just the voluntarily childless. For example, some older people go through a transition period to reorganize their thinking and behavior to cope with their increased fears of death. The outcome of this transition period is better adaptation to the end-of-life phase with increased acceptance of death (Cicirelli, 2003). It can also be assumed that voluntarily childless older people go through this transition period: for example, some participants stated that they had made the necessary arrangements for euthanasia to be a real possibility when the need for care became too urgent.

6.1. Limitations and Implications for Future Research

This study has several limitations. First, potential participants had to respond to an advertisement (via a Facebook call, poster, or online newsletter) if they were interested in participating. Therefore, the older people who participated were already engaged to a certain extent. In other words, selection bias is possible (Hernán et al., 2004). This bias goes even further because the interviews and the literature show that there is still a stigma about voluntary childlessness (Moore, 2017). Because of this, some older people may have preferred not to participate and, therefore, did not register for participation (Stevenson et al., 2018, p. 2). Moreover, Stevenson et al. (2018, p. 2) indicate that the diversity of the researched population may not be reflected in the people who wanted to participate. Therefore, the four profiles mentioned in this article are not exhaustive, because they only provide one possible classification of the heterogeneity of reasons for older people being voluntarily childless.

A second possible limitation is that there is no such thing as a single story: a life story is a "cultural construct" (Jupp, 2006, p. 160). The participants experience their lives in a highly individual and subjective way (Van Regenmortel et al., 2019). They may not mention some details that seem unimportant to them but might be relevant for this study. Also, there may

be an element of social desirability, with participants telling a story differently because they think that a certain version is more desirable than another (Jupp, 2006, p. 161).

There are many opportunities for more in-depth research into voluntarily childless older people. Longitudinal research, for example, can provide more in-depth insight into the theme through repeated surveys of the same population (Christensen et al., 2011) or through qualitative biographical studies (Hermanowicz, 2016; Van Regenmortel et al., 2019). There may be changes and developments over the years in the reasons given and in the experiences indicated for voluntary childlessness.

In this study, the number of participants was 13 because the chosen interview technique, life story interviews, is very time-consuming (Jupp, 2006, p. 159). However, the 13 participants showed similar personal characteristics in some areas: most participants were between 60 and 79 (only three were older than 80), while all of them had Belgian roots and were heterosexual. Future research with more diverse participants, including more people aged over 80, older people with a migration background, and a mix of sexual orientations, could generate new insights on this topic.

Another suggestion for further research comes from the idea that voluntary childlessness is difficult to define. The question arises whether a strict dichotomy of involuntary versus voluntary childlessness is relevant because childlessness sometimes results from living conditions and not necessarily from a conscious choice (Dykstra, 2009; Dykstra & Liefbroer, 1998). Also, unwanted circumstances may cause voluntary childlessness (Connidis & McMullin, 1996; Rowland, 2007). Therefore, a third recommendation is to develop methods to define people's childlessness in order to create more clarity about the different gradations that (voluntary) childlessness can have.

7. Conclusion

This research aimed to explore the life stories of voluntarily childless older people and to map out the reasons for and experiences of voluntary childlessness. In the life stories of voluntarily childless older people, it became clear that they still have plans, but that they also have concerns about the future (health and care, financial prospects, and death). From the reasons for childlessness, four profiles can be deduced (the liberated careerist, the social critic, the acquiescent partner, and voluntarily childless because of life course circumstances). Despite the fact that the content of these profiles is not completely new, they combine ideas from different earlier studies. Describing their experiences of voluntary childlessness, the

participants reported feelings of acceptance, loss, relief, and not regretting their choice (which is interesting for younger generations, because they often fear to regret their voluntary childlessness in the future). All participants agreed that having children would undeniably have had a major impact on their lives. Further research is needed to recognize the diversity of this target group, so that future generations also know what to expect if they voluntarily opt for childlessness. This study aims to open the way for more in-depth research, because having children is not inevitable, even for current older generations.

References

- Ahmadi, S. E., Rafiey, H., Sajjadi, H., & Nosratinejad, F. (2019). Explanatory model of voluntary childlessness among Iranian couples in Tehran: A grounded theory approach. *Iranian Journal of Medical Sciences, 44*(6), 449–456.
- Albertini, M., & Kohli, M. (2009). What childless older people give: Is the generational link broken? *Ageing and Society, 29*(8), 1261–1274.
- Ashburn-Nardo, L. (2017). Parenthood as a moral imperative? Moral outrage and the stigmatization of voluntarily childfree women and men. *Sex Roles, 76*(5–6), 393–401.
- Atkinson, R. (2001). The life story interview. In J. Gubrium & J. Holstein (Eds.), *Handbook of Interview Research* (pp. 121–140). SAGE Publications, Inc.
- Baum, F., & Cope, D. R. (1980). Some characteristics of intentionally childless wives in Britain. *Journal of Biosocial Science, 12*(3), 287–300.
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology, 3*(2), 77–101.
- Christensen, L. B., Johnson, R. B., & Turner, L. A. (2011). *Research methods, design, and analysis* (11th ed.). Boston, USA: Pearson.
- Cicirelli, V. G. (2003). Older adults' fear and acceptance of death: A transition model. *Ageing International, 28*(1), 66–81.
- Cohen-Almagor, R., & Ely, E. W. (2018). Euthanasia and palliative sedation in Belgium. *BMJ Supportive & Palliative Care, 8*(3), 307–313.
- Conner, S., & Stith, S. (2014). Childless couples. In M. Coleman & L. H. Ganong (Eds.), *The social history of the American family: An encyclopedia* (pp. 204–208). SAGE.
- Connidis, I. A., & McMullin, J. A. (1996). Reasons for and perceptions of childlessness among older persons: Exploring the impact of marital status and gender. *Journal of Aging Studies, 10*(3), 205–222.
- Deindl, C., & Brandt, M. (2017). Support networks of childless older people: Informal and formal support in Europe. *Ageing and Society, 37*(8), 1543–1567.
- Dykstra, P. A. (2009). Childless old age. In P. Uhlenberg (Ed.), *International handbook of population aging* (pp. 671–690). Springer Netherlands.
- Dykstra, P. A., & Hagestad, G. O. (2007). Roads less taken: Developing a nuanced view of older adults without children. *Journal of Family Issues, 28*(10), 1275–1310.
- Dykstra, P. A., & Liefbroer, A. C. (1998). Kinderloos en toch gelukkig? Over de gevolgen van kinderloosheid voor de ouderdom [Childless yet happy? About the consequences of childlessness for old age]. *Mens & Maatschappij, 73*(2), 108–129.
- Dykstra, P. A., & Wagner, M. (2007). Pathways to childlessness and late-life outcomes. *Journal of Family Issues, 28*(11), 1487–1517.
- Fiori, F., Rinesi, F., & Graham, E. (2017). Choosing to remain childless? A comparative study of fertility intentions among women and men in Italy and Britain. *European Journal of*

- Population*, 33(3), 319–350.
- Gibney, S., Delaney, L., Codd, M., & Fahey, T. (2017). Lifetime childlessness, depressive mood and quality of life among older Europeans. *Social Indicators Research*, 130(1), 305–323.
- Hagestad, G. O., & Call, V. R. A. (2007). Pathways to childlessness: A life course perspective. *Journal of Family Issues*, 28(10), 1338–1361.
- Hakim, C. (1998). Developing a sociology for the twenty-first century: Preference theory. *The British Journal of Sociology*, 49(1), 137–143.
- Hermanowicz, J. C. (2016). Longitudinal qualitative research. In M. J. Shanahan, J. T. Mortimer, & M. Kirkpatrick Johnson (Eds.), *Handbook of the life course* (pp. 491–513). Springer International Publishing.
- Hernán, M. A., Hernández-Díaz, S., & Robins, J. M. (2004). A structural approach to selection bias. *Epidemiology*, 15(5), 615–625.
- Ireland, M. S. (1993). *Reconceiving women: Separating motherhood from female identity*. Guilford Press.
- Jeffries, S., & Konnert, C. (2002). Regret and psychological well-being among voluntarily and involuntarily childless women and mothers. *The International Journal of Aging and Human Development*, 54(2), 89–106.
- Jupp, V. (Ed.). (2006). *The Sage dictionary of social research methods*. SAGE Publications.
- Kaiser, G., & Presmeg, N. (Eds.). (2019). *Compendium for early career researchers in mathematics education*. Springer International Publishing.
- Keizer, R., Dykstra, P. A., & Jansen, M. D. (2008). Pathways into childlessness: Evidence of gendered life course dynamics. *Journal of Biosocial Science*, 40(6), 863–878.
- Koropecykj-Cox, T., & Call, V. R. A. (2007). Characteristics of older childless persons and parents: cross-national comparisons. *Journal of Family Issues*, 28(10), 1362–1414.
- Kowske, B. J., Rasch, R., & Wiley, J. (2010). Millennials' (lack of) attitude problem: an empirical examination of generational effects on work attitudes. *Journal of Business and Psychology*, 25(2), 265–279.
- Kreyenfeld, M., & Konietzka, D. (Eds.). (2017). *Childlessness in Europe: Contexts, causes, and consequences*. Springer Open.
- Lee, K.-H., & Zvonkovic, A. M. (2014). Journeys to remain childless: A grounded theory examination of decision-making processes among voluntarily childless couples. *Journal of Social and Personal Relationships*, 31(4), 535–553.
- Litwin, H., & Meir, A. (2013). Financial worry among older people: Who worries and why? *Journal of Aging Studies*, 27(2), 113–120.
- McAdams, D. P. (2005). Studying lives in time: a narrative approach. *Advances in Life Course Research*, 10, 237–258.
- McDonald, P., & Belanger, A. (2016). A comparison of fertility in Canada and Australia, 1926-

2011. *Canadian Studies in Population*, 43(1–2), 5.
- Moore, J. (2017). Facets of agency in stories of transforming from childless by choice to mother. *Journal of Marriage and Family*, 79(4), 1144–1159.
- Parlak, S., & Tekin, I. (2020). A phenomenological study on voluntarily childless women. *Psikoloji Çalışmaları / Studies in Psychology*, 40(1), 161–186.
- Peterson, H. (2015). Fifty shades of freedom. Voluntary childlessness as women's ultimate liberation. *Women's Studies International Forum*, 53, 182–191.
- Riggs, D. W., & Bartholomaeus, C. (2016). The desire for a child among a sample of heterosexual Australian couples. *Journal of Reproductive and Infant Psychology*, 34(5), 442–450.
- Rowland, D. T. (2007). Historical trends in childlessness. *Journal of Family Issues*, 28(10), 1311–1337.
- Rowlands, I., & Lee, C. (2006). Choosing to have children or choosing to be childfree: Australian students' attitudes towards the decisions of heterosexual and lesbian women. *Australian Psychologist*, 41(1), 55–59.
- Rybińska, A., & Morgan, S. P. (2019). Childless expectations and childlessness over the life course. *Social Forces*, 97(4), 1571–1602.
- Smith, I., Knight, T., Fletcher, R., & Macdonald, J. A. (2020). When men choose to be childless: An interpretative phenomenological analysis. *Journal of Social and Personal Relationships*, 37(1), 325–344.
- Stahnke, B., Blackstone, A., & Howard, H. (2020). Lived experiences and life satisfaction of childfree women in late life. *The Family Journal*, 28(2), 159–167.
- Statbel. (2019, April 9). *A still declining birth rate and fertility rate*. STATBEL: Belgium in Figures. <https://statbel.fgov.be/en/news/still-declining-birth-rate-and-fertility-rate>
- Stevenson, J., Keogh, P., Smith, J., & West, E. (2018). Reaching the right people: reflexive practice to support effective recruitment, participation, and engagement in research with communities affected by stigma. *International Journal of Qualitative Methods*, 17(1), 1–7.
- Tanturri, M. L., & Mencarini, L. (2008). Childless or childfree? Paths to voluntary childlessness in Italy. *Population and Development Review*, 34(1), 51–77.
- Van Bavel, J. (2014). The mid-twentieth century Baby Boom and the changing educational gradient in Belgian cohort fertility. *Demographic Research*, 30, 925–962.
- Van Regenmortel, S. (2017). *Social Exclusion in Later Life (SELL). Measurement and drivers of social exclusion among older adults*. Vrije Universiteit Brussel.
- Van Regenmortel, S., Smetcoren, A.-S., Marsillas, S., Lambotte, D., Fret, B., & De Donder, L. (2019). Exploring underexposed stories: The experienced lifecourse of financially excluded older adults. *Ageing and Society*, 1–22.
- Veevers, J. E. (1980). *Childless by choice*. Butterworth-Heinemann.

Wenger, G. C., Dykstra, P. A., Melkas, T., & Knipscheer, K. C. P. M. (2007). Social embeddedness and late-life parenthood: community activity, close ties, and support networks. *Journal of Family Issues*, 28(11), 1419–1456.

CHAPTER 5.

Childlessness in later life: what's in a name? Results from a cross-sectional study among childless older adults

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Submitted to SageOpen

CHAPTER 5. Childlessness in later life: what's in a name? Results from a cross-sectional study among childless older adults

Abstract

This study is a comprehensive portrayal of childlessness in later life, describing childless older adults' specific characteristics related to childlessness, their personal and social characteristics, and well-being in comparison with older adults with children. A cross-sectional survey was conducted among 543 adults (60+), 47.0% (255) of whom were childless. Reasons for childlessness include personal choice (35.3%), life events (24.3%), health problems (23.1%), and partner-related factors (21.2%). A total of 14.9% of childless older adults had received professional medical help in attempts to become pregnant; 5.5% of childless older adults had undergone abortions; 37.3% indicated that their childlessness was undesired; and for 32.2%, it was desired. In comparison to older adults with children, childless older adults reported significantly lower life satisfaction ($p < 0.05$), were not more socially, emotionally, or existentially lonely, and did not experience lower levels of meaning in life ($p > 0.05$).

Keywords: childlessness, older adults, reasons for childlessness, well-being, loneliness, parents

1. Introduction

In recent decades, there has been a rising trend in global childlessness, in particular since the 1970s (Fiori et al., 2017; Kreyenfeld & Konietzka, 2017). The postponement of having children and changing societal norms and values, leading to greater social acceptance of childlessness, are the two main reasons for this increase (Fiori et al., 2017). Depending on the definition used, 9.2%–13.6% of older Americans (55+) are childless (Xu et al., 2022). In Europe, pooled SHARE data from 1992 to 2017 show that the prevalence of childlessness among older adults (50+) varies from 5.6% in Czechia to 16.2% in Ireland (Antczak et al., 2023).

Some existing literature indicates that remaining childless may have negative consequences in later life, such as reduced psychological well-being (Gibney et al., 2017), poorer health, higher mortality rates (Dykstra, 2009), and increased loneliness (Vozikaki et al., 2018; Zoutewelle-Terovan & Liefbroer, 2018). Other studies reveal positive effects, such as maintaining contact with a broader range of family members (Wenger et al., 2007) or engaging in activities, such as working, playing sports, or traveling (Stegen et al., 2021). While childless older adults are often considered a very homogeneous group (Kohli & Albertini, 2009), the opposite is true. Childless older people form a heterogeneous group because they have a variety of reasons for being childless, their marital histories are different, and different life pathways lead to their childlessness (Dykstra, 2006; Wenger et al., 2007).

Research on childlessness often uses secondary datasets (e.g., Vozikaki et al., 2018; Zoutewelle-Terovan et al., 2018; Xu et al., 2022), and few studies have specifically designed questionnaires that focus on the characteristics of childless older adults themselves. The specific group of childless older adults is always seen as part of the total group of older adults. However, those who are childless require research attention due to their heterogeneity (Penning et al., 2022).

Therefore, the aims of this study are to investigate a particular group of childless older adults in relation to older adults with children, with attention to the specific characteristics of their childlessness, their personal and social characteristics, and their well-being.

2. Literature Review

2.1. The rise of childlessness

In the US, the percentage of women without children at the end of their reproductive years doubled from approximately 10%–20% between the mid-1970s and the mid-2000s, with a decline to approximately 15% in 2010–2012 (Kreyenfeld & Konietzka, 2017). In 2018, nearly 1 in 6 (16.5%) adults over 55 were childless in the US, and these levels are expected to rise (Valerio et al., 2021). Permanent childlessness has also been on the rise in Europe in recent decades, particularly since the 1970s. Numbers from Western European countries, including Belgium, France, Ireland, the Netherlands, and the United Kingdom, demonstrate that 10%–14% of women born in the 1940s remained childless, due to the baby boom around the 1960s (Van Bavel, 2014). However, from the 1960s birth cohorts onward, the number of childless women increased to 16%–19%. For later birth cohorts, the trend toward increasing childlessness in Western Europe has generally stabilized (Fiori et al., 2017; Kreyenfeld & Konietzka, 2017).

2.2. Characteristics of childless older adults

Older adults without children form a heterogeneous population with a range of reasons for not having children, disparities in their marriage histories, and distinct life paths that end in childlessness (Wenger et al., 2007). The proportion of childless older women is higher than childless older men in different countries, such as Australia (16% vs. 11%), the United States (17% vs. 11%), Finland (19% vs. 16%), and the Netherlands (17% vs. 13%) (Koropecj-Cox & Call, 2007). This can be explained by women's biological restrictions because they only have a window of opportunity of two to three decades for becoming a parent, in contrast to men who, typically, do not experience permanent loss of fertility (Kim et al., 2019).

There are different reasons why older adults remain childless throughout their lives. Childlessness can be voluntary, namely the result of a conscious decision to remain childless (Conner & Stith, 2014; Dykstra & Hagestad, 2007). Older adults can also remain childless involuntarily because their desire to have children was never fulfilled (Dykstra & Hagestad, 2007). In some studies, a third category is also mentioned, namely postponers. This group consists (mostly) of women who postponed having children because of career, educational, or lifestyle reasons, which limited their chances of having children (Dykstra & Liefbroer, 1998; Peterson, 2015).

Beyond this widely used dichotomy of voluntary vs. involuntary childlessness lies a wide range of reasons for childlessness. People mention different reasons for remaining childless, such as preferring a career to family life (Rybińska & Morgan, 2019), having a critical view of society (Stegen et al., 2021), having a partner who would rather not have children (Riggs & Bartholomaeus, 2016), remaining childless due to life course circumstances (Stegen et al., 2021), or medical reasons (Dykstra & Hagestad, 2007). Childlessness involves more than just answering “no” to the question, “Do you have children?” The pathway to childlessness is at least as important, because reasons for childlessness can be varied and complex (Hagestad & Call, 2007).

The characteristics of childless older adults described above are quite general. However, little is known about matters such as having tried fertility treatments, having undergone an abortion, or the desirability of and the wide diversity of reasons for childlessness.

2.3. Personal characteristics of childless older adults

Childless older adults in China are more likely to live alone or in institutions compared to older adults who have children because they might lack the immediate family support that parents often receive from their children (Hsieh & Zhang, 2021). Regarding income and wealth, childless married couples in the US tend to have slightly more income and 5% more wealth, compared with older married adults who have children, and a longer period of education (Plotnick, 2009). This is because childless couples might have dual incomes without the financial burden of raising children, allowing them to save more and accumulate wealth over time. Where social networks are concerned, data from the German Aging Survey demonstrate that childless older adults in Germany have more friends and extended family members that they consider to be their chosen families. Their friends can fulfill their social and emotional needs, and they are more likely to consider friends as potential emotional supporters compared to older adults with children (Schnettler & Wöhler, 2016).

2.4. Well-being among childless older adults

The small amount of quantitative evidence that exists about childlessness and well-being in later life shows mixed results. Some studies report lower life satisfaction among childless older individuals compared to older parents because they missed out on a normative life event (Albertini & Arpino, 2018). Other studies have indicated that parental status does not have an impact on life satisfaction or well-being in general (Bauer et al., 2023; Gibney et al., 2017; Hansen et al., 2009). Explanations for this are that childless older adults went through

a process of acceptance of their situation over the years and that other social contacts strengthened their social network (Hadley, 2021; Stahnke et al., 2020).

Some studies suggest that being childless might correlate with higher levels of loneliness. For example, Vozikaki et al. (2018) studied loneliness among older European adults in 11 countries and found that being childless was significantly associated with frequent feelings of loneliness in later life. Zoutewelle-Terovan and Liefbroer (2018) also showed that childlessness is strongly related to later-life loneliness, particularly in traditional, familistic countries where the family is still of great importance and where childlessness is viewed as a deviation from traditional family norms. Some qualitative research also identifies the importance of childlessness as a risk factor for loneliness in later life, resulting in feelings of fear of being helpless or dependent on professional care services (Kafková, 2023). However, other studies indicate that there is not always a direct relationship between childlessness and loneliness, and that it might depend on how childlessness and loneliness are defined (Penning et al., 2022; Xu et al., 2022; Zhang & Hayward, 2001).

This study addresses the need to know more about the specific childlessness-related characteristics of older adults, their personal and social characteristics, and their well-being.

The research questions we aim to answer are as follows:

1. What are the specific characteristics related to the childlessness of childless older adults?
2. What is the difference between childless older adults and older adults with children in terms of their personal and social characteristics?
3. How do childless older adults and older adults with children differ in terms of well-being?

3. Research Design

3.1. Respondents and procedure

This study followed a non-probability purposive sampling strategy, based on the characteristics of the population and the objective of the study. The inclusion criteria were that the respondents had to be older than 60 and were community-dwelling (i.e., not living in a residential care facility). The primary interest group in this research consisted of childless older adults; an overrepresentation of childless older adults was intended. Therefore, to obtain a sufficient number of childless older adults, this group was more targeted in the purposive sampling. The recruitment of the purposive sample was done by our research team

and by university students who were trained to recruit respondents and administer the survey face-to-face to older adults. Online leaflets were distributed via older adults' organizations in Flanders and Brussels (Belgium) and via the social networks of the researchers involved. The leaflets included a link to an online survey on the Qualtrics platform. Data were collected between March 1 and September 30, 2023. In total, 731 older adults completed the survey, but after excluding cases with missing responses to the main measures (described in greater detail in the next section), we had a final working sample of 543 respondents, 255 of whom were childless (47.0%). Table 1 presents the demographics of the respondents whose data are used in the current paper. In total, 255 (47.0%) childless older adults participated, compared to 288 (53.0%) older adults with children. The age of the respondents ranged from 60 to 98 years ($M = 70.89$, $SD = 8.79$), and 62.4% were female. Among the respondents, 39.2% indicated having no partner. Respondents were quite highly educated; more than half (53.4%) had completed higher education. Also, over 80% of the respondents were able to make ends meet with their monthly income.

The respondents included in the analysis, compared to those who were not included, were slightly younger (70.89 vs. 72.56), less likely to be female (62.4% vs. 68.9%), more often had a partner (60.8% vs. 47.4%), were more highly educated (53.4% vs. 37.6% had completed higher education), and had slightly better household incomes (80.5% vs. 77.7%).

Table 1. Personal and social characteristics of childless older people and older people with children (N=543).

Variables	Min.	Max.	Total (N = 543)		Childless older people (N = 255, 47.0%)		Older people with children (N = 288, 53.0%)		χ ² (t)
			%	M (SD)	%	M (SD)	%	M (SD)	
Age	60	98		70.89 (8.79)		69.95 (8.77)		71.72 (8.73)	(2.35*)
Gender									2.39
Female			62.4		58.8		65.6		
Male			37.6		41.2		34.4		
Partner state									9.47**
No partner			39.2		46.3		33.0		
Partner			60.8		53.7		67.0		
Bad physical functioning (MOS)	0	100		21.03 (28.08)		20.98 (28.43)		21.06 (27.83)	(0.035)
Educational level									
No finished degree or lower education			8.5		7.1		9.7		1.34
Secondary education			38.1		38.0		38.2		
Higher education			53.4		54.9		52.1		
Perception of making ends meet with the monthly income									0.004
Difficult			19.5		19.2		19.8		
Easy			80.5		80.8		80.2		

Notes: M = Mean, SD = standard deviation, MOS = Medical Outcomes Study

*p<0.05, **p<0.01

Prior to data collection, this study was approved by the Ethical Committee of Human Sciences (ECHW) at the Vrije Universiteit Brussel (VUB) (Ethics file: 398.02). Our questionnaire was accompanied by an informed consent form, an information letter providing a description of the study background and aims, and clear instructions on how to complete the survey. We provided the contact details of the research team. We also provided contact details for Tele-Onthaal and the Centrum voor Algemeen Welzijnswerk (two organizations providing help to people experiencing social or mental problems of all kinds) in case completing the questionnaire would cause negative feelings or the respondents would want to reflect on the interview later on. The respondents were also informed of their right to withdraw from the study at any time.

3.2. Measurement

The survey consisted of three parts: specific questions on childlessness or parenthood (i.e., respondents could choose themselves to fill in the childlessness or the parenthood part), sociodemographic characteristics, and questions on well-being.

Childlessness. One of our main variables of interest was childlessness (0 = parent, 1 = childless). We based our variable on a so-called subjective definition of childlessness, meaning that respondents were considered childless once they filled in the part of the questionnaire specifically about childlessness. Similarly, the respondents who completed the part of the questionnaire about parenthood were considered to be older adults with children. In so doing, we followed the perceptions of the respondents and whether they saw themselves as a parent or as childless. We included other questions related to childlessness in the questionnaire, such as whether the respondents had sought professional help regarding fertility and whether they had ever had an abortion. Specifically, in the childlessness part of the questionnaire, we asked whether the respondents perceived their childlessness as voluntary or involuntary. However, because this dichotomy might be limited (Allen & Wiles, 2013), we also asked where the respondents would place themselves in the continuum of McAllister and Clarke (2000). This continuum consists of the following different categorizations: (1) the 'early articulators' (those who were certain from an early age that they did not want children), (2) those who had some doubts at a young age but eventually became determined not to have children, (3) those who accept childlessness because of certain circumstances, (4) those for whom having children never really mattered and who ended up not having any of their own, (5) those for whom remaining childless or not really mattered but who ended up feeling their childlessness as if it was a decision made for them, and (6) those who unintentionally never saw their desire for children fulfilled. A question on who might have

impacted the fact that someone remained childless was also included. An example would be that a partner could prevent someone from having children (Riggs & Bartholomaeus, 2016). The respondents were also given a list of 21 possible reasons for their childlessness. The reasons were arranged in the following four groups (Stegen et al., 2021): (1) personal choice, which includes all factors related to an individual's motivations, goals, and desires; (2) life events, which show that an individual experienced specific life events that resulted in their childlessness; (3) health problems for themselves or their partner; and (4) the partner, which includes all partner-related factors related to someone's partner who did not want or could not have children. Respondents could indicate several reasons for not having children. Once they indicated one or more reasons within one of the categories, their responses were registered as being part of the respective category. The researchers used a formative approach to scale construction (Bucic & Gudergan, 2004; Jarvis et al., 2003). Each of the several items, or "reasons," are reflected in a "reason category" and are not comparable or interchangeable with other items (Bucic & Gudergan, 2004).

Sociodemographic and health variables, and social contacts. Based on previous literature on childlessness in later life (Dykstra & Wagner, 2007; Keizer et al., 2008; Penning et al., 2022), several sociodemographic variables were included to describe the group of childless older people: gender (0 = female), age (measured in years), having a partner (0 = no partner, 1 = partner), educational level (1 = no education or primary education, 2 = secondary education, 3 = higher education), and the perception of making ends meet with their monthly income (0 = difficult, 1 = easy). Poor physical functioning was measured using a part of the MOS Short Form General Health Survey (SF-20), using six items to obtain a score on the dimension of physical functioning (Cronbach's alpha = 0.817) (e.g., the extent of being able to bend, lift, bend over, or walk around the block). The scale ranged from 0 to 100, with higher scores representing worse physical functioning.

We also included questions on the respondents' social networks because there might be differences in the contacts of childless and non-childless older adults (Schnettler & Wöhler, 2016; Wenger et al., 2007). We first asked about the frequency of contact with a partner, children, children-in-law, grandchildren, siblings, parents, other family members, friends, acquaintances, and people living in the neighborhood (all, if applicable), followed by the level of satisfaction with these contacts.

Well-being. For well-being, we used the Short Well-being Instrument for Older Adults (SWIO) (Duppen et al., 2019), a short instrument consisting of nine items used to evaluate the level of well-being. Each item was scored on a 5-point Likert scale, with higher scores indicating higher levels of well-being (total score range: 0–100; Cronbach's alpha = 0.818). The SWIO contains three subdomains: life satisfaction (total score range, 0–100; Cronbach's alpha =

0.781), mastery (total score range: 0–100; Cronbach's alpha = 0.703), and meaning in life (total score range, 0–100; Cronbach's alpha = 0.804).

We also included several loneliness variables. Loneliness was considered as a multidimensional construct with specific attention to the different types of loneliness. Therefore, we used a set of widely used measurement instruments for loneliness. First, the 11-item De Jong Gierveld Loneliness Scale, with a 5-point Likert scale, was used to obtain a total loneliness score (total score range: 0–100; Cronbach's alpha = 0.899) and separate scores for social and emotional loneliness (De Jong Gierveld & van Tilburg, 2021). Out of the 11 items on the scale, six items, such as "I often feel rejected," serve as indicators of emotional loneliness (total score range: 0–100; Cronbach's alpha = 0.869), while the remaining five items capture aspects of social loneliness (e.g., "I can call on my friends whenever I need them.") (total score range: 0–100; Cronbach's alpha = 0.859). For existential loneliness, we used the Existential Loneliness Questionnaire (Mayers et al., 2002), with a 5-point Likert scale. Because this scale was validated among HIV-infected women (van Tilburg, 2020), we only used 16 out of the 22 items from the scale that did not address specific HIV-related matters (total score range: 0–100; Cronbach's alpha = 0.869). The answers to one of the items, for example, "I feel lonely," were simultaneously used as a one-item question to be considered separately. Furthermore, we used the three-item UCLA Loneliness Scale (Hughes et al., 2004). In this measurement instrument, respondents were asked how often they (1) felt they lacked companionship, (2) felt left out, or (3) felt isolated from others during the past week. Response options were "hardly ever," "some of the time," and "often." Each item was scored on a scale of 1–3, with higher scores indicating higher levels of loneliness (total score range: 0–100; Cronbach's alpha = 0.743). The higher the scores, the higher the level of loneliness.

Some authors (Switsers et al., 2022) found that loneliness can be viewed as positive. Therefore, in line with the BBC Loneliness Experiment (Victor et al., 2022), the topic of positive loneliness was included in the survey by asking respondents to answer the following question: "Is the experience of loneliness positive?" Possible answers were "Yes," "Sometimes," or "No."

We also used a self-anchoring rating scale question that we based on the Anamnestic Comparative Self Assessment method (Theuns & Verlet, 2022), asking respondents to think about the least lonely and the most lonely periods in their life experience to see where they would place themselves right now in terms of loneliness.

3.3. Analytic strategy

For research question 1, we investigated descriptive statistics regarding childless-related characteristics among the childless subgroup (N = 255). For research questions 2 and 3, we investigated the descriptive statistics of the total included sample (N = 543), including the means and standard deviations for all study variables. We also conducted chi-squared tests (using a continuity correction for 2 × 2 variables) and independent samples t-tests to assess significant differences between the childless and non-childless respondents in our study. For all analyses, we used the Statistical Package for the Social Sciences (IBM Statistics version 29) (IBM, 2022).

4. Results

4.1. Specific characteristics of childless older adults (N = 255)

We looked at the specific characteristics of childless older adults, starting with the continuum of childlessness as defined by McAllister and Clarke (2000), in which older adults could position themselves (see Table 2). The biggest group of respondents (28.6%) indicated that they had wanted one or more children, but that this did not happen due to circumstances in their lives, and that they accepted this. This group was followed by the group who had always wanted children but never had any (23.5%) and then by the group who reported that having children just never happened for them (20.4%).

Table 2. Positioning in the continuum of McAllister & Clarke (2000) (N=255).

Which statement about your childlessness is most applicable to you?	%
I knew from young age that I did not want children ('early articulator').	14.1
At a younger age, I doubted for a while, but I was finally determined that I would never have children	8.2
I did once want one or more children, but due to certain circumstances in my life, I never got any children and accepted this.	28.6
I never made a conscious decision about whether or not to have children: it didn't really matter to me whether I would have children, and it just never happened to me in the end.	20.4
I never made a conscious decision about whether or not to have children: for a very long time it didn't matter to me, but at some point, I felt that my childlessness was a choice made in my place, and that I had no control over it myself.	5.1
I have always had a desire for children, but unfortunately, I never had any.	23.5

Table 3 shows the data on the reasons for childlessness. The most frequently mentioned reason was "personal choice" (35.3%). The second category, "life events," represented 24.3% of the respondents, meaning that 24.3% indicated having gone through life events that caused their childlessness. The next category was "health problems," in which respondents related their childlessness to the health problems of their partner or themselves (23.1%). The smallest category, "partner" (21.2%), consisted of reasons such as the partner did not want children or became too old to have children.

Table 3. Reasons for childlessness (N=255).

Reason category and corresponding reasons	N	Percent
<i>Reason category 1: Personal choice</i>	90	35.3%
I have always put my own development first	42	16.7%
The adjustments children would require in my life, which I did not want to face	36	14.3%
My critical view of society (on ecology, climate, overpopulation, politics and events such as wars, famines or pandemics)	34	13.5%
Having children does not really fit into my ideal image of society	30	11.9%
My aspiration to pursue my career fully instead of starting a family	24	9.6%
I did not want my children to become like myself (e.g. genetic diseases, personal traits, ...)	18	7.1%
<i>Reason category 2: Life events</i>	62	24.3%
Events throughout my life (later than childhood)	39	15.5%
Events in my childhood	32	12.9%
I had to provide help or care to someone close to me who needed intensive care due to physical or mental health problems, illness or old age (e.g. a sick family member, informal care, ...)	13	5.2%
My own diminished psychological wellbeing	7	2.8%
<i>Reason category 3: Health problems</i>	59	23.1%
In case of biological children: health problems in myself	37	14.9%
In case of biological children: health problems in my partner	36	14.7%
<i>Reason category 4: Partner</i>	54	21.2%
My partner who did not want children him-/herself, so I followed him/her in that decision	26	10.5%
My partner who already had children from a previous relationship and did not want other children	23	9.3%
My partner's age: my partner became too old to have children	22	8.9%
My partner who was absent (e.g. due to work, war, ...)	11	4.4%

Childlessness is not a single event related to a particular time. Therefore, we wished to point to the possible evolution of the reasons for childlessness throughout the life course (Table 4). More than half of the respondents (55.3%) did not think their reasons for childlessness evolved over time. For about one in four (24.5%), the reasons changed over time.

Table 4. Evolution reasons for childlessness: My reasons for childlessness evolved throughout time (N=255).

My reasons for childlessness evolved throughout time.	%
(Strongly) disagree	55.3
Neither agree, nor disagree	20.2
(Strongly) agree	24.5

Table 5 shows the people who influenced the childlessness of others. Most of the childless respondents (64.7%) attributed their childlessness to themselves and/or their (ex)-partner (51.3%). However, parents were said to have influenced childlessness in one out of ten (9.6%) childless older adults, and siblings were given as having had a similar influence by one out of twenty (4.4%).

Table 5. Extent to which childlessness was impacted by people (N=255).

	Childless older adults (Strongly) agree (%)
Me (myself, own choice)	64.7
Partner	38.4
Ex-partner	12.9
Parent(s)	9.6
Sibling(s)	4.4
Other family members	2.4
Friends or acquaintances	2.8
Neighbors/people from the neighborhood	0.8

We asked all respondents whether they used professional medical help to try to become pregnant (Table 6) and if they had ever had an abortion (Table 7). Among the childless, 14.9% received professional help to try to become pregnant, and 97.4% of them reported that the help did not succeed. Among older adults with children, 7.3% received professional help. More than one out of 20 older adults with children (5.2%) in our sample had children as a result of successful professional help. Among the respondents, 5.9% had undergone abortions; 5.5% of the older adults without children, and 6.3% of the older adults with children.

Table 6. Use of professional help for getting pregnant (%).

Use of professional help?	Total (N = 543)	Older people without children (N = 255)	Older people with children (N = 288)
Professional help worked	3.0	0.4	5.2
Professional help failed	7.9	14.5	2.1
Never used professional help	89.1	85.1	92.7

Table 7. Ever performed abortion (%).

Ever performed abortion?	Total (N = 543)	Older people without children (N = 255)	Older people with children (N = 288)
Yes	5.9	5.5	6.3
No	94.1	94.5	93.7

4.2. Personal and social characteristics of older people with and without children

Table 1 presents the demographic characteristics of our respondents, along with the results of the chi-squared tests and independent sample t-tests describing the difference between older people with and without children. Hardly any bivariate differences were noticed between the two groups. The childless group was slightly younger ($M = 69.95$, $SD = 8.77$) than the older adults with children group ($M = 71.72$, $SD = 8.73$) ($t = 2.35$, $p < 0.05$). There were more respondents without a partner (46.3%) in the childless group compared to the older adults with children group (33.0%) ($X^2 = 9.47$, $p < 0.01$).

Table 8 shows the percentages of the extent to which an individual's parental status was desired. Among our childless older adult population (N = 255), 37.3% indicated that their childlessness was (very) undesired, and 32.2% stated that it was (very) desired. Among the older adults with children, 95.2% indicated that their parenthood was desired, compared to 2.4%, for whom this was not the case.

Table 8. Desirability parental status (%).

To what extent is your parental status desired?	Childless older adults (N=255): desirability childlessness	Older adults with children (N=288): desirability parenthood
(Very) undesired	37.3	2.4
Not undesired, not desired	30.6	2.4
(Very) desired	32.2	95.2

Table 9 shows the results for frequency of and satisfaction with social contacts. It shows that childless older adults indicated having at least weekly contact with other family members (i.e., not siblings or parents) than the group of older adults with children (26.1% compared to 12.3%, $X^2 = 15.86$, $p < 0.01$), and with friends or acquaintances (68.9% compared to 60.3%, $X^2 = 3.99$, $p < 0.05$). Satisfaction with all types of social contact did not differ between the two groups: childless older adults and older adults with children were equally satisfied with their social contacts.

Table 9. Frequency of and satisfaction with social contacts (N=543).

Variables	Total (N = 543) %	Older people without children (N = 255, 47.0%) %	Older people with children (N = 288, 53.0%) %	χ^2
Frequency social contact – at least weekly				
Sibling(s)	39.6	42.7	36.8	1.68
Parent(s)	16.2	18.4	14.3	1.34
Other family member(s)	18.8	26.1	12.3	15.86**
Friends/acquaintances	64.3	68.9	60.3	3.99*
Neighbors/people from the neighborhood	64.6	65.2	64.1	0.03
Satisfaction social contact – (rather) satisfied				
Sibling(s)	61.3	59.7	62.7	0.40
Parent(s)	17.2	18.0	16.5	0.12
Other family member(s)	56.2	57.9	54.7	0.43
Friends/acquaintances	86.9	89.0	85.0	1.56
Neighbors/people from the neighborhood	71.8	68.6	74.6	2.07

* $p < 0.05$, ** $p < 0.01$

4.3. Comparison of the well-being and loneliness of childless older adults and parents

Table 10 shows the well-being and loneliness indicators. For all measurement instruments except one, there was no significant difference between older adults with and without children. Life satisfaction was the only indicator that was significantly lower among the group of childless older adults ($M = 71.24$, $SD = 19.26$) compared to older adults with children ($M = 74.65$, $SD = 17.16$) ($t = 2.18$, $p < 0.05$).

Table 10. Loneliness and well-being of childless people and parents (N=543).

Variables	Min.	Max.	Total (N = 543)		Older people without children (N = 255, 47.0%)		Older people with children (N = 288, 53.0%)		χ ² (t)
			%	M (SD)	%	M (SD)	%	M (SD)	
Well-being SWIO scale – total	0	100		71.71 (15.28)		70.71 (16.25)		72.60 (14.34)	(1.44)
Life satisfaction	0	100		73.05 (18.24)		71.24 (19.26)		74.65 (17.16)	(2.18*)
Mastery	0	100		68.19 (21.99)		67.68 (22.33)		68.63 (21.71)	(0.51)
Meaning in life	0	100		73.90 (18.44)		73.20 (19.36)		74.51 (17.60)	(0.82)
Total loneliness-11-item DJG ⁺	0	100		28.56 (29.59)		28.81 (30.40)		28.35 (28.92)	(-0.18)
Social loneliness	0	100		26.96 (33.31)		27.61 (34.09)		26.39 (32.64)	(-0.43)
Emotional loneliness	0	100		29.90 (33.19)		29.80 (33.05)		29.98 (33.37)	(0.06)
Existential loneliness-ELQ ⁺	0	100		27.50 (22.58)		29.12 (24.07)		26.06 (21.10)	(-1.57)
UCLA loneliness scale	0	100		17.10 (21.80)		18.63 (22.10)		15.74 (21.49)	(-1.54)
1-item question: "I feel lonely"									0.52
(Totally) agree, neither agree nor disagree			25.0		26.7		23.6		
(Totally) disagree			75.0		73.3		76.4		
Positive loneliness									0.37
Yes/sometimes			60.4		62.0		59.0		
No			39.6		38.0		41.0		
Loneliness: Self-anchoring rating scale									2.65
-5 → -1 (closer to the loneliest period of my life)			14.0		12.5		15.3		
0 (neutral)			10.9		12.9		9.0		
1 → 5 (closer to the least lonely period of my life)			75.1		74.5		75.7		

Notes: M = Mean, SD = standard deviation, DJG = 11-item De Jong Gierveld loneliness scale, ELQ = Existential Loneliness Questionnaire, UCLA = 3-item University of California Los Angeles Loneliness Scale, SWIO = Short Well-being Instrument for Older adults

*p<0.05, **p<0.01

5. Discussion

In this unique study on childless older adults, we examined the characteristics related to childlessness of childless older adults in Flanders and Brussels (Belgium), and compared their personal and social characteristics and well-being parameters to those of older adults with children. The strength of the study lies in its thorough description of a heterogeneous group of childless older adults.

First, childlessness is not a straightforward and unequivocal concept. It extends beyond the dichotomy of voluntary vs. involuntary childlessness (Dykstra, 2009). The reasons for childlessness can evolve throughout the life course, and decisions in this respect can evolve. A minority of the respondents (14.1%) knew from a young age that they did not want children; half of the respondents might have wanted children at a certain point, but this did not happen, and almost one-third never made a conscious decision.

Furthermore, the term “childlessness” encompasses a range of reasons for which someone remains childless. We identified the following four categories of reasons for childlessness: personal choice (35.3%), life events (24.3%), health problems (23.1%), and partner-related reasons (21.2%). In future research, it will be important to take these reasons for childlessness into account because different reasons might have different effects in terms of mental health, social support, and established networks (McQuillan et al., 2012).

Lastly, childlessness, as such, does not need to be a negative fact. Today, we refer to people without children as childless, with the name implicating a loss or lack. In terms of their social networks, there was only one significant difference between the childless and the non-childless in terms of at least weekly contact with other family members and with friends or acquaintances. The childless older adults met these two groups significantly more frequently (26.1% and 68.9%, respectively), compared to older adults with children (12.3% and 60.3%). The reasons for this might be that maintaining contact with family members and friends is part of a substitution mechanism for childless older adults as compensation for not having children (Chen & Lou, 2023; Schnettler & Wöhler, 2016). This means that childlessness, as such, does not need to be negative. In terms of well-being, we did not identify many big differences, apart from lower life satisfaction among childless older adults.

Currently, there are alternative terms, such as “without children” or “childfree,” to indicate that childlessness is voluntarily (Gietel-Basten & Yeung, 2023). Therefore, the assumption that childlessness in later life must be involuntary is not true (Stegen et al., 2021).

The strengths of this study include its comprehensive examination of childlessness, with attention to heterogeneity and depth. However, some limitations should be acknowledged. First, the use of self-reported measures may introduce response bias and social desirability

effects, potentially influencing the validity of the findings (Hoepfner et al., 2011). Feelings like loneliness may be estimated as being lower than they actually are because these feelings can be seen as not desirable in certain cultures (Fisher & Katz, 2000). Our sample was a purposive sample in which childless older adults were overrepresented. This means that some older people may have preferred not to participate and, therefore, did not register for participation (Stevenson et al., 2018, p. 2), whereby this sample does not represent the wider older adult population in Flanders and Brussels (Belgium). It is also important to note that random sampling statistical tests are not ideal for a purposive sample. They introduce inherent bias, which may affect the generalizability of our findings (Hernán et al., 2004). Many statistical tests, such as t-tests, assume that the sample was randomly selected from the population (Field, 2012), which was not the case in this study. In addition, the survey was completed by a group of people who were likely to be highly educated and wealthy, thereby introducing selection bias (Hernán et al., 2004). Nevertheless, our study provides valuable insights into the specific experiences and perspectives of the targeted population, offering a deeper understanding of the nuanced factors impacting childlessness.

6. Conclusion

This study thoroughly examined a group of childless older adults. Our findings show that being childless does not necessarily mean being at a disadvantage in later life despite existing biases and prejudices. Neither policy nor practice should define older adults according to one characteristic, such as having (or not having) children. Future research could delve deeper into the mechanisms underlying the relationship between childlessness and well-being by exploring other potential mediating and moderating factors, such as gender or partner status. Deeper investigations of the social relations of older adults and their support networks could lead to more specific insights into the mechanisms that play a role in their well-being, given that childlessness goes beyond the question of whether one has children or not. Qualitative studies could also provide rich insights into the lived experiences of childless older adults, shedding light on the subjective meaning of loneliness and the factors that contribute to its decrease or increase.

References

- Albertini, M., & Arpino, B. (2018). Childlessness, parenthood and subjective wellbeing: The relevance of conceptualizing parenthood and childlessness as a continuum [Preprint]. *Le SocietàArXiv*. <https://doi.org/10.31235/osf.io/xtfq6>
- Allen, R. E. S., & Wiles, J. L. (2013). How older people position their late-life childlessness: A qualitative study. *Journal of Marriage and Family*, 75(1), 206–220. <https://doi.org/10.1111/j.1741-3737.2012.01019.x>
- Antczak, R., Quashie, N. T., Mair, C. A., & Arpino, B. (2023). Less is (often) more: Number of children and health among older adults in 24 countries. *The Journals of Gerontology. Series B, Psychological Sciences and Social Sciences*, 78(11), 1892–1902. <https://doi.org/10.1093/geronb/gbad123>
- Bauer, G., Brandt, M., & Kneip, T. (2023). The role of parenthood for life satisfaction of older women and men in Europe. *Journal of Happiness Studies*, 24(1), 275–307. <https://doi.org/10.1007/s10902-022-00600-8>
- Bucic, T., & Gudergan, S. P. (2004). Formative versus reflective measurement implications for explaining innovation in marketing partnerships. <https://opus.lib.uts.edu.au/bitstream/10453/3067/1/2004000806.pdf>
- Chen, H., & Lou, V. W. Q. (2023). Co-reasoning with the significant other(s): How childless older adults in rural china make residential decisions. *Research on Aging*, 45(7–8), 526–537. <https://doi.org/10.1177/01640275221134783>
- Conner, S., & Stith, S. (2014). Childless couples. In M. Coleman & L. H. Ganong (Eds.) (Red.), *The social history of the American family: An encyclopedia* (pp. 204–208). SAGE.
- De Jong Gierveld, J., & van Tilburg, T. (2021). *Manual of the loneliness scale 1999—Update from 7–5-2021*. Department of Social Research Methodology, Vrije Universiteit Amsterdam.
- Duppen, D., Rossi, G., Dierckx, E., Hoeyberghs, L., De Donder, L., & D-SCOPE Consortium. (2019). Focusing on positive outcomes in frailty research: Development of a short well-being instrument for older adults (SWIO). *International Psychogeriatrics*, 31(6), 767–777. <https://doi.org/10.1017/S1041610219000401>
- Dykstra, P. A. (2006). Off the beaten track: Childlessness and social integration in late life. *Research on Aging*, 28(6), 749–767. <https://doi.org/10.1177/0164027506291745>
- Dykstra, P. A. (2009). Childless old age. In P. Uhlenberg (Red.), *International handbook of population aging* (pp. 671–690). Springer Netherlands. https://doi.org/10.1007/978-1-4020-8356-3_30
- Dykstra, P. A., & Hagestad, G. O. (2007). Roads less taken: Developing a nuanced view of older adults without children. *Journal of Family Issues*, 28(10), 1275–1310. <https://doi.org/10.1177/0192513X07303822>

- Dykstra, P. A., & Liefbroer, A. C. (1998). Kinderloos en toch gelukkig? Over de gevolgen van kinderloosheid voor de ouderdom. *Mens & Maatschappij*, 73(2), 108–129.
- Dykstra, P. A., & Wagner, M. (2007). Pathways to childlessness and late-life outcomes. *Journal of Family Issues*, 28(11), 1487–1517. <https://doi.org/10.1177/0192513X07303879>
- Field, A. (2012). *Discovering statistics using SPSS: And sex and drugs and rock 'n' roll* (3. ed., repr). SAGE.
- Fiori, F., Rinesi, F., & Graham, E. (2017). Choosing to remain childless? A comparative study of fertility intentions among women and men in Italy and Britain. *European Journal of Population*, 33(3), 319–350. <https://doi.org/10.1007/s10680-016-9404-2>
- Fisher, R. J., & Katz, J. E. (2000). Social-desirability bias and the validity of self-reported values. *Psychology and Marketing*, 17(2), 105–120. [https://doi.org/10.1002/\(SICI\)1520-6793\(200002\)17:2<105::AID-MAR3>3.0.CO;2-9](https://doi.org/10.1002/(SICI)1520-6793(200002)17:2<105::AID-MAR3>3.0.CO;2-9)
- Gibney, S., Delaney, L., Codd, M., & Fahey, T. (2017). Lifetime childlessness, depressive mood and quality of life among older Europeans. *Social Indicators Research*, 130(1), 305–323. <https://doi.org/10.1007/s11205-015-1177-1>
- Gietel-Basten, S., & Yeung, A. S. W. (2023). Self-definition and evaluation of the term “Childfree” among Hong Kong women. *SAGE Open*, 13(4). <https://doi.org/10.1177/21582440231198994>
- Hadley, R. A. (2021). ‘No longer invincible’: The impact of involuntary childlessness on older men. *Physical Therapy Reviews*, 26(5), 328–343. <https://doi.org/10.1080/10833196.2021.1884172>
- Hagestad, G. O., & Call, V. R. A. (2007). Pathways to childlessness: A life course perspective. *Journal of Family Issues*, 28(10), 1338–1361. <https://doi.org/10.1177/0192513X07303836>
- Hansen, T., Slagsvold, B., & Moum, T. (2009). Childlessness and psychological well-being in midlife and old age: An examination of parental status effects across a range of outcomes. *Social Indicators Research*, 94(2), 343–362. <https://doi.org/10.1007/s11205-008-9426-1>
- Hernán, M. A., Hernández-Díaz, S., & Robins, J. M. (2004). A structural approach to selection bias. *Epidemiology*, 15(5), 615–625. <https://doi.org/10.1097/01.ede.0000135174.63482.43>
- Hoepfner, B. B., Kelly, J. F., Urbanoski, K. A., & Slaymaker, V. (2011). Comparative utility of a single-item versus multiple-item measure of self-efficacy in predicting relapse among young adults. *Journal of Substance Abuse Treatment*, 41(3), 305–312. <https://doi.org/10.1016/j.jsat.2011.04.005>
- Hsieh, N., & Zhang, Z. (2021). Childlessness and social support in old age in china. *Journal of Cross-Cultural Gerontology*, 36(2), 121–137. <https://doi.org/10.1007/s10823-021-09427-x>

- Hughes, M. E., Waite, L. J., Hawkey, L. C., & Cacioppo, J. T. (2004). A short scale for measuring loneliness in large surveys: Results from two population-based studies. *Research on Aging, 26*(6), 655–672. <https://doi.org/10.1177/0164027504268574>
- IBM. (2022, November 17). IBM SPSS Statistics 29 [CT738,CT763,CT761,CT762]. <https://www.ibm.com/support/pages/downloading-ibm-spss-statistics-29>
- Jarvis, C. B., Mackenzie, S. B., & Podsakoff, P. M. (2003). A critical review of construct indicators and measurement model misspecification in marketing and consumer research. *Journal of Consumer Research, 30*(2), 199–218. <https://doi.org/10.1086/376806>
- Kafková, M. P. (2023). Sources of loneliness for older adults in the Czech Republic and strategies for coping with loneliness. *Social Inclusion, 11*(1). <https://doi.org/10.17645/si.v11i1.6185>
- Keizer, R., Dykstra, P. A., & Jansen, M. D. (2008). Pathways into childlessness: Evidence of gendered life course dynamics. *Journal of Biosocial Science, 40*(6), 863–878. <https://doi.org/10.1017/S0021932007002660>
- Kim, P. S., McQueen, J. S., & Hawkes, K. (2019). Why does women's fertility end in mid-life? Grandmothering and age at last birth. *Journal of Theoretical Biology, 461*, 84–91. <https://doi.org/10.1016/j.jtbi.2018.10.035>
- Kohli, M., & Albertini, M. (2009). Childlessness and intergenerational transfers: What is at stake? *Ageing and Society, 29*(8), 1171–1183. <https://doi.org/10.1017/S0144686X09990341>
- Koropecj-Cox, T., & Call, V. R. A. (2007). Characteristics of older childless persons and parents: Cross-national comparisons. *Journal of Family Issues, 28*(10), 1362–1414. <https://doi.org/10.1177/0192513X07303837>
- Kreyenfeld, M., & Konietzka, D. (Eds.). (2017). *Childlessness in Europe: Contexts, causes, and consequences*. Springer.
- Mayers, A. M., Khoo, S.-T., & Svartberg, M. (2002). The Existential Loneliness Questionnaire: Background, development, and preliminary findings. *Journal of Clinical Psychology, 58*(9), 1183–1193. <https://doi.org/10.1002/jclp.10038>
- cAllister, F., & Clarke, L. (2000). Voluntary childlessness: Trends and implications. In G. R. Bentley & C. G. N. Mascie-Taylor (Eds.), *Infertility in the modern world* (1st ed., pp. 189-237). Cambridge University Press. <https://doi.org/10.1017/CBO9780511613036.006>
- McQuillan, J., Greil, A. L., Shreffler, K. M., Wonch-Hill, P. A., Gentzler, K. C., & Hathcoat, J. D. (2012). Does the reason matter? Variations in childlessness concerns among U. S. Women. *Journal of Marriage and Family, 74*(5), 1166–1181. <https://doi.org/10.1111/j.1741-3737.2012.01015.x>

- Penning, M. J., Wu, Z., & Hou, F. (2022). Childlessness and social and emotional loneliness in middle and later life. *Ageing and Society*, 1–28. <https://doi.org/10.1017/S0144686X22000824>
- Peterson, H. (2015). Fifty shades of freedom. Voluntary childlessness as women's ultimate liberation. *Women's Studies International Forum*, 53, 182–191. <https://doi.org/10.1016/j.wsif.2014.10.017>
- Plotnick, R. D. (2009). Childlessness and the economic well-being of older Americans. *The Journals of Gerontology. Series B, Psychological Sciences and Social Sciences*, 64(6), 767–776. <https://doi.org/10.1093/geronb/gbp023>
- Riggs, D. W., & Bartholomaeus, C. (2016). The desire for a child among a sample of heterosexual Australian couples. *Journal of Reproductive and Infant Psychology*, 34(5), 442–450. <https://doi.org/10.1080/02646838.2016.1222070>
- Rybińska, A., & Morgan, S. P. (2019). Childless expectations and childlessness over the life course. *Social Forces; a Scientific Medium of Social Study and Interpretation*, 97(4), 1571–1602. <https://doi.org/10.1093/sf/soy098>
- Schnettler, S., & Wöhler, T. (2016). No children in later life, but more and better friends? Substitution mechanisms in the personal and support networks of parents and the childless in Germany. *Ageing and Society*, 36(7), 1339–1363. <https://doi.org/10.1017/S0144686X15000197>
- Stahnke, B., Blackstone, A., & Howard, H. (2020). Lived experiences and life satisfaction of ChildFree women in late life. *The Family Journal*, 28(2), 159–167. <https://doi.org/10.1177/1066480720911611>
- Stegen, H., Switsers, L., & De Donder, L. (2021). Life stories of voluntarily childless older people: A retrospective view on their reasons and experiences. *Journal of Family Issues*, 42(7), 1536–1558. <https://doi.org/10.1177/0192513X20949906>
- Stevenson, J., Keogh, P., Smith, J., & West, E. (2018). Reaching the right people: Reflexive practice to support effective recruitment, participation, and engagement in research with communities affected by stigma. *International Journal of Qualitative Methods*, 17(1), 1–7. <https://doi.org/10.1177/1609406918819376>
- Switsers, L., Qualter, P., Pan, H., Barreto, M., De Donder, L., Victor, C., Dury, S., Hammond, C., & Dierckx, E. (2022). Exploring the demographic and situational characteristics of older British people experiencing loneliness as positive within the BBC loneliness experiment. *Aging and Mental Health*, 1–7. <https://doi.org/10.1080/13607863.2022.2088692>
- Theuns, P., & Verlet, D. (2022). Bernheim's anamnestic comparative self-assessment (ACSA). In F. Maggino (Ed.) (Red.), *Encyclopedia of Quality of life and well-being research* (pp. 1–6). Springer International Publishing. https://doi.org/10.1007/978-3-319-69909-7_84-2

- Valerio, T., Knop, B., Kreider, R. M., & He, W. (2021). *Childless older Americans: 2018*.
- Van Bavel, J. (2014). The mid-twentieth century baby Boom and the changing educational gradient in Belgian cohort fertility. *Demographic Research*, 30, 925–962. <https://doi.org/10.4054/DemRes.2014.30.33>
- van Tilburg, T. G. (2020). Social, emotional, and existential loneliness: A test of the multidimensional concept. *The Gerontologist*, gnaa082. <https://doi.org/10.1093/geront/gnaa082>
- Victor, C. R., Rippon, I., Barreto, M., Hammond, C., & Qualter, P. (2022). Older adults' experiences of loneliness over the lifecourse: An exploratory study using the BBC loneliness experiment. *Archives of Gerontology and Geriatrics*, 102, 104740. <https://doi.org/10.1016/j.archger.2022.104740>
- Vozikaki, M., Papadaki, A., Linardakis, M., & Philalithis, A. (2018). Loneliness among older European adults: Results from the survey of health, aging and retirement in Europe. *Journal of Public Health*, 26(6), 613–624. <https://doi.org/10.1007/s10389-018-0916-6>
- Wenger, G. C., Dykstra, P. A., Melkas, T., & Knipscheer, K. C. P. M. (2007). Social embeddedness and late-life parenthood: Community activity, close ties, and support networks. *Journal of Family Issues*, 28(11), 1419–1456. <https://doi.org/10.1177/0192513X07303895>
- Xu, X., Liang, J., Raymo, J. M., Kim, B., & Ofstedal, M. B. (2022). Defining childlessness among middle-aged and older Americans: A research note. *Demography*, 59(3), 813–826. <https://doi.org/10.1215/00703370-9987649>
- Zhang, Z., & Hayward, M. D. (2001). Childlessness and the psychological well-being of older persons. *The Journals of Gerontology. Series B, Psychological Sciences and Social Sciences*, 56(5), S311–S320. <https://doi.org/10.1093/geronb/56.5.S311>
- Zoutewelle-Terovan, M., & Liefbroer, A. C. (2018). Swimming against the stream: Non-normative family transitions and loneliness in later life across 12 nations. *The Gerontologist*, 58(6), 1096–1108. <https://doi.org/10.1093/geront/gnx184>

CHAPTER 6.

The Impact Of Childlessness and the Reasons for it On Older Adults' Loneliness And The Moderating Role Of Gender

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CHAPTER 6. The Impact Of Childlessness and the Reasons for it On Older Adults' Loneliness And The Moderating Role Of Gender

Abstract

This study examines the relationship between childlessness and different types of loneliness (overall, social, emotional and existential) in later life, the role that different reasons for childlessness play in older adults' loneliness, and whether these factors vary between men and women. We used a cross-sectional design and surveyed 543 older adults in Flanders and the Brussels region of Belgium, of whom 255 (47.0%) were childless. We conducted multivariate linear regressions to model the relationship between the reasons for childlessness and the different types of loneliness in later life. We tested the moderating effect of gender using the Hayes PROCESS macro. The results show that childless older adults are not significantly lonelier than older adults with children, and this applies to social, emotional, existential and overall loneliness. However, different reasons for childlessness have different impacts on later-life loneliness. There is a positive association between (1) being childless because of life events and overall loneliness; (2) life events and social loneliness; (3) health problems and overall loneliness; (4) health problems and emotional loneliness; (5) partner and emotional loneliness; and (6) partner and existential loneliness. Finally, gender does not moderate any of the associations. Our findings challenge the assumption that childless older adults are inherently destined to be lonelier in later life. However, the specific reasons for older adults' childlessness have an important impact.

Keywords: loneliness, childlessness, social loneliness, emotional loneliness, existential loneliness, older adults

1. Introduction

Having children is often seen as a benefit in later life. Children are an important component in the social network of older people (Deindl & Brandt, 2017) and are often the main informal caregivers (Jacobs et al., 2016). Not having children (or grandchildren) is a possible risk factor for loneliness. For example, Vozikaki et al. (2018) studied loneliness among older European adults and found that being childless was significantly associated with frequent feelings of loneliness in later life. Zoutewelle-Terovan and Liefbroer (2018) also showed that childlessness is strongly related to later-life loneliness. Using micro-level data from the Generations and Gender Survey for 12 European countries, they showed that this relationship is strongest in traditional, familistic countries where the family is still of great importance and where childlessness is the greatest deviation from traditional family norms. Qualitative research also underlines the importance of childlessness as a risk factor for loneliness in later life, arising from feelings of fear of not being helped or of being dependent on professional carers (Kafková, 2023). Conversely, other research indicates that the relationship between childlessness and loneliness is not as strong or negative as previously thought (i.e. that childless older adults are less lonely than older adults with children) (Hansen, 2021).

While few aforementioned studies researching childlessness and loneliness examined different types of loneliness (e.g. social, emotional, existential), it could be hypothesised that being childless places older adults more at risk of experiencing social loneliness, in particular, because children could provide opportunities for social engagement in middle and later life (Penning et al., 2022) and social support in old age (Von Saenger et al., 2023). The reasons for childlessness are also important, because the pathways to childlessness in later life might also play a role (Hagestad & Call, 2007). Our study examines the relationship between childlessness and different types of loneliness in later life and the role of different reasons for childlessness for different types of loneliness. Finally, because gender might define the context and structural situations of someone's life (Keizer et al. 2008), we aimed to examine in depth whether these relationships vary between men and women. Therefore, three hypotheses are proposed in the next section.

2. Theoretical framework and hypotheses

2.1 Childlessness and different types of loneliness in later life

To fully understand the relationship between childlessness and loneliness, it is essential to consider the different types of loneliness. Based on the traditional definition of loneliness by Perlman and Peplau (1981, p. 31), i.e. 'the unpleasant experience that occurs when a person's network of social relations is deficient in some important way, either quantitatively or qualitatively', recent literature acknowledges that loneliness is a multidimensional concept consisting of several types (De Jong Gierveld et al., 2018; Maes et al., 2015; Yanguas et al., 2018). The following three types are the most prominent in the literature: social, emotional (Dahlberg et al., 2022; van Tilburg, 2020; Weiss, 1973), and existential loneliness (Bolmsjö et al., 2019; van Tilburg, 2020). Social loneliness refers to the absence of a broad, engaging social network (e.g. siblings, cousins, friends, neighbours), meaning the lack of a wider network of family and friends with common interests (van Tilburg, 2020; Weiss, 1973). Emotional loneliness concerns the feeling of lacking an intimate relationship (e.g. partner, best friend). This type of loneliness is exemplified by the loss of a partner through bereavement and can be characterised by intense feelings of emptiness, abandonment and forlornness (van Tilburg, 2020; Weiss, 1973). The importance of existential loneliness also emerged; some researchers argue that other distinctions fall short of explaining the concept of loneliness comprehensively (Bolmsjö et al., 2019; van Tilburg, 2020). Bolmsjö et al. (2019, p. 5) define existential loneliness as 'the immediate awareness of being fundamentally separated from other people and from the universe, and typically, because of this awareness, experiencing negative feelings, that is, moods and emotions'.

A recent systematic review about the prevalence of loneliness among community-dwelling older adults demonstrated that knowledge about the prevalence of different types of loneliness is limited. This study found an estimated pooled prevalence rate of loneliness of 31.6%, but there were no separate prevalence percentages for the different types of loneliness (Stegen et al., 2024). Although several studies acknowledge the existence of different types of loneliness, this has rarely resulted in differential research results (Stegen et al., 2024). Possibly, the only study to distinguish between different types of loneliness in relation to childlessness was by Penning et al. (2022). They used data from the Canadian General Social Survey and differentiated social and emotional loneliness. Their findings indicate the importance of having children to lower levels of loneliness in middle and later life; the strength of this link varies and depends on the specific social circumstances (age, gender, marital/partner status) and the type of loneliness (emotional versus social) (Penning

et al., 2022). These results show that childlessness is more strongly associated with social loneliness than with emotional loneliness, suggesting that having children offers possibilities for social interaction in later life (Penning et al., 2022). Therefore, our first hypothesis is as follows:

H1: Remaining childless leads to increased social, emotional and existential loneliness, especially social loneliness.

2.2 Reasons for childlessness and their associations with loneliness

A second shortcoming in the literature is the unnuanced dichotomisation of childlessness: voluntary versus involuntary. Childlessness can be voluntary, stemming from a deliberate decision not to have children (Abramowska-Kmon et al., 2023; Conner & Stith, 2014; Dykstra & Hagestad, 2007). However, older adults may find themselves involuntarily childless because their desire for children was unfulfilled (Abramowska-Kmon et al., 2023; Dykstra & Hagestad, 2007). Some studies introduce a third category, the *postponers* (Dykstra & Liefbroer, 1998; Peterson, 2015). This group primarily comprises women who delay childbearing for career, educational or lifestyle reasons, thereby reducing their chances of becoming parents. While this third category adds some nuance, it is important to acknowledge that there is a spectrum of reasons for not having children. These include prioritising a career over family life (Rybińska & Morgan, 2019; Stegen et al., 2021), holding critical perspectives on society (Smith et al., 2020; Stegen et al., 2021), having a partner who does not wish to have children (Riggs & Bartholomaeus, 2016; Stegen et al., 2021), encountering life circumstances that hinder childbearing (Stegen et al., 2021), or facing medical barriers (Dykstra & Hagestad, 2007). Childlessness requires more than just a simple response to the question 'Do you have children?'—the pathway to childlessness is also important (Hagestad & Call, 2007). The link between the reasons for childlessness and loneliness in later life has never been fully researched. Therefore, we propose a second hypothesis as follows:

H2: Different reasons for childlessness have different impacts on different types of loneliness in later life.

2.3 The impact of gender on the relationship between childlessness and loneliness in later life

The life trajectories of men and women are comparable. However, there may be different pathways to and experiences of their childlessness (Keizer et al., 2008; Skirbekk, 2022). For men, factors such as prolonged singlehood during fertile years and a history of multiple relationships may serve as significant barriers to parenthood (Keizer et al., 2008). These factors can also impact later-life wellbeing. For example, singlehood makes men more vulnerable to depression, excessive smoking, poor physical health and sleeping issues (Hadley, 2021). Women face specific biological restrictions, their *window of opportunity* for childbearing being limited to two to three decades, in contrast to men, who are usually not confronted with permanent loss of fertility (Hagestad & Call, 2007). Factors such as higher education and uninterrupted career pursuits could also heighten women's likelihood of remaining childless (Keizer et al., 2008; Skirbekk, 2022). For men, this trend is reversed; childlessness is highest among the least educated men and lowest among the most highly educated men (Skirbekk, 2022). Since the 1950s, gender roles have become more flexible, granting women greater autonomy in reproductive choices (Neyer & Bernardi, 2011; Rybińska & Morgan, 2019). This shift has implications for greater autonomy in childbearing decisions, with greater male involvement at home now considered crucial for increasing fertility and reducing childlessness (Goldscheider et al., 2015; Leocádio, 2022). The smaller the variation in gender role attitudes in a society, meaning that most members of society share similar attitudes, the higher the rate of parenthood. This means that societal disagreement on gender roles heightens the degree of childlessness (Hudde, 2018).

The question arises as to whether this difference between men and women is still felt later in life. Older childless women may be perceived as more socially vulnerable than older childless men due to societal expectations surrounding parenthood and because children can be an important source of support (Wenger et al., 2007). Older men, whether or not they have children, are frequently more susceptible to loneliness because of lower-quality interpersonal relationships (Heylen, 2010; Penning et al., 2022). Dykstra and De Jong Gierveld (2004) found that older women without children are less socially and emotionally lonely compared to older women with children. The authors did not find a link between childlessness and social and emotional loneliness in men. Penning et al. (2022) showed that childless older women were less socially lonely than childless older men. Therefore, our third hypothesis is as follows:

H3a: Gender moderates the relationship between childlessness and loneliness in later life; the relationships are different for men and women.

H3b: Gender moderates the relationship between the reasons for childlessness and loneliness in later life; the relationships are different for men and women.

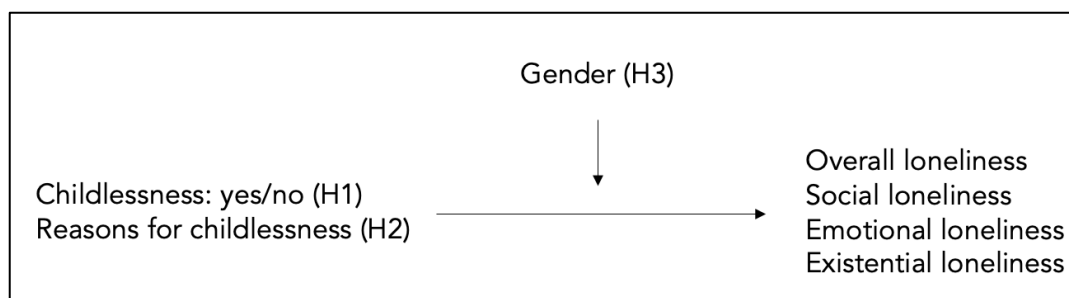


Figure 1. The hypothesised moderation model of (reasons for) childlessness and loneliness, with gender as a moderator

3. Research design

3.1 Respondents and procedure

This study employed a purposive sampling approach, which involved selecting respondents based on specific characteristics relevant to the population and study objectives, rather than relying on random selection. Inclusion criteria required respondents to be aged 60 years or older and living in the community, not in a residential care facility. Given the focus on childless older adults, deliberate efforts were made to overrepresent this demographic. Therefore, this group was specifically targeted in purposive sampling to achieve a sufficient number of older individuals without children. The recruitment of respondents was conducted by the research team and by trained university students who were instructed to search for childless respondents and who administered surveys primarily face-to-face. We distributed online leaflets through older adults' organisations, our personal and professional networks, and social network sites. Data collection occurred between March 1 and September 30, 2023, when 731 older adults completed the survey. In subsequent analyses, cases with missing responses to the main measures were excluded, resulting in a final working sample of 543 respondents, of whom 255 identified themselves as childless (41.4%). Table 1 presents the descriptive statistics of the total sample. The respondents' ages ($M = 70.89$, $SD = 8.79$) varied from 60 to 98 years old, with 62.4% of them being female and 39.2% having no partner. More than half of the respondents (53.4%) had finished higher education, meaning that they were relatively well educated. More than 80% of the respondents said it was easy to make ends meet with their monthly income. The mean score for the participants' physical health was 21.03 ($SD = 28.08$) on a scale from 0 to 100 (the higher the score, the worse the physical health). In contrast to respondents who were excluded from the analysis, those who were included were slightly younger (70.89 vs. 72.56), more likely to be male (37.6% vs. 31.1%),

more likely to have a partner (60.8% vs. 47.4%), more educated (53.4% had completed higher education vs. 37.6%), and able to make ends meet slightly more easily (80.5% vs. 77.7%).

Table 1. Descriptive statistics of the sample (N=543)

Variables	Min.	Max.	% (N)	M (SD)
Independent variable				
Childlessness				
Childless			47.0 (255)	
Parents			53.0 (288)	
Dependent variable				
Overall loneliness-11-item DJG	0	100		28.56 (29.59)
Social loneliness	0	100		26.96 (33.31)
Emotional loneliness	0	100		29.90 (33.19)
Existential loneliness-ELQ	0	100		27.50 (22.58)
Control variables				
Age	60	98		70.89 (8.79)
Gender				
Female			62.4 (339)	
Male			37.6 (204)	
Partner state				
No partner			39.2 (213)	
Partner (whether or not cohabiting)			60.8 (330)	
Bad physical functioning (MOS)	0	100		21.03 (28.08)
Educational level				
No finished degree or lower education			8.5 (46)	
Secondary education			38.1 (207)	
Higher education			53.4 (290)	
Subjective income: perception of making ends meet				
Difficult			19.5 (106)	
Easy			80.5 (437)	

Notes: M = Mean, SD = standard deviation, DJG = De Jong Gierveld Loneliness Scale, ELQ = Existential Loneliness Questionnaire, MOS = Medical Outcomes Study

*p<0.05, **p<0.01

Before data collection, ethical approval was obtained from the Ethical Committee of Human Sciences (ECHW) at Vrije Universiteit Brussel (VUB) (Ethics file: 398.02). Our questionnaire was accompanied by an informed consent letter, which included a detailed description of the study's background and objectives, along with explicit instructions on how to complete the survey. Contact information for the research team was provided, as were contact details for Tele-Onthaal and the Centrum voor Algemeen Welzijnswerk, two organisations offering support to individuals facing challenges, should respondents wish to discuss personal insights from the survey. Respondents were also informed of their right to withdraw from the study at any point.

3.2 Measures

The survey comprised three sections. The first part contained specific questions about childlessness or parenthood. Respondents had the option to complete either the childlessness or parenthood section based on their personal circumstances. The second part focused on sociodemographic characteristics, and the third on loneliness and wellbeing.

3.2.1 *Childlessness*

The first independent variable was childlessness (0 = parent, 1 = childless). Respondents were considered childless when they completed the section on childlessness in the questionnaire. When they completed the questions about parenthood, they were categorised as parents. In so doing, we followed the perceptions of the respondents and how they see themselves, as childless or as a parent.

3.2.2 *Reasons for childlessness*

The second group of independent variables was *reasons for childlessness*. A list of 21 items or reasons was provided to the respondents. The reasons could be clustered into the following four categories: (1) personal choice, encompassing all reasons that have to do with personal drives, thoughts and aspirations; (2) life events, indicating the specific life events that led to childlessness; (3) health problems, for themselves or their partner; and (4) the partner, incorporating all reasons the partner did not want or could not have children. Respondents could indicate multiple reasons for their childlessness. A formative approach to scale construction was chosen (Bucic & Gudergan, 2004; Jarvis et al., 2003). The different items, or *reasons*, are reflected in *reason categories* that are not comparable or interchangeable with other categories (Bucic & Gudergan, 2004). Table 2 presents an overview of all the reasons that respondents could choose from, each in their respective reason categories. The first and biggest category (N = 90, 35.3%) was personal choice; this involved reasons why the individual concerned actively chose a childless life. The second was life events (N = 62, 24.3%) and included events earlier or later in life that led to childlessness. Category number three involved health problems for the individual or their partner (N = 59, 23.1%). Finally, the fourth category (N = 54, 21.2%) comprised partner-related reasons, indicating that an individual's childlessness was primarily attributable to their partner.

Table 2. Reasons for childlessness, in their respective category (N=255)

Reason category and corresponding reasons	N	Percent
<i>Reason category 1: Personal choice</i>	90	35.3%
I have always put my own development first	42	16.7%
The adjustments children would require in my life, which I did not want to face	36	14.3%
My critical view of society (on ecology, climate, overpopulation, politics and events such as wars, famines or pandemics)	34	13.5%
Having children does not really fit into my ideal image of society	30	11.9%
My aspiration to pursue my career fully instead of starting a family	24	9.6%
I did not want my children to become like myself (e.g. genetic diseases, personal traits, ...)	18	7.1%
<i>Reason category 2: Life events</i>	62	24.3%
Events throughout my life (later than childhood)	39	15.5%
Events in my childhood	32	12.9%
I had to provide help or care to someone close to me who needed intensive care due to physical or mental health problems, illness or old age (e.g. a sick family member, informal care, ...)	13	5.2%
My own diminished psychological wellbeing	7	2.8%
<i>Reason category 3: Health problems</i>	59	23.1%
In case of biological children: health problems in myself	37	14.9%
In case of biological children: health problems in my partner	36	14.7%
<i>Reason category 4: Partner</i>	54	21.2%
My partner who did not want children him-/herself, so I followed him/her in that decision	26	10.5%
My partner who already had children from a previous relationship and did not want other children	23	9.3%
My partner's age: my partner became too old to have children	22	8.9%
My partner who was absent (e.g. due to work, war, ...)	11	4.4%

3.2.3 Loneliness

The primary outcome variable in our study was loneliness. We computed an overall loneliness score along with distinct scores for social, emotional and existential loneliness. For the overall loneliness score, we used a 5-point Likert scale for the 11-item De Jong Gierveld Loneliness Scale (Cronbach's alpha: 0.899), which also provided separate scores for emotional (Cronbach's alpha: 0.869) and social loneliness (Cronbach's alpha: 0.859) (De Jong Gierveld & van Tilburg, 2021). Six of the scale items, for example, 'I often feel rejected', were indicative of emotional loneliness, while the remaining five items focused on aspects of social loneliness (e.g. 'I can call on my friends whenever I need them'). For existential loneliness, we used the Existential Loneliness Questionnaire (ELQ) developed by Mayers et al. (2002), also with a 5-point Likert scale. However, this scale was validated among HIV-infected women. Therefore, we retained only the 16 non-HIV-related items. These items focused on meaninglessness in life and existential loneliness in relationships (Cronbach's alpha: 0.869) (van Tilburg, 2020). All loneliness scores ranged between 0–100, with higher scores indicating greater levels of loneliness.

3.2.4 Control variables

Various control variables were considered crucial in assessing loneliness, including gender (Dahlberg et al., 2015), age (Surkalim et al., 2022), partner status (Arpino et al., 2022), physical functioning (McKenna-Plumley et al., 2023), educational attainment (Fernández-Carro & Gumà Lao, 2022), and subjective income (Fokkema et al., 2012). The questionnaire collected respondents' sociodemographic data on gender (0 = female, 1 = male), age (measured in years), partner status (0 = no partner, 1 = partner), impaired physical functioning (further details provided), educational level (1 = no education or primary education, 2 = secondary education, 3 = higher education), and subjective income (0 = difficult, 1 = easy). Poor physical functioning was assessed using a segment of the MOS Short Form General Health Survey (SF-20), incorporating six items to derive a score for physical functioning (Cronbach's alpha: 0.817). The scores ranged from 0–100, with higher scores indicating poorer physical functioning.

4. Analysis

We used SPSS (IBM Statistics version 29) for our analyses. First, we calculated the descriptive statistics of the included sample, including means and standard deviations for all study

variables (see Table 1). Second, independent sample t-tests were conducted to check for bivariate loneliness differences between older adults with and without children. Next, we conducted multivariate linear regressions. We controlled for multicollinearity in our regression model by ensuring that the Variance Inflation Factors (VIF) for all predictors were below 2 and the Tolerance (TOL) values were above 0.5, indicating acceptable levels of multicollinearity (Field 2012). We omitted gender as a control variable in the multivariate linear regressions. We then tested whether gender moderated the effect of childlessness on overall, social, emotional and existential loneliness by using the Hayes bias-corrected bootstrap approach ($n = 5,000$) (Hayes, 2013). In this model, the interaction term (childlessness \times gender) was computed; the predictor and the interaction were entered into a simultaneous regression model. We treated age, partner state, poor physical functioning, educational level and subjective income as control variables. We used PROCESS version 4.2 for SPSS 29.0 (Model 1 in PROCESS; Hayes, 2013) for these analyses. We considered $p < 0.05$ as statistically significant.

We looked at the effect of the reasons for childlessness on the different types of loneliness by conducting multivariate linear regressions without gender, followed by the same bias-corrected bootstrapping approach ($n = 5,000$) (Hayes, 2013) to test gender as a moderator. Four categories of reasons for childlessness were tested, resulting in the computation of four interaction terms with gender. Age, partner state, poor physical functioning, educational level and subjective income were treated as control variables.

5. Results

5.1 H1 and H3a: Childless vs. non-childless and loneliness

Table 3 shows the loneliness scores of the childless and non-childless groups of respondents. The results of the independent samples t-test between the two groups indicate no significant differences ($p > 0.05$), meaning that there was no bivariate difference between older adults with and without children in terms of overall, social, emotional and existential loneliness.

Table 4 shows the multivariate linear regression analyses with childlessness predicting overall, social, emotional and existential loneliness. We conducted the analyses for the entire group ($N = 543$) and for women ($N = 339$) and men ($N = 204$) separately. None of the analyses of our total group of respondents revealed a statistically significant relationship between childlessness and loneliness, as indicated by non-significant β -coefficients. For men and women separately, no significant β -coefficients were found. These findings suggest that, within the scope of this study, childlessness did not indicate a significant association with any

of the examined types of loneliness when including control variables such as age, partner state, poor physical functioning, educational level and subjective income.

In the second step, we performed a moderation analysis (Hayes Model 1) with gender as a moderator (see Table 4). The results indicate that the direct effect of childlessness on the four types of loneliness and the interaction effect 'childlessness \times gender' on all loneliness types were non-significant. The lack of significance in the direct and interaction effects suggests that, taking these control variables into account, the anticipated relationship between childlessness, gender and loneliness did not manifest as hypothesised.

Table 3. Loneliness scores among older adults without and with children (N=543)

Variables	Min.	Max.	Total (N = 543) M (SD)	Older adults without children (N = 255, 47.0%) M (SD)	Older adults with children (N = 288, 53.0%) M (SD)	t	p
Overall loneliness-11-item DJG	0	100	28.56 (29.59)	28.81 (30.40)	28.35 (28.92)	-0.18	ns
Social loneliness DJG	0	100	26.96 (33.31)	27.61 (34.09)	26.39 (32.64)	-0.43	ns
Emotional loneliness DJG	0	100	29.90 (33.19)	29.80 (33.05)	29.98 (33.37)	0.06	ns
Existential loneliness-ELQ	0	100	27.50 (22.58)	29.12 (24.07)	26.06 (21.10)	-1.57	ns

Notes: M = Mean, SD = standard deviation, DJG = De Jong Gierveld Loneliness Scale, ELQ = Existential Loneliness Questionnaire, ns= not significant

Table 4. Multivariate regressions: childlessness and loneliness in later life, and the moderating role of gender (total N=543)

Childlessness	Overall loneliness (β (SE), R ²)	Social loneliness (β (SE), R ²)	Emotional loneliness (β (SE), R ²)	Existential loneliness (β (SE), R ²)	
Linear regression – total group (N=543)	-1.39 (2.52), 0.072	-0.23 (2.89), 0.036	-2.36 (2.80), 0.086	2.05 (1.88), 0.113	
Linear regression – women only (N=339)	1.75 (3.15), 0.091	3.81 (3.48), 0.059	0.04 (3.58), 0.096	4.61 (2.41), 0.117	
Linear regression – men only (N=204)	-7.07 (4.27), 0.101	-8.58 (5.16), 0.051	-5.82 (4.59), 0.120	-2.45 (3.07), 0.136	
Linear regression, moderating for gender (Hayes process macro) (N=543)	Childlessness	1.28 (3.16), 0.082	3.33 (3.61), 0.052	-0.43 (3.53), 0.090	4.15 (2.36), 0.117
	Interaction: Childlessness x gender	-8.44 (5.11), 0.082	-11.45 (5.85), 0.052	-5.93 (5.71), 0.090	-5.91 (3.82), 0.117

Control variables included: age, partner state, bad physical functioning, educational level, subjective income

β : unstandardized beta coefficients. SE: standard error. Ref.: Reference category

* $p < 0.05$, ** $p < 0.01$

5.2 H2 and H3b: Reasons for childlessness and loneliness

Childless older adults were our main group of interest; therefore we also looked closer at this specific target group (N = 255). We used independent samples t-tests on the four categories of reasons to compare the loneliness of people who did and did not fall into each of the categories (see Table 5). We found no differences in the 'personal choice' reasons category. Those in the 'life events' category had a significantly higher overall ($p < 0.05$) and social loneliness score ($p < 0.01$) compared to people outside this category. In the 'health problems' category, overall loneliness ($p < 0.05$) and, in particular, emotional loneliness ($p < 0.01$) were significantly higher. Finally, existential loneliness was significantly higher among those in the 'partner' reason category ($p < 0.01$) than those not in the category.

We conducted multivariate linear regressions on each of the categories of reasons for the four types of loneliness (see Table 6). The bivariate results remained significant, even when controlling for age, partner state, poor physical functioning, educational level and subjective income. Being childless as the result of 'life events' increased overall loneliness and social loneliness; being childless because of 'health problems' increased overall and emotional loneliness; and being childless because of partner-related reasons increased emotional and existential loneliness.

Appendix 1 shows the results for women (N = 150) and men (N = 105) separately. The results for women were similar to the results for the total sample. This was not the case for men; not one regression was significant. However, moderation analysis (Hayes Model 1) with gender as a moderator (see Table 7) did not show any significant moderation effect of gender. Gender did not significantly moderate the relationship between the reasons for childlessness and loneliness in later life.

Table 5. Loneliness within each reason category of childlessness (N=255)

Variables	Category 1: Personal choice		Category 2: Life events		Category 3: Health problems		Category 4: Partner	
	Yes (N=90, 35.3%) M (SD)	No (N=165, 64.7%) M (SD)	Yes (N=62, 24.3%) M (SD)	No (N=193, 75.7%) M (SD)	Yes (N=59, 23.1%) M (SD)	No (N=196, 76.9%) M (SD)	Yes (54, 21.2%) M (SD)	No (201, 78.8%) M (SD)
Overall loneliness-11-item DJG	31.52 (30.96)	27.33 (30.08)	36.80* (31.72)	26.24* (29.59)	36.36* (31.72)	26.53* (29.70)	35.19 (35.45)	27.09 (28.75)
Social loneliness	32.00 (34.68)	25.21 (33.63)	37.42** (36.12)	24.46** (32.90)	31.86 (33.24)	26.33 (34.33)	32.59 (40.06)	26.27 (32.29)
Emotional loneliness	31.11 (33.91)	29.09 (32.65)	36.29 (33.95)	27.72 (32.57)	40.11** (35.03)	26.70** (31.87)	37.35 (35.90)	27.78 (32.03)
Existential loneliness-ELQ	29.56 (24.03)	28.89 (24.16)	33.12 (24.50)	27.84 (23.85)	34.12 (23.85)	27.62 (23.99)	37.04** (26.37)	27.00** (23.02)

Notes: DJG = De Jong Gierveld Loneliness Scale, ELQ = Existential Loneliness Questionnaire

* $p < 0.05$, ** $p < 0.01$ (independent samples t-test)

Table 6. Multivariate regressions: relationship of reason of childlessness with loneliness, control variables included – total sample (N=255)

	Overall loneliness (β (SE), R^2)	Social loneliness (β (SE), R^2)	Emotional loneliness (β (SE), R^2)	Existential loneliness (β (SE), R^2)
Category 1 – Personal choice	3.80 (3.99), 0.074	7.37 (4.52), 0.052	0.83 (4.31), 0.084	0.93 (3.06), 0.128
Category 2 – Life events	9.62* (4.41), 0.088	12.95* (5.00), 0.067	6.84 (4.79), 0.091	4.97 (3.40), 0.135
Category 3 – Health problems	9.17* (4.57), 0.086	3.75 (5.24), 0.044	13.69** (4.90), 0.111	4.81 (3.52), 0.134
Category 4 – Partner	8.38 (4.56), 0.083	5.82 (5.22), 0.047	10.51* (4.92), 0.100	10.86** (3.46), 0.161
Control variables	Yes	Yes	Yes	Yes

Control variables included: age, partner state, bad physical functioning, educational level, subjective income

β : unstandardized beta coefficients. SE: standard error. Ref.: Reference category

* $p < 0.05$, ** $p < 0.01$

Table 7. Relationship of categories of reasons for childlessness with loneliness, controlling for control variables: a moderating effect of gender (Hayes PROCESS macro) (N=255)

	Overall loneliness (β (SE), R^2)	Social loneliness (β (SE), R^2)	Emotional loneliness (β (SE), R^2)	Existential loneliness (β (SE), R^2)
Category 1 – Personal choice	-0.46 (5.42), 0.080	1.68 (6.14), 0.060	-2.25 (5.87), 0.086	1.87 (4.17), 0.130
<i>Personal choice x gender</i>	9.50 (7.92), 0.080	12.50 (8.98), 0.060	7.00 (8.58), 0.086	-1.35 (6.10), 0.130
Category 2 – Life events	13.06* (5.76), 0.091	17.18** (6.53), 0.071	9.63 (6.26), 0.093	8.25 (4.44), 0.141
<i>Life events x gender</i>	-8.29 (8.89), 0.091	-10.20 (10.08), 0.071	-6.69 (9.66), 0.093	-7.83 (6.84), 0.141
Category 3 – Health problems	15.11** (5.64), 0.097	10.22 (6.47), 0.055	19.18** (6.05), 0.120	3.80 (4.37), 0.136
<i>Health problems x gender</i>	-16.43 (9.26), 0.097	-17.82 (10.63), 0.055	-15.26 (9.94), 0.120	2.34 (7.18), 0.136
Category 4 – Partner	11.20 (5.84), 0.085	9.46 (6.67), 0.050	12.65* (6.29), 0.101	13.28** (4.42), 0.165
<i>Partner x gender</i>	-7.27 (9.45), 0.085	-9.30 (10.80), 0.050	-5.58 (10.18), 0.101	-6.57 (7.15), 0.165
Control variables	Yes	Yes	Yes	Yes

Control variables included: gender (also as moderator) age, partner state, bad physical functioning, educational level, subjective income

β : unstandardized β coefficients. SE: standard error.

* $p < 0.05$, ** $p < 0.01$.

6. Discussion

We examined the relationship between childlessness and loneliness in later life, taking into consideration the multidimensionality of loneliness and paying specific attention to the potential moderating role of gender. We also examined whether the reasons for childlessness had an impact on loneliness in later life, going beyond the yes/no-children dichotomy. The goal of this research was to shed more nuanced light on the relationship between childlessness and later-life loneliness by testing three hypotheses.

Our first hypothesis was refuted. Contrary to some existing studies (e.g. Vozikaki et al., 2018; Zoutewelle-Terovan & Liefbroer, 2018) that identify a negative effect of the lack of children on later-life loneliness, our results indicate that older adults who do not have children did not score higher on social, emotional and existential loneliness compared to their counterparts who had children. These findings challenge prevailing assumptions about the role of parenthood in mitigating loneliness among older adults. This indicates that factors other than (no) children, and the resulting lack of social contacts and social support from children, may play a more significant role in shaping the experience of loneliness in later life. These might be individual-level factors such as partner state (Arpino et al., 2022), poor physical functioning (McKenna-Plumley et al., 2023) or being able to make ends meet (Fokkema et al., 2012). There could also be macro-level factors, such as income and retirement security, social networks and family support, and health and long-term care (Torres-Gil & Chen, 2021). Some findings can be explained by the fact that, in later life, older adults have been childless for many years and have accepted this situation (Hadley, 2021; Stahnke et al., 2020). While having a child is a normative life event that did not happen, childless older adults might have compensated in other ways, such as by caring for other children (e.g. godchildren; Stegen et al., 2021), pets (Ahmadi et al., 2019) or by dedicating their time to travelling or education (Stegen et al., 2021).

Our second hypothesis on the role of the reasons for childlessness was confirmed. Our results show that three categories of reasons for childlessness affect loneliness in later life. Life events as a reason impacted overall and social loneliness (i.e., missing a broader network of social contacts) (De Jong Gierveld et al., 2018; Weiss, 1973); health problems as a reason increased overall and emotional loneliness (i.e. missing an intimate connection) (De Jong Gierveld et al., 2018; Weiss, 1973); and partner-related reasons increased emotional and existential loneliness (i.e. experiencing existential concerns) (Bolmsjö et al., 2019). Therefore, depending on the reason someone has for childlessness, the experience of loneliness might differ. Explanations for the fact that reasons for childlessness have an impact might include the fact

that not only an individual's current status – childless or not – plays a role, but the life course circumstances that resulted in childlessness as well (Hagestad & Call, 2007).

Our third hypothesis proposed gender as a moderator between (reasons for) childlessness and the different types of later-life loneliness. However, gender did not function as a moderator among any of the models. Therefore, the relationship between childlessness (yes/no) and different types of loneliness is not moderated by gender, and the relation between reasons for childlessness and the loneliness types does not differ between women and men. A possible explanation might be that possible gender differences in experiencing childlessness at a young age fade out as people become older (Umberson et al., 2010). This idea matches the 'age-as-leveller' hypothesis, which suggests that, as people age, there is a decrease in resource inequality, which leads to a reduction in health disparities (Acciai, 2018). The development of support networks (Deindl & Brandt, 2017), the change of social norms (Fiori et al., 2017), changing personal circumstances throughout the life course such as health or socioeconomic status (Hagestad & Call, 2007), and psychological factors such as coping strategies (Abramowska-Kmon et al., 2023; Marsillas & Schoenmakers, 2022) may have a stronger impact on later-life loneliness than gender has.

The strengths of this study include its comprehensive examination of reasons for childlessness and different types of loneliness because previous research almost always considered childlessness as a yes/no-question (Stegen et al., 2021) and looked at loneliness as a unidimensional concept (Stegen et al., 2024). The consideration of gender as a potential moderator by utilising the Hayes PROCESS macro add-on in SPSS is an enhancement to the research literature on childlessness and loneliness in later life. However, some limitations should be acknowledged. Our sample was a purposive sample in which childless older adults were overrepresented, and there were proportionally fewer low-educated people, people with a migration background or non-heterosexual respondents. Therefore, this sample is not representative of the larger older adult population in Flanders and Brussels (Belgium) (Andrade, 2021).

7. Conclusion

This study examined the relationship between (reasons for) childlessness and loneliness in later life and the moderating role of gender in this relationship. Our findings show that being childless in itself does not affect loneliness in later life, but that the reasons for childlessness have a different impact on the different types of loneliness. Gender is not a moderator in any of these relationships; the relationship between (reasons for) childlessness and different types

of loneliness in later life does not differ between men and women. These results show that factors other than childlessness define later-life loneliness and that the impact of gender on this relationship is not significant when childless people become older. Beyond these reasons for childlessness lies a whole life trajectory that should be considered. Qualitative studies could provide rich insights into the lived experiences of childless older adults, shedding light on the subjective meaning of loneliness and the factors that contribute to its decrease or increase throughout the life course.

References

- Abramowska-Kmon, A., Mynarska, M., & Timoszuk, S. (2023). Coping strategies for happy childless ageing: An explorative study in Poland. *Genus*, 79(1), 2. <https://doi.org/10.1186/s41118-022-00180-8>
- Acciai, F. (2018). The age pattern of social inequalities in health at older ages: Are common measures of socio-economic status interchangeable? *Public Health*, 157, 135-141. <https://doi.org/10.1016/j.puhe.2018.01.002>
- Ahmadi, S. E., Rafiey, H., Sajjadi, H., & Nosratinejad, F. (2019). Explanatory Model of Voluntary Childlessness among Iranian Couples in Tehran: A Grounded Theory Approach. *Iranian Journal of Medical Sciences*, 44(6), 449-456. <https://doi.org/10.30476/ijms.2019.44964>
- Andrade, C. (2021). The Inconvenient Truth About Convenience and Purposive Samples. *Indian Journal of Psychological Medicine*, 43(1), 86-88. <https://doi.org/10.1177/0253717620977000>
- Arpino, B., Mair, C. A., Quashie, N. T., & Antczak, R. (2022). Loneliness before and during the COVID-19 pandemic—Are unpartnered and childless older adults at higher risk? *European Journal of Ageing*, 19(4), 1327-1338. <https://doi.org/10.1007/s10433-022-00718-x>
- Bolmsjö, I., Tengland, P.-A., & Rämngård, M. (2019). Existential loneliness: An attempt at an analysis of the concept and the phenomenon. *Nursing Ethics*, 26(5), 1310-1325. <https://doi.org/10.1177/0969733017748480>
- Bucic, T., & Gudergan, S. P. (2004). *Formative versus reflective measurement implications for explaining innovation in marketing partnerships*. <https://opus.lib.uts.edu.au/bitstream/10453/3067/1/2004000806.pdf>
- Conner, S., & Stith, S. (2014). Childless Couples. In M. Coleman & L. H. Ganong (Red.), *The social history of the American family: An encyclopedia* (pp. 204-208). SAGE.
- Dahlberg, L., Andersson, L., McKee, K. J., & Lennartsson, C. (2015). Predictors of loneliness among older women and men in Sweden: A national longitudinal study. *Ageing & Mental Health*, 19(5), 409-417. <https://doi.org/10.1080/13607863.2014.944091>
- Dahlberg, L., McKee, K. J., Frank, A., & Naseer, M. (2022). A systematic review of longitudinal risk factors for loneliness in older adults. *Ageing & Mental Health*, 26(2), 225-249. <https://doi.org/10.1080/13607863.2021.1876638>
- De Jong Gierveld, J., & van Tilburg, T. (2021). *Manual of the Loneliness Scale 1999—Update from 7-5-2021*. Department of Social Research Methodology, Vrije Universiteit Amsterdam.
- De Jong Gierveld, J., van Tilburg, T. G., & Dykstra, P. A. (2018). New Ways of Theorizing and Conducting Research in the Field of Loneliness and Social Isolation. In A. L. Vangelisti & D. Perlman (Red.), *The Cambridge Handbook of Personal Relationships*

- (2de dr., pp. 391-404). Cambridge University Press.
<https://doi.org/10.1017/9781316417867.031>
- Deindl, C., & Brandt, M. (2017). Support networks of childless older people: Informal and formal support in Europe. *Ageing and Society*, 37(8), 1543-1567.
<https://doi.org/10.1017/S0144686X16000416>
- Dykstra, P. A., & De Jong Gierveld, J. (2004). Gender and Marital-History Differences in Emotional and Social Loneliness among Dutch Older Adults. *Canadian Journal on Aging / La Revue Canadienne Du Vieillissement*, 23(2), 141-155.
<https://doi.org/10.1353/cja.2004.0018>
- Dykstra, P. A., & Hagestad, G. O. (2007). Roads Less Taken: Developing a Nuanced View of Older Adults Without Children. *Journal of Family Issues*, 28(10), 1275-1310.
<https://doi.org/10.1177/0192513X07303822>
- Dykstra, P. A., & Liefbroer, A. C. (1998). Kinderloos en toch gelukkig? Over de gevolgen van kinderloosheid voor de ouderdom. *Mens & Maatschappij*, 73(2), 108-129.
- Fernández-Carro, C., & Gumà Lao, J. (2022). A Life-Course Approach to the Relationship Between Education, Family Trajectory and Late-Life Loneliness Among Older Women in Europe. *Social Indicators Research*, 162(3), 1345-1363.
<https://doi.org/10.1007/s11205-022-02885-x>
- Field, A. (2012). *Discovering statistics using SPSS: And sex and drugs and rock'n'roll* (3. ed., repr). Sage.
- Fokkema, T., De Jong Gierveld, J., & Dykstra, P. A. (2012). Cross-National Differences in Older Adult Loneliness. *The Journal of Psychology*, 146(1-2), 201-228.
<https://doi.org/10.1080/00223980.2011.631612>
- Goldscheider, F., Bernhardt, E., & Lappegård, T. (2015). The Gender Revolution: A Framework for Understanding Changing Family and Demographic Behavior. *Population and Development Review*, 41(2), 207-239.
<https://doi.org/10.1111/j.1728-4457.2015.00045.x>
- Hadley, R. A. (2021). 'No longer invincible': The impact of involuntary childlessness on older men. *Physical Therapy Reviews*, 26(5), 328-343.
<https://doi.org/10.1080/10833196.2021.1884172>
- Hagestad, G. O., & Call, V. R. A. (2007). Pathways to Childlessness: A Life Course Perspective. *Journal of Family Issues*, 28(10), 1338-1361.
<https://doi.org/10.1177/0192513X07303836>
- Hansen, T. (2021). Childlessness and Psychological Well-Being in Midlife and Old Age. In F. Maggino (Red.), *Encyclopedia of Quality of Life and Well-Being Research* (pp. 1-5). Springer International Publishing. https://doi.org/10.1007/978-3-319-69909-7_3710-2
- Hayes, A. F. (2013). *Introduction to mediation, moderation, and conditional process analysis:*

- A regression-based approach.* (pp. xvii, 507). Guilford Press.
- Heylen, L. (2010). The older, the lonelier? Risk factors for social loneliness in old age. *Ageing and Society*, 30(7), 1177-1196. <https://doi.org/10.1017/S0144686X10000292>
- Hudde, A. (2018). Societal Agreement on Gender Role Attitudes and Childlessness in 38 Countries. *European Journal of Population*, 34(5), 745-767. <https://doi.org/10.1007/s10680-017-9459-8>
- Jacobs, M. T., Broese van Groenou, M. I., Aartsen, M. J., & Deeg, D. J. H. (2016). Diversity in Older Adults' Care Networks: The Added Value of Individual Beliefs and Social Network Proximity. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, gbw012. <https://doi.org/10.1093/geronb/gbw012>
- Jarvis, C. B., Mackenzie, S. B., & Podsakoff, P. M. (2003). A critical review of construct indicators and measurement model misspecification in marketing and consumer research. *Journal of Consumer Research*, 30(2), 199-218.
- Kafková, M. P. (2023). Sources of Loneliness for Older Adults in the Czech Republic and Strategies for Coping With Loneliness. *Social Inclusion*, 11(1). <https://doi.org/10.17645/si.v11i1.6185>
- Keizer, R., Dykstra, P. A., & Jansen, M. D. (2008). Pathways into Childlessness: Evidence of Gendered Life Course Dynamics. *Journal of Biosocial Science*, 40(6), 863-878. <https://doi.org/10.1017/S0021932007002660>
- Leocádio, V. A. (2022). Childlessness: A review of the theoretical frameworks and a proposition of general pathways. *International Journal of Population Studies*, 7(2), 352. <https://doi.org/10.36922/ijps.v7i2.352>
- Maes, M., Klimstra, T., Van den Noortgate, W., & Goossens, L. (2015). Factor Structure and Measurement Invariance of a Multidimensional Loneliness Scale: Comparisons Across Gender and Age. *Journal of Child and Family Studies*, 24(6), 1829-1837. <https://doi.org/10.1007/s10826-014-9986-4>
- Marsillas, S., & Schoenmakers, E. (2022). Older adults' mentioned practices for coping with loneliness. *European Journal of Ageing*, 19(3), 753-762. <https://doi.org/10.1007/s10433-021-00658-y>
- Mayers, A. M., Khoo, S.-T., & Svartberg, M. (2002). The Existential Loneliness Questionnaire: Background, development, and preliminary findings. *Journal of Clinical Psychology*, 58(9), 1183-1193. <https://doi.org/10.1002/jclp.10038>
- McKenna-Plumley, P. E., Turner, R. N., Yang, K., & Groarke, J. M. (2023). Experiences of Loneliness Across the Lifespan: A Systematic Review and Thematic Synthesis of Qualitative Studies. *International Journal of Qualitative Studies on Health and Well-Being*, 18(1), 2223868. <https://doi.org/10.1080/17482631.2023.2223868>
- Neyer, G., & Bernardi, L. (2011). Feminist Perspectives on Motherhood and Reproduction. *Historical Social Research*, 36(2), 162-176.

<https://doi.org/10.12759/HSR.36.2011.2.162-176>

- Penning, M. J., Wu, Z., & Hou, F. (2022). Childlessness and social and emotional loneliness in middle and later life. *Ageing and Society*, 1-28. <https://doi.org/10.1017/S0144686X22000824>
- Perlman, D., & Peplau, L. A. (1981). Toward a social psychology of loneliness. In S. W. Duck & R. Gilmour (Red.), *Personal Relationships. 3: Personal relationships in disorder* (pp. 31-56). Academic Press.
- Peterson, H. (2015). Fifty shades of freedom. Voluntary childlessness as women's ultimate liberation. *Women's Studies International Forum*, 53, 182-191. <https://doi.org/10.1016/j.wsif.2014.10.017>
- Riggs, D. W., & Bartholomaeus, C. (2016). The desire for a child among a sample of heterosexual Australian couples. *Journal of Reproductive and Infant Psychology*, 34(5), 442-450. <https://doi.org/10.1080/02646838.2016.1222070>
- Rybińska, A., & Morgan, S. P. (2019). Childless Expectations and Childlessness Over the Life Course. *Social Forces*, 97(4), 1571-1602. <https://doi.org/10.1093/sf/soy098>
- Skirbekk, V. (2022). The New Have-Nots: Childlessness in the Twenty-First Century. In V. Skirbekk, *Decline and Prosper!* (pp. 105-140). Springer International Publishing. https://doi.org/10.1007/978-3-030-91611-4_7
- Smith, I., Knight, T., Fletcher, R., & Macdonald, J. A. (2020). When men choose to be childless: An interpretative phenomenological analysis. *Journal of Social and Personal Relationships*, 37(1), 325-344. <https://doi.org/10.1177/0265407519864444>
- Stahnke, B., Blackstone, A., & Howard, H. (2020). Lived Experiences and Life Satisfaction of ChildFree Women in Late Life. *The Family Journal*, 28(2), 159-167. <https://doi.org/10.1177/1066480720911611>
- Stegen, H., Duppen, D., Savieri, P., Stas, L., Pan, H., Aartsen, M., Callewaert, H., Dierckx, E., & De Donder, L. (2024). Loneliness prevalence of community-dwelling older adults and the impact of the mode of measurement, data collection, and country: A systematic review and meta-analysis. *International Psychogeriatrics*, 1-15. <https://doi.org/10.1017/S1041610224000425>
- Stegen, H., Switsers, L., & De Donder, L. (2021). Life Stories of Voluntarily Childless Older People: A Retrospective View on Their Reasons and Experiences. *Journal of Family Issues*, 42(7), 1536-1558. <https://doi.org/10.1177/0192513X20949906>
- Surkalim, D. L., Luo, M., Eres, R., Gebel, K., van Buskirk, J., Bauman, A., & Ding, D. (2022). The prevalence of loneliness across 113 countries: Systematic review and meta-analysis. *BMJ*, e067068. <https://doi.org/10.1136/bmj-2021-067068>
- Torres-Gil, J. F., & Chen, L. (2021). The Macro Realities of Population Aging: Policy Trends Impacting Aging, Health and Mental Health in the Americas. In J. L. Angel, M. López Ortega, & L. M. Gutierrez Robledo (Red.), *Understanding the Context of Cognitive*

- Aging* (pp. 289-303). Springer International Publishing. https://doi.org/10.1007/978-3-030-70119-2_15
- Umberson, D., Pudrovska, T., & Reczek, C. (2010). Parenthood, Childlessness, and Well-Being: A Life Course Perspective. *Journal of Marriage and Family*, 72(3), 612-629. <https://doi.org/10.1111/j.1741-3737.2010.00721.x>
- van Tilburg, T. G. (2020). Social, Emotional, and Existential Loneliness: A Test of the Multidimensional Concept. *The Gerontologist*, gnaa082. <https://doi.org/10.1093/geront/gnaa082>
- Von Saenger, I., Dahlberg, L., Augustsson, E., Fritzell, J., & Lennartsson, C. (2023). Will your child take care of you in your old age? Unequal caregiving received by older parents from adult children in Sweden. *European Journal of Ageing*, 20(1), 8. <https://doi.org/10.1007/s10433-023-00755-0>
- Vozikaki, M., Papadaki, A., Linardakis, M., & Philalithis, A. (2018). Loneliness among older European adults: Results from the survey of health, aging and retirement in Europe. *Journal of Public Health*, 26(6), 613-624. <https://doi.org/10.1007/s10389-018-0916-6>
- Weiss, R. S. (1973). *Loneliness: The experience of emotional and social isolation*. MIT Press.
- Wenger, G. C., Dykstra, P. A., Melkas, T., & Knipscheer, K. C. P. M. (2007). Social Embeddedness and Late-Life Parenthood: Community Activity, Close Ties, and Support Networks. *Journal of Family Issues*, 28(11), 1419-1456. <https://doi.org/10.1177/0192513X07303895>
- Yanguas, J., Pinazo-Henandis, S., & Tarazona-Santabalbina, F. J. (2018). The complexity of loneliness. *Acta Bio Medica Atenei Parmensis*, 89(2), 302-314. <https://doi.org/10.23750/abm.v89i2.7404>
- Zoutewelle-Terovan, M., & Liefbroer, A. C. (2018). Swimming Against the Stream: Non-normative Family Transitions and Loneliness in Later Life Across 12 Nations. *The Gerontologist*, 58(6), 1096-1108. <https://doi.org/10.1093/geront/gnx184>

Appendix 1.

Table A. Relationship of categories of childlessness with loneliness, control variables included – women only (N=150)

	Overall loneliness (β (SE), R^2)	Social loneliness (β (SE), R^2)	Emotional loneliness (β (SE), R^2)	Existential loneliness (β (SE), R^2)
Category 1 – Personal choice	0.15 (5.75), 0.071	2.04 (6.17), 0.067	-1.43 (6.33), 0.065	2.68 (4.47), 0.108
Category 2 – Life events	13.41* (6.08), 0.102	17.17** (6.48), 0.110	10.28 (6.75), 0.080	9.26 (4.75), 0.129
Category 3 – Health problems	14.25* (5.94), 0.107	9.02 (6.46), 0.079	18.61** (6.48), 0.116	3.20 (4.71), 0.109
Category 4 – Partner	11.36 (6.06), 0.093	9.91 (6.54), 0.081	12.57 (6.67), 0.088	13.28** (4.65), 0.154
Control variables	Yes	Yes	Yes	Yes

Control variables included: age, partner state, bad physical functioning, educational level, subjective income

β : unstandardized β coefficients. SE: standard error.

* $p < 0.05$, ** $p < 0.01$.

Table B. Relationship of categories of childlessness with loneliness, control variables included – men only (N=105)

	Overall loneliness (β (SE), R^2)	Social loneliness (β (SE), R^2)	Emotional loneliness (β (SE), R^2)	Existential loneliness (β (SE), R^2)
Category 1 – Personal choice	7.96 (5.66), 0.132	13.72 (6.99), 0.083	3.17 (5.95), 0.159	-0.28 (4.35), 0.162
Category 2 – Life events	2.62 (6.67), 0.116	5.77 (8.30), 0.051	-0.013 (6.96), 0.157	-0.65 (5.07), 0.162
Category 3 – Health problems	-0.47 (7.37), 0.114	-6.02 (9.16), 0.051	4.15 (7.66), 0.159	6.56 (5.56), 0.173
Category 4 – Partner	7.25 (7.22), 0.123	3.62 (9.04), 0.048	10.28 (7.49), 0.172	7.56 (5.46), 0.178
Control variables	Yes	Yes	Yes	Yes

Control variables included: age, partner state, bad physical functioning, educational level, subjective income

β : unstandardized β coefficients. SE: standard error.

* $p < 0.05$, ** $p < 0.01$.

CHAPTER 7.

Levensverhalen van kinderloze 60-plussers: reflecties op kinderloosheid en eenzaamheid doorheen de levensloop

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CHAPTER 7. Levensverhalen van kinderloze 60-plussers: reflecties op kinderloosheid en eenzaamheid doorheen de levensloop

Samenvatting

Kinderen zijn een belangrijke schakel in het leven van ouderen, onder meer op vlak van sociale netwerken en zorg. Niettemin toont eerder onderzoek uit Vlaanderen dat kinderloze 60-plussers niet eenzamer zijn dan hun leeftijdsgenoten met kinderen. Deze studie focust daarom op de ervaring van kinderloze 60-plussers zelf, en zoekt een antwoord op de vraag welke thema's in het narratief van kinderloze ouderen kunnen verklaren dat deze groep niet eenzamer is dan ouderen met kinderen. Uit levensverhaalinterviews met 12 kinderloze 60-plussers identificeren we 5 thema's: het kunnen maken van ruimte voor andere dingen, een gevoel van sociale uitsluiting, aanvaarding, zingeving door andere kinderen, en eenzaamheid. Gekoppeld aan deze thema's ervaarden de deelnemers een dualiteit aan gevoelens: negatievere gevoelens en bewoordingen (bv. *gemis* of *er niet bijhoren*) wisselden elkaar dan ook af met positieve ervaringen en opportuniteiten (bv. *opluchting* of *vrijheid*). Ouderen zonder kinderen vormen een heel heterogene groep, met heel wat verschillende visies op hun kinderloos leven en de impact op welzijn hiervan. Kinderloosheid is deel van iemands levensloop, maar is niet altijd doorslaggevend in de ervaringen en gebeurtenissen van mensen.

Kernwoorden

Eenzaamheid, kinderloosheid, levensverhalen

1. Achtergrond

Kinderen krijgen is niet voor iedereen een vanzelfsprekend gegeven. Mensen kunnen de keuze maken om kinderloos te blijven of ze blijven ongewild kinderloos. Er zijn dan ook verschillende redenen waarom mensen kinderloos zijn. Eén op zes mensen wereldwijd ervaart ooit vruchtbaarheidsproblemen (World Health Organization, 2023). Sommigen geven prioriteit aan een carrière boven een gezinsleven (Rybińska & Morgan, 2019), hebben een kritisch perspectief op de samenleving (Stegen et al., 2021), hebben een partner die geen kinderen (meer) wenst (Riggs & Bartholomaeus, 2016), of maken levensloopgebeurtenissen mee – zoals een traumatische gebeurtenis op jonge leeftijd of geconfronteerd worden met een ziekte – die maken dat mensen kinderloos blijven (Stegen et al., 2021).

Over het algemeen is er in Europa een stijgende trend in kinderloosheidscijfers sinds de jaren '60 (Kreyenfeld & Konietzka, 2017). Deze toename is te verklaren door onder meer een grotere beschikbaarheid van anticonceptiemiddelen, een grotere betrokkenheid van vrouwen op de arbeidsmarkt en stijgende opleidingsniveaus (Leocádio, 2022). De twee belangrijkste redenen voor de toename van kinderloosheid zijn het uitstel van het krijgen van kinderen enerzijds (i.e. op latere leeftijd pas het eerste kind willen krijgen tot het krijgen van kinderen uiteindelijk niet meer mogelijk is) en veranderende maatschappelijke normen en waarden die leiden tot een grotere sociale acceptatie van kinderloosheid anderzijds (Fiori et al., 2017). In Europa tonen gepoolde SHARE-gegevens van 1992 tot 2017 dat de prevalentie van kinderloosheid onder oudere volwassenen varieert van 5,6% in Tsjechië tot 16,2% in Ierland. In België ligt de prevalentie op 12,2%, in Nederland op 10,2% (Antczak et al., 2023).

Het hebben van kinderen wordt vaak gezien als een voordeel op latere leeftijd: kinderen vormen een belangrijk onderdeel van het sociale netwerk van ouderen (Deindl & Brandt, 2017) en zijn vaak de belangrijkste mantelzorgers (Jacobs et al., 2016). Kinderloosheid zou dan ook kunnen leiden tot meer eenzaamheid (Vozikaki et al., 2018; Zoutewelle-Terovan & Liefbroer, 2018) en minder levenstevredenheid (Albertini & Arpino, 2018). Bevindingen uit een Vlaams surveyonderzoek bij 543 60-plussers, waarvan 255 kinderloos, tonen echter aan dat er geen verschil bestaat tussen ouderen met en zonder kinderen op vlak van eenzaamheid (Stegen et al., in voorbereiding). Ouderen zonder kinderen zijn dus niet significant eenzamer dan ouderen met kinderen. Omdat dit ingaat tegen het buikgevoel van heel wat mensen, wil voorliggende studie dan ook verder zoeken naar mogelijke verklaringen.

Ouderen die te maken krijgen met kinderloosheid doorheen hun levensloop gaan daar op verschillende manieren mee om. Sommigen zoeken emotionele steun bij familie en vrienden (Schnettler & Wöhler, 2016), terwijl anderen baat hebben bij het krijgen van professionele begeleiding of zelfhulpgroepen (Hilevych & Claes, 2023), waar ze hun ervaringen kunnen delen met anderen die in een vergelijkbare situatie verkeren. Sommige mensen proberen ook

stress en verdriet te verminderen door meditatie, aandachtsoefeningen, sportbeoefening of andere ontspanningsmethoden (Abramowska-Kmon et al., 2023). Deze manieren kunnen veranderen doorheen het leven en hebben nog steeds een impact op hoe (eenzaam) ouderen zich vandaag de dag voelen (Abramowska-Kmon et al., 2023; Switsers, 2021).

In dit onderzoek willen we daarom onderzoeken hoe ouderen omgingen met hun kinderloosheid doorheen het leven. Welke thema's in het levensverhaal van kinderloze ouderen kunnen ons helpen begrijpen en verklaren waarom zij niet eenzamer zijn dan ouderen met kinderen?

2. Methode

De inclusiecriteria waren dat de oudere deelnemers kinderloos moesten zijn (of zichzelf zo benoemden ook al hadden ze bijvoorbeeld stiefkinderen), en dat ze ouder moesten zijn dan 60.

We namen levensverhaalinterviews af bij 12 kinderloze 60-plussers tussen 60 en 89 jaar, woonachtig in Vlaanderen of Brussel (zie tabel 1 voor een overzicht van alle kenmerken). Alle deelnemers, 6 mannen en 6 vrouwen, hadden de Belgische nationaliteit. 8 deelnemers hadden op het moment van het interview een partner, 4 geen partner. Alle deelnemers spraken Nederlands. Eén respondent had stief(klein)kinderen, maar benoemde zichzelf wel als kinderloos. Wat betreft kinderloosheid, was dit bij 7 deelnemers ongewenst, voor 3 was dit gewenst, en 2 kenden hierin een evolutie of gaven aan ergens tussenin te zitten. De redenen voor kinderloosheid varieerden, gaande van levensloopgebeurtenissen (bv. jeugdtrauma, opname in een instelling), redenen die te maken hebben met de partner die geen kinderen wilde of die zich hier te oud voor voelde, geen aanpassingen willen maken aan het eigen leven voor kinderen, of biologische problemen bij zichzelf en/of de partner. Om eenzaamheid te kunnen inschatten, namen we de 6-item De Jong Gierveld eenzaamheidsschaal af (De Jong Gierveld & van Tilburg, 2021): 7 deelnemers waren niet eenzaam, 5 deelnemers matig eenzaam.

Tabel 1. Overzicht deelnemers.

Deelnemer	Gender	Leeftijd	Partnerstatus	Eenzaamheid volgens de De Jong Gierveld Eenzaamheidsschaal (score tussen 0 en 6)	Ongewenste/gewenste kinderloosheid	Reden kinderloosheid
1. Maria	V	71	Partner	Matig eenzaam (3)	Ongewenst	Biologische reden bij zichzelf
2. Julia	V	60	Partner	Niet eenzaam (0)	Ongewenst	Combinatie: partner op latere leeftijd ontmoet + angst voor beperking bij kind + angst voor bevalling
3. Bea	V	89	Geen partner	Niet eenzaam (1)	Ongewenst	Levensloopgebeurtenis (psychiatrie)
4. Marc	M	80	Partner	Matig eenzaam (3)	Ongewenst	Biologische problemen bij hemzelf of partner (nooit onderzocht)
5. Louis	M	73	Geen partner	Niet eenzaam (0)	Ongewenst	Medische problemen bij partner (vnl.)
6. Leon	M	72	Partner	Matig eenzaam (3)	Ongewenst	Medische problemen bij partner – heeft plus(klein)kinderen bij huidige partner
7. Stef	M	64	Partner	Niet eenzaam (1)	Ongewenst	Partner vond zichzelf te oud
8. Ria	V	63	Geen partner	Niet eenzaam (1)	Gewenst	Levensloopgebeurtenissen (jeugdtrauma) + nooit juiste man op juiste moment ontmoet
9. Jules	M	71	Partner (respondent 10)	Niet eenzaam (1)	Gewenst	Kinderen vragen aanpassingen die hij niet zag zitten

10. Christa	V	71	Partner (respondent 9)	Niet eenzaam (0)	Gewenst	Partner wilde er geen en dit was oké voor haar
11. Martha	V	66	Partner	Matig eenzaam (2)	Eerst gewenst, later geëvolueerd naar ongewenst	Combinatie van levensloopgebeurtenissen (misbruik, depressie) – ooit zwanger geweest maar abortus gepleegd
12. Arthur	M	70	Geen partner	Matig eenzaam (2)	Ergens tussenin	Levensloopgebeurtenissen: veel reizen waardoor hij nooit partner op juiste moment leerde kennen

Legende: V = vrouw; M = man

We maakten gebruik van de levensverhaalinterview-methodiek van McAdams (2005) (Switsers et al., 2021). Tijdens dit levensverhaalinterview kreeg elke deelnemer de tijd om zijn of haar levensverhaal te vertellen. Het begin van elk interview richtte zich op het eigenlijke levensverhaal van de deelnemers, waarbij hen werd gevraagd hun eigen leven als een boek te beschouwen en dit boek in hoofdstukken op te delen (om praktische redenen tussen twee en zeven). Na het doornemen van de hoofdstukken van hun levensverhaal, bespraken we hoe ze het leven ervaren hebben zonder kinderen, met een focus op eenzaamheid en de link die ze met hun kinderloosheid zien.

De interviews werden afgenomen tussen december 2021 en september 2023. Ze duurden gemiddeld 1 uur 41 minuten; het kortste interview duurde 54 minuten, het langste 2 uur 19 minuten. Om deelnemers te bereiken, werden verschillende kanalen gebruikt: nieuwsbrieven of Facebookpagina's van ouderenorganisaties, affiches en folders in bijvoorbeeld dokterspraktijken of culturele centra, via het netwerk van de eerste auteur. Deelnemers kregen een informatiebrief op voorhand, zodat elke deelnemer de mogelijkheid had om vooraf vragen te stellen of ervoor te kiezen om niet deel te nemen aan het onderzoek. Elke deelnemer was vrij om te kiezen waar en wanneer het interview zou plaatsvinden. Aan het begin van het interview ondertekende elke deelnemer een geïnformeerd toestemmingsformulier, en de structuur en het doel van het interview werden kort besproken voor het eigenlijke interview.

Tijdens de analyseprocedure werden alle interviews woordelijk getranscribeerd en gepseudonimiseerd. Het analyseprogramma MAXQDA werd gebruikt om de gegevens te analyseren. Voor de analyse van de kwalitatieve gegevens werd gebruik gemaakt van inductieve reflexieve thematische analyse, zoals beschreven door Braun en Clarke (2022). Deze methode heeft zes fasen voor het identificeren en analyseren van patronen in kwalitatieve data. Eerst werden de data grondig gelezen (fase 1), waarna initiële codes voor interessante kenmerken werden gegenereerd (fase 2). Deze codes werden gegroepeerd in thema's (fase 3), die vervolgens werden beoordeeld en verfijnd voor consistentie (fase 4). Daarna werden de thema's gedefinieerd en benoemd (fase 5). Ten slotte werd een verslag geschreven waarin de thema's werden beschreven en geïllustreerd (fase 6). Deze rigoureuze aanpak zorgde ervoor dat de analyse zowel flexibel, reflectief als gestructureerd was, waardoor diepgaande inzichten in de data werden verkregen.

3. Resultaten

Deelnemers gebruikten voor hun gevoelens rond kinderloosheid heel wat negatieve termen, zoals *het er moeilijk mee hebben, er ambetant van zijn, zich vaak verdrietig hebben gevoeld, niet bepaald gelukkig zijn, minderwaardigheidsgevoelens of zich vaak alleen gevoeld hebben*. Bij een aantal deelnemers kwam een gevoel van *gemis* en *tekort* naar boven. Voor Ria (63 jaar) was er echter niet meer echt sprake van een *gemis*, maar van een *verlangen*, een onderscheid dat ze ook duidelijk uitlegde: *Het was een verlangen, eigenlijk eerder een verlangen dan een gemis, het is een verlangen, ja. Een gemis is eerder dat je eronder lijdt hè, een verlangen is iets waar je op hoopt, wat je zou willen, 't is eigenlijk, ja dat hè? Ja. Ik lijd er niet onder hè?* Uit de levensverhalen van de deelnemers kwamen dan ook verschillende thema's naar boven wanneer naar kinderloosheid doorheen de levensloop werd gekeken, zowel positieve als negatieve.

3.1. Ruimte voor andere mogelijkheden

Naast de negatievere gevoelens die soms naar boven kwamen, gaven de deelnemers ook aan dat het niet hebben van kinderen tegelijkertijd ook voor nieuwe opportuniteiten kon zorgen. Ondanks het *gemis* en het *altijd leegblijven van een ruimte die bijvoorbeeld als logeerkamer werd gebruikt* (en dus niet als kinderkamer), gaf Marc (80) aan dat hij in de plaats daarvan wel *ieder jaar een maand op reis kon gaan* met zijn partner.

Verschillende deelnemers beseften dat er dingen mogelijk waren doorheen het leven die niet mogelijk zouden zijn geweest als ze kinderen hadden. Ook een financiële *reserve* (Marc (80 jaar)) kon makkelijker opgebouwd worden, omdat er niet snel op geld gekeken moest worden. Een ander voordeel is *niets hebben dat je bindt* (Stef (64 jaar)), bijvoorbeeld als het gaat over een plek om te wonen of over niet gebonden zijn aan de schoolvakanties, omdat je niet gebonden bent aan je kinderen. Jules (71 jaar), die zijn hele leven als leerkracht werkte, maakte ooit een bewuste keuze om geen kinderen te krijgen, en waardeerde in de eerste plaats de *opluchting* en de *vrijheid* die er is wanneer je na de werkuren geen kinderen meer hebt om voor te zorgen.

3.2. Gevoel van sociale uitsluiting

Ouderen zonder kinderen konden soms ook het gevoel krijgen sociaal uitgesloten te worden. Of dit nu door ontmoetingen aan *de schoolpoort* (Leon (72 jaar)) kwam, op *schoolfeesten* (Marc (80 jaar)) of op *de voetbal of basketbal* (Leon (72 jaar)), dit waren momenten die mensen

zonder kinderen niet meemaakten. Ook waren kinderen vaak een gespreksonderwerp, met collega's of met vrienden. *Geen ervaring hebben over opvoeding* maakte dat mensen het gevoel kregen *niet te kunnen meespreken* wanneer het *in 90% van de gevallen over kinderen* ging (Leon (72 jaar)). Reacties uit de omgeving als *"kinderlozen kennen er toch niets van"* of *"jij kan dit doen want je hebt toch geen kinderen"* versterkten dit negatieve gevoel ook (Leon (72 jaar)). Christa (71 jaar) vertelde hierover: *Ik denk wel dat dat geëvolueerd is dat dat niet meer aanvaard is, maar dat dat... Vroeger was dat toch minder aanvaard, vonden ze je eerder een beetje abnormaal, met zelfs de woorden van "goh, dat is toch egoïstisch, zo geen kinderen hebben, zo alleen op uzelf bezig, zo alleen aan uzelf denken, zo niet voor kinderen willen zorgen", dat zijn woorden die ik nog gehoord heb hé.*

Kinderloze ouderen vertelden dan ook dat ze het gevoel hadden *anders te zijn dan de anderen* (Ria (63 jaar)), spraken over *minderwaardigheidsgevoelens* (Leon (72 jaar)) en voelden zich *precies buitengesloten* (Maria (71 jaar)). Redenen waren *niet kunnen meespreken* (Ria (63 jaar)) met mensen met kinderen *want je weet niet wat het is*, alsook het gevoel van oningevulde maatschappelijke verwachtingen: *Onze generatie was toch een generatie opgevoed om kinderen te hebben* (Leon (72 jaar)). En dat uitte zich in hun sociale contacten. *Kinderen zijn een van de mogelijkheden om meer contact te hebben met andere mensen* (Leon (72 jaar)). Deelnemers vertelden hoe *contactmogelijkheden met andere mensen* toch *veel beperkter* waren (Leon (72 jaar)).

Maar niet voor iedereen was er het gevoel van er niet bij te horen, *omdat je van je sociale netwerken moet gebruiken wat je wilt*, in die zin dat dat het sociale netwerk van mensen zonder kinderen ook breder kon zijn omdat ze zoveel mensen kenden (Marc (80 jaar)).

3.3. Aanvaarding

Een aantal van de deelnemers gaven aan hun kinderloosheid *goed aanvaard te hebben*, maar dit was niet bij iedereen het geval. De reacties uit de omgeving speelden dus ook een rol in de mate waarin die aanvaarding van kinderloosheid kon gebeuren. Aanvaarding kon dus ook op een eerder negatieve manier plaatsvinden, wanneer er het gevoel bestond dat er niet meer over die kinderloosheid gesproken kon worden bijvoorbeeld, waardoor mensen het gevoel kregen om *erover te zwijgen, je moest aanvaarden en ermee leren leven* (Marc (80 jaar)). Maria (71 jaar) zei *zich nooit bij de kinderloosheid te kunnen neerleggen*.

3.4. Zingeving door andere kinderen

Sommige ouderen gaven aan dat ze wel bepaalde contacten hadden met kinderen: ze hadden dan een goeie band met neefjes, nichtjes, stiefkinderen of petekinderen, waarbij ze

dan bijvoorbeeld hoopten *dat die petekinderen op een dag eigen kinderen hebben* (Stef (64 jaar)). Wanneer mensen geen eigen kinderen hebben, hebben ze later ook geen eigen kleinkinderen, waardoor een *oma-en-opa-gevoel* (Jules (71 jaar)) uitbleef. Voor sommige ouderen was de afwezigheid van eigen kleinkinderen moeilijk en verdween daardoor een zeker deel van hun zingeving: *Als wij kleinkinderen hadden, dan leef je voor je kleinkinderen hé, voor wie moeten wij nu leven?* (Marc (80 jaar)). Voor anderen was dit geen probleem: grootouders konden *zot zijn* van hun kleinkinderen en daar *echt plezier aan hebben zonder volledige verantwoordelijkheid*, maar ze konden ook *allemaal zo veel zorgen hebben*, en dat werd dan niet als wenselijk gezien (Christa (71 jaar)).

3.5. Eenzaamheid

Omdat eenzaamheid één van de centrale concepten is van onze studie, werd de deelnemers na de beschrijving van hun levensloop gevraagd wat eenzaamheid precies voor hen betekende. Twee deelnemers, nl. Louis (73 jaar) en Stef (64 jaar), zagen eenzaamheid echt als een fysiek gegeven, waarbij je fysiek omringd bent door andere mensen. Louis (73 jaar), die zelf geen kinderen kreeg omwille van medische problemen bij zijn partner, maar zelf naar eigen zeggen geen eenzaamheid ervaarde op het moment van het interview, beschreef eenzaamheid als volgt:

Eenzaamheid is alleen zijn en niet weten wie je zou kunnen contacteren als er een probleem is of als je iemand zou willen zien. Dat je eigenlijk afgesloten bent van de buitenwereld. Allez, fysiek afgesloten van de fysieke buitenwereld, afgesloten van andere mensen. Want op ander vlak zijn er zo veel mogelijkheden. Je kan op internet dingen gaan zoeken, je kan tv kijken, boeken lezen. – Louis (73 jaar)

In tegenstelling tot wat Louis (73 jaar) hierboven vertelde, maakten sommige deelnemers wel heel bewust een onderscheid tussen 'alleen zijn' aan de ene kant en 'eenzaam zijn' aan de andere kant. Waar 'alleen zijn' volgens hen voornamelijk doelt op het niet fysiek omringd zijn, gaat 'eenzaam zijn' volgens hen verder dan deze betekenis en wordt hierbij het negatieve gevoel benadrukt. Julia (60 jaar) bijvoorbeeld, die aangaf nooit de juiste partner op het juiste moment te ontmoeten en angstig was voor bevallingen en voor de kans dat ze een kind met een beperking op de wereld zou zetten, beschreef dit verschil tussen 'alleen' en 'eenzaam', en herkende zichzelf niet in de definitie van eenzaamheid die ze gaf.

Dat is echt niemand hebben. Ik heb bijvoorbeeld heel lang alleen gewoond, maar ik was niet eenzaam. En dat is voor mij een groot punt. Ik zie het echt als alleen zijn, geen vrienden en familie. Dat was echt nooit mijn situatie. Alleen is niet eenzaam. – Julia (60 jaar)

Doorheen hun leven hebben sommige respondenten wel eenzaamheid ervaren, waarbij in sommige levenshoofdstukken meer eenzaamheid aanwezig was dan tijdens andere. Bepaalde gebeurtenissen konden op die manier bijdragen aan eenzaamheid. Dit konden kleine eenmalige triggers zijn, zoals een *film* die eenzaamheidsgevoelens oproep of een *moeder die met een kind over straat liep*. Het kon ook een grotere trigger zijn, zoals levensloopgebeurtenissen. Leon (72 jaar) bijvoorbeeld verloor zijn echtgenote, en vond het moeilijk om naar bedrijfsfeestjes te gaan, omdat hij de moed niet had omdat er over kinderen gesproken werd, en hij moeilijk contacten kon leggen doordat er over kinderen gesproken werd.

Ook herhaaldelijke gebeurtenissen konden eenzaamheid oproepen, zoals bepaalde specifieke periodes in het jaar. Feestdagen waren voor Marc (80 jaar) en Louis (73 jaar) bijvoorbeeld periodes die ze graag voorbij zagen gaan. Marc (80 jaar), die omwille van biologische problemen bij hem of zijn partner kinderloos bleef maar nooit de exacte oorzaak liet achterhalen, beschreef dit als volgt:

De Kerst- en Nieuwjaarsperiode is een periode dat we graag hebben dat die voorbij is, omdat je dan de meeste eenzaamheid tegenkomt. – Marc (80 jaar)

Alle deelnemers kregen tijdens het levensverhaalinterview de vraag of ze expliciet een link zagen tussen hun kinderloosheid en eventuele eenzaamheidsgevoelens. Waar sommige deelnemers dit bevestigden en ze effectief een link zagen tussen beiden, was dit voor andere deelnemers niet het geval. Sommige deelnemers ervaarden niet per se eenzaamheid maar andere gevoelens, of wijtten hun eenzaamheidsgevoelens aan andere zaken, en gaven zelf aan dat het niet de kinderloosheid was die daar doorslaggevend in is geweest, maar wel andere bepalende levensloopgebeurtenissen, zoals het ontbreken van een partner of geconfronteerd worden met ziekte.

Jules (71 jaar) ten slotte gaf nog aan dat je ook mét kinderen eenzaam kan zijn.

Als je nu een kind hebt, en je ziet die niet dikwijls, want die gaat studeren in Amerika, dan heb je een kind. Ik denk dat die mensen eenzamer zijn dan ik, omdat die gewoon, die hebben een kind en dat verdwijnt dan op de een of andere manier. Of, nog veel cruer, als uw kind overlijdt. Dan begrijp ik dat je eenzaam moet zijn. – Jules (71 jaar)

4. Discussie

Dit onderzoek focuste op de thema's die naar boven komen en gelinkt zijn aan de kinderloosheid van de oudere deelnemers. Eerst en vooral ervaren deelnemers een dualiteit aan gevoelens: negatievere emoties wisselen elkaar af met de erkenning van nieuwere

opportunities die kinderloosheid met zich meebrengen. Deze tweedeling zien we in eerder onderzoek ook terugkeren: doorheen de tijd kunnen zowel gevoelens van gemis en rouw optreden, alsook opluchting en vrijheid (Allen & Wiles, 2013; Stegen et al., 2021). De reden voor kinderloosheid kan hier dan ook een rol in spelen: wanneer iemands kinderloosheid ongewenst is, zijn de zorgen omtrent kinderloosheid vaak groter (McQuillan et al., 2012).

Specifiek kwam als eerste thema de ruimte naar boven om andere dingen te kunnen doen, zoals andere hobby's of reizen. Doordat mensen geen tijd investeren in eigen kinderen, kunnen ze deze tijd in andere interesses investeren (Stegen et al., 2021). Een volgend thema was sociale uitsluiting. Het gevoel anders te zijn dan de anderen wordt meermaals aangehaald, en uit zich in zich buitengesloten voelen, of zelfs verdriet omdat anderen wel kinderen hebben (McQuillan et al., 2012). Ook aanvaarding kwam aan bod. Voor een aantal deelnemers is er gaandeweg doorheen de levensloop meer en meer aanvaarding gekomen. Dit kan bijvoorbeeld wanneer iemands kinderloosheid gewenst was (Stegen et al., 2021). Voor andere deelnemers lag de aanvaarding moeilijker. Het was een lot dat "aanvaard moest worden" (Allen & Wiles, 2013). Tenslotte was er ook zingeving als thema: het hebben van kinderen en kleinkinderen kan voor een zekere mate van zingeving zorgen, wat maakt dat ouderen zonder (klein)kinderen deze zingeving anders moeten invullen (Shen & Yang, 2022).

Het begrip 'eenzaamheid' was één van de thema's waar we specifiek naar vroegen en waar we dus ook uitgebreid op ingingen. Eenzaamheid wordt in de eerste plaats gezien als het missen van fysiek contact met mensen: het gaat over het "niet omringd zijn", wat in feite meer overeenkomt met de definitie van sociale isolatie (De Jong Gierveld et al., 2018). Eén van de deelnemers maakte echter ook een duidelijk onderscheid tussen 'alleen zijn' en 'eenzaam zijn'. Ze benadrukt bij 'eenzaam zijn' ook echt het negatieve gevoel, dat er bij 'alleen zijn' niet per se is. De definitie van eenzaamheid spreekt dan ook over een gevoel, zijnde een onaangename ervaring (Perlman & Peplau, 1981), iets dat deze deelnemer dus ook erkent. Op de vraag of er een eventuele link tussen kinderloosheid en eenzaamheid bestaat, werd geantwoord dat niet per se de kinderloosheid an sich die eenzaamheidsgevoelens triggert: eenzaamheid kan ook opgeroepen worden door bepaalde traumatische levensloopgebeurtenissen of het gemis van een partner. En ook met kinderen kan je eenzaam zijn. Het is dus geen garantie dat het de kinderloosheid is die per definitie voor eenzaamheid zorgt wanneer men kinderloos is (Stegen et al., 2024).

Young (1982) onderscheidt naar duur drie types eenzaamheid: occasionele eenzaamheid, situationele eenzaamheid en chronische eenzaamheid. Occasionele eenzaamheid is kortdurend, bv. na het verlies van een partner, iets waar één van de deelnemers ook naar verwijst, dat dit een eenzame periode voor hem was. Situationele eenzaamheid heeft in dezen te maken met bepaalde, gelijkaardige gebeurtenissen die zich voordoen en die telkens opnieuw eenzaamheid oproepen. Een voorbeeld hiervan is de periode van de feestdagen op

het einde van het jaar, die elk jaar opnieuw een moeilijke periode vormt voor een aantal deelnemers. En ten slotte kan situationele eenzaamheid ook een langdurig, chronisch karakter krijgen wanneer de eenzaamheidsgevoelens blijven aanhouden. Dit is vooral nog iets dat niet in de interviews aan bod kwam, maar uiteraard is deze groep niet representatief voor alle kinderlozen, en kunnen ook kinderloze ouderen chronisch eenzaam zijn.

4.1. Sterktes en zwaktes van dit onderzoek

Levensverhalen van ouderen leren ons veel over de levensloop, het verouderingsproces en de rol van verschillende verhalen en gebeurtenissen doorheen het leven. We vonden het nuttig om een breed scala aan thema's en doelgroepen (zoals eenzaamheid, sociale uitsluiting, kinderloosheid, armoede, enz.) in een breder kader te plaatsen met een levensloopperspectief, om zo zicht te krijgen op de volledige context die ermee gepaard gaat (Switsers et al., 2021). Bovendien leerden we dat het voor deelnemers vaak ook een fijne ervaring is om hun verhaal te kunnen delen (Switsers et al., 2021).

Er zijn echter ook een aantal zwaktes verbonden aan het gebruik van levensverhaalinterviews. Zo kunnen levensverhalen voor deelnemers wel heel moeilijk en zwaar om te vertellen zijn, waardoor we als onderzoekers een manier moesten vinden om hiermee om te gaan (Dickson-Swift et al., 2009). Daarnaast moesten we er ons van bewust zijn dat het in levensverhalen gaat over zelfrapportage en is iemands levensverhaal nooit volledig (Switsers et al., 2021). Tot slot komt ook in onze levensverhalen vaak het individuele sterk naar boven. Echter, Marshall en Clarke (2010) geven aan dat individuele levenscycli worden beïnvloed door zowel de individuele keuzes en acties als de interacties met anderen binnen de bestaande structuren. De bredere maatschappelijke processen en gemeenschappen waarmee individuele levensverhalen verweven zijn, spelen ook een belangrijke rol (Switsers et al., 2021).

Tenslotte is het voor verder onderzoek belangrijk om de heterogeniteit van de groep kinderlozen mee in acht te nemen. Onze deelnemers waren bijvoorbeeld allemaal hetero, en niemand onder hen had een migratieverleden, waardoor we specifieke invalshoeken waarschijnlijk gemist hebben.

5. Algemene conclusie

Deze studie onderzocht de thema's die aan bod komen in de levensverhalen van kinderloze 60-plussers. Thema's die aan bod kwamen, waren het kunnen maken van ruimte voor andere dingen, sociale uitsluiting, aanvaarding, zingeving door contact met kinderen en eenzaamheid. Samenvattend benadrukken deze bevindingen de complexe en ambivalente

gevoelens van kinderloze ouderen en de noodzaak voor een genuanceerde benadering in toekomstig onderzoek en beleid, waarbij rekening wordt gehouden met de diversiteit aan ervaringen en de bredere maatschappelijke context.

Referenties

- Abramowska-Kmon, A., Mynarska, M., & Timoszuk, S. (2023). Coping strategies for happy childless ageing: An explorative study in Poland. *Genus*, 79(1), 2. <https://doi.org/10.1186/s41118-022-00180-8>
- Albertini, M., & Arpino, B. (2018). *Childlessness, parenthood and subjective wellbeing: The relevance of conceptualizing parenthood and childlessness as a continuum*. [Preprint]. SocArXiv. <https://doi.org/10.31235/osf.io/xtfq6>
- Allen, R. E. S., & Wiles, J. L. (2013). How Older People Position Their Late-Life Childlessness: A Qualitative Study. *Journal of Marriage and Family*, 75(1), 206-220. <https://doi.org/10.1111/j.1741-3737.2012.01019.x>
- Antczak, R., Quashie, N. T., Mair, C. A., & Arpino, B. (2023). Less Is (Often) More: Number of Children and Health Among Older Adults in 24 Countries. *The Journals of Gerontology: Series B*, 78(11), 1892-1902. <https://doi.org/10.1093/geronb/gbad123>
- Braun, V., & Clarke, V. (2022). *Thematic analysis: A practical guide*. SAGE.
- De Jong Gierveld, J., & van Tilburg, T. (2021). *Manual of the Loneliness Scale 1999—Update from 7-5-2021*. Department of Social Research Methodology, Vrije Universiteit Amsterdam.
- De Jong Gierveld, J., van Tilburg, T. G., & Dykstra, P. A. (2018). New Ways of Theorizing and Conducting Research in the Field of Loneliness and Social Isolation. In A. L. Vangelisti & D. Perlman (Red.), *The Cambridge Handbook of Personal Relationships* (2de dr., pp. 391-404). Cambridge University Press. <https://doi.org/10.1017/9781316417867.031>
- Deindl, C., & Brandt, M. (2017). Support networks of childless older people: Informal and formal support in Europe. *Ageing and Society*, 37(8), 1543-1567. <https://doi.org/10.1017/S0144686X16000416>
- Dickson-Swift, V., James, E. L., Kippen, S., & Liangputtong, P. (2009). Researching sensitive topics: Qualitative research as emotion work. *Qualitative Research*, 9(1), 61-79. <https://doi.org/10.1177/1468794108098031>
- Fiori, F., Rinesi, F., & Graham, E. (2017). Choosing to Remain Childless? A Comparative Study of Fertility Intentions Among Women and Men in Italy and Britain. *European Journal of Population*, 33(3), 319-350. <https://doi.org/10.1007/s10680-016-9404-2>
- Hilevych, Y., & Claes, T. (2023). Peer-to-peer counselling and emotional guidance on infertility in Britain and Belgium (1970s–1980s). *Medical Humanities*, 49(2), 214-224. <https://doi.org/10.1136/medhum-2022-012505>
- Jacobs, M. T., Broese van Groenou, M. I., Aartsen, M. J., & Deeg, D. J. H. (2016). Diversity in Older Adults' Care Networks: The Added Value of Individual Beliefs and Social Network Proximity. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, gbw012. <https://doi.org/10.1093/geronb/gbw012>

- Kreyenfeld, M., & Konietzka, D. (Eds.). (2017). *Childlessness in Europe: Contexts, causes, and consequences*. Springer Open.
- Leocádio, V. A. (2022). Childlessness: A review of the theoretical frameworks and a proposition of general pathways. *International Journal of Population Studies*, 7(2), 352. <https://doi.org/10.36922/ijps.v7i2.352>
- Marshall, V. W., & Clarke, P. J. (2010). Agency and Social Structure in Aging and Life-course Research. In D. Dannefer & C. Phillipson, *The SAGE Handbook of Social Gerontology* (pp. 294-305). SAGE Publications Ltd. <https://doi.org/10.4135/9781446200933.n22>
- McAdams, D. P. (2005). Studying Lives in Time: A Narrative Approach. *Advances in Life Course Research*, 10, 237-258. [https://doi.org/10.1016/S1040-2608\(05\)10009-4](https://doi.org/10.1016/S1040-2608(05)10009-4)
- McQuillan, J., Greil, A. L., Shreffler, K. M., Wonch-Hill, P. A., Gentzler, K. C., & Hathcoat, J. D. (2012). Does the Reason Matter? Variations in Childlessness Concerns Among U.S. Women. *Journal of Marriage and Family*, 74(5), 1166-1181. <https://doi.org/10.1111/j.1741-3737.2012.01015.x>
- Perlman, D., & Peplau, L. A. (1981). Toward a social psychology of loneliness. In S. W. Duck & R. Gilmour (Eds.), *Personal Relationships. 3: Personal relationships in disorder* (pp. 31-56). Academic Press.
- Riggs, D. W., & Bartholomaeus, C. (2016). The desire for a child among a sample of heterosexual Australian couples. *Journal of Reproductive and Infant Psychology*, 34(5), 442-450. <https://doi.org/10.1080/02646838.2016.1222070>
- Rybińska, A., & Morgan, S. P. (2019). Childless Expectations and Childlessness Over the Life Course. *Social Forces*, 97(4), 1571-1602. <https://doi.org/10.1093/sf/soy098>
- Schnettler, S., & Wöhler, T. (2016). No children in later life, but more and better friends? Substitution mechanisms in the personal and support networks of parents and the childless in Germany. *Ageing and Society*, 36(7), 1339-1363. <https://doi.org/10.1017/S0144686X15000197>
- Shen, K., & Yang, X. (2022). Caring for grandchildren and life satisfaction of grandparents in China. *Aging and Health Research*, 2(3), 100095. <https://doi.org/10.1016/j.ahr.2022.100095>
- Stegen, H., Dierckx, E., & De Donder, L. (2024). Zijn ouderen zonder kinderen echt zo eenzaam? *Geron*.
- Stegen, H., Häussermann, F., Dury, S., De Donder, L., & Dierckx, E. (in voorbereiding). *The Impact Of Childlessness and the Reasons for it On Older Adults' Loneliness And The Moderating Role Of Gender*.
- Stegen, H., Switsers, L., & De Donder, L. (2021). Life Stories of Voluntarily Childless Older People: A Retrospective View on Their Reasons and Experiences. *Journal of Family Issues*, 42(7), 1536-1558. <https://doi.org/10.1177/0192513X20949906>
- Switsers, L. (2021). "Only the lonely?!" Challenging stereotypes on loneliness among older people. perlman.

- Switsers, L., Stegen, H., Van Regenmortel, S., & De Donder, L. (2021). Onderzoek naar de levensloop van ouderen: Ervaringen met het McAdams-levensverhaalinterview. *KWALON*, 26(1), 53-63. <https://doi.org/10.5117/KWA2021.1.006.SWIT>
- Vozikaki, M., Papadaki, A., Linardakis, M., & Philalithis, A. (2018). Loneliness among older European adults: Results from the survey of health, aging and retirement in Europe. *Journal of Public Health*, 26(6), 613-624. <https://doi.org/10.1007/s10389-018-0916-6>
- World Health Organization. (2023). *Infertility*. <https://www.who.int/news-room/fact-sheets/detail/infertility>
- Young, J. E. (1982). Loneliness, depression and cognitive therapy: Theory and application. In L. A. Peplau & D. Perlman (Red.), *Loneliness. A sourcebook of current theory, research and therapy* (pp. 379-405). John Wiley & Sons.
- Zoutewelle-Terovan, M., & Liefbroer, A. C. (2018). Swimming Against the Stream: Non-normative Family Transitions and Loneliness in Later Life Across 12 Nations. *The Gerontologist*, 58(6), 1096-1108. <https://doi.org/10.1093/geront/gnx184>

CHAPTER 8.

Discussion

CHAPTER 8. Discussion

This chapter presents the general discussion of this dissertation. After a discussion of the main findings in relation to the research questions in section one, the focus is on critical reflections after which implications for policy and practice and suggestions for future research are presented in section two. Lastly, this chapter ends with a general conclusion.

1. Discussion of the main findings

The prevalence of individuals reaching old age without having children is rising (Teerawichitchainan et al., 2024). Although it is widely acknowledged that children can play an important role in the life of older adults, for example in terms of care and social relations (Teerawichitchainan & Ha, 2024), there is no consensus on the effects of childlessness in later life. Effects can be negative, such as social stigmatisation, stress, higher health and mortality risks (Skirbekk, 2022), but also positive since childlessness can result in more freedom (Gietel-Basten & Yeung, 2023). In this dissertation, I focussed on the relation between childlessness and loneliness in later life.

Two overarching research questions were formulated:

1. What is the relationship between childlessness and loneliness in later life?
2. What is the relationship between reasons for childlessness and loneliness in later life?

Insights from the five previous studies (Chapter 3 to 7) come together in the following discussion. Before responding to these research questions, the groundwork had to be laid, which was done in part one of the dissertation (Chapters 3-5). In Chapter 3, the prevalence of loneliness was understood, how such research is done, and what the effects are of any potential contextual factors like the study's country, mode of data collection, and impact of the measurement tool. Childlessness was the second fundamental concept. Specifically the reasons why someone would remain childless (Chapter 4) were examined, as well as the characteristics of older individuals without children (Chapter 5). In part two (Chapters 6-7), the relationship between childlessness and loneliness in later life was elaborated on, in both a quantitative (Chapter 6) and a qualitative way (Chapter 7).

1.1. Overall summary of the different chapters

The aim of this PhD was thus to understand the relation between childlessness and loneliness in later life. In Figure 1, an overview of all chapters can be found, with in short the conclusions from each.

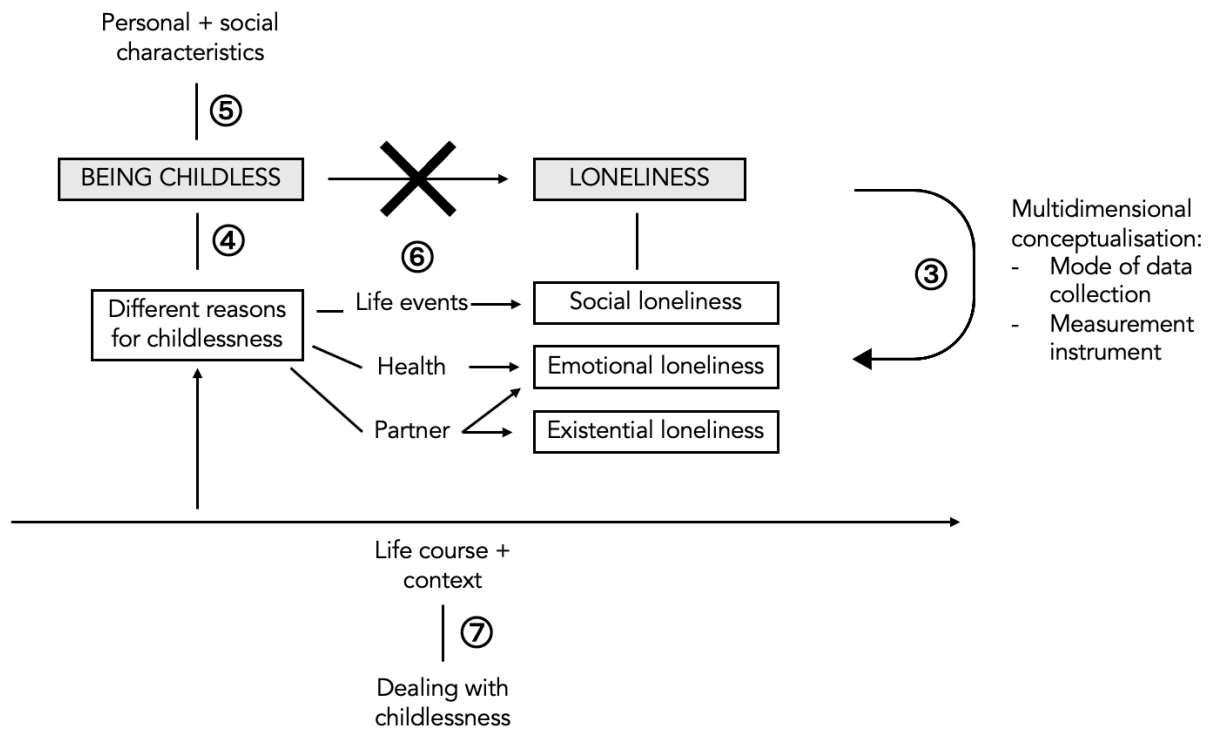


Figure 1. Overall summary of the different chapters

- **Chapter 3:** The pooled prevalence of loneliness among community-dwelling older adults is 31.6%, and loneliness has different modes of data collection and conceptualisations.
- **Chapter 4:** (Voluntary) childlessness has several reasons: career-related reasons, critical views on society, the partner and life course circumstances.
- **Chapter 5:** Childless older adults have several personal and social characteristics, which makes them a heterogeneous population.
- **Chapter 6:** Childlessness does not make older people lonelier in later life, but among the childless older population, loneliness might differ depending on the reason someone has for their childlessness.
- **Chapter 7:** Several themes (e.g. making space for other things, feelings of social exclusion, and acceptance) are part of the life stories of childless older adults which

can explain that childlessness as such does not make older people lonelier compared to older parents.

1.2. Childlessness in later life is not negative per se

First of all, being childless should not always be viewed negatively. These days, the term 'childless' is used to describe those who do not have children and implies a loss or lack. Recently, alternative terms like 'childfree' or 'without children' are used to describe people without children, to move away from the negative wording (Gietel-Basten & Yeung, 2023). This also means that the assumption that childlessness must be involuntary, is not true (Rojas Betancur et al., 2023). As seen in Chapter 4, childlessness indeed goes beyond the involuntarily as several reasons can lead to voluntary childlessness as well, such as career reasons, critical views on society, the partner who did not want children, or life course circumstances that lead to a deliberate decision to remain childless. In terms of this deliberate decision, the term 'childfree' is often used, referring to people or couples who make a deliberate choice not to have children. This is thus a more positively framed wording for 'voluntary childlessness' (Gietel-Basten & Yeung, 2023). This distinction emphasises the agency and intentionality behind the decision to remain childfree, which has emerged as a legitimate lifestyle choice (Blackstone & Stewart, 2012). The positive reframing of childlessness emphasises personal autonomy and empowerment, highlighting the value of having control over one's life and decisions (DePaulo, 2006). The word 'childfree' actually suggests some kind of emancipation, either by choice or by good fortune – such as *diseasefree* or *carefree* (Basten, 2009). Moreover, both cultural and social acceptance of childfree lifestyles are increasing, as media portrayals have become more varied and nuanced, challenging stereotypes of deviance. This change is also highlighted by Kreyenfeld and Konietzka (2017), who demonstrate how people without children are now positively portrayed as contributing and active members of society.

The use of the term 'childfree' is already a step in the right direction regarding the more positive framing of childlessness, but it is still part of the dichotomy around childlessness which is actually outdated, as shown in Chapter 4. There are therefore some critiques on the use of this term. First of all, 'childfree' can be considered as 'selfish', implying that those who choose to remain childless forego mothering/fathering and all its accompanying duties (Coates-Davies, 2020). Moreover, the term 'childfree' is sometimes seen as too binary, creating a clear division between people who choose not to have children and people who are unable to have children (i.e. the actual 'childless'). This dichotomy however ignores the complex factors and situations in life that can contribute to childlessness (Moore, 2014). Furthermore, the nature of childlessness can also evolve in time, as shown in Chapter 5 where

one in four older adults states that their childlessness reasons evolved throughout their life. Despite the use of the term 'childfree', this term thus does not fully cover the full scope of childlessness because it is still part of the non-exhaustive dichotomy (Dykstra, 2009).

1.3. Importance of other meaningful connections than children

Although some research (Vozikaki et al., 2018; Zoutewelle-Terovan & Liefbroer, 2018) suggests that childless older adults are more vulnerable to loneliness in later life, Chapter 6 of this dissertation did not find any evidence to support this hypothesis. The dynamic process model of loneliness by Huxhold & Fiori (2024), based on the Differential Investment in Resources Model (DIRe Model) by Huxhold et al. (2022), can give possible explanations for these findings (see Figure 2).

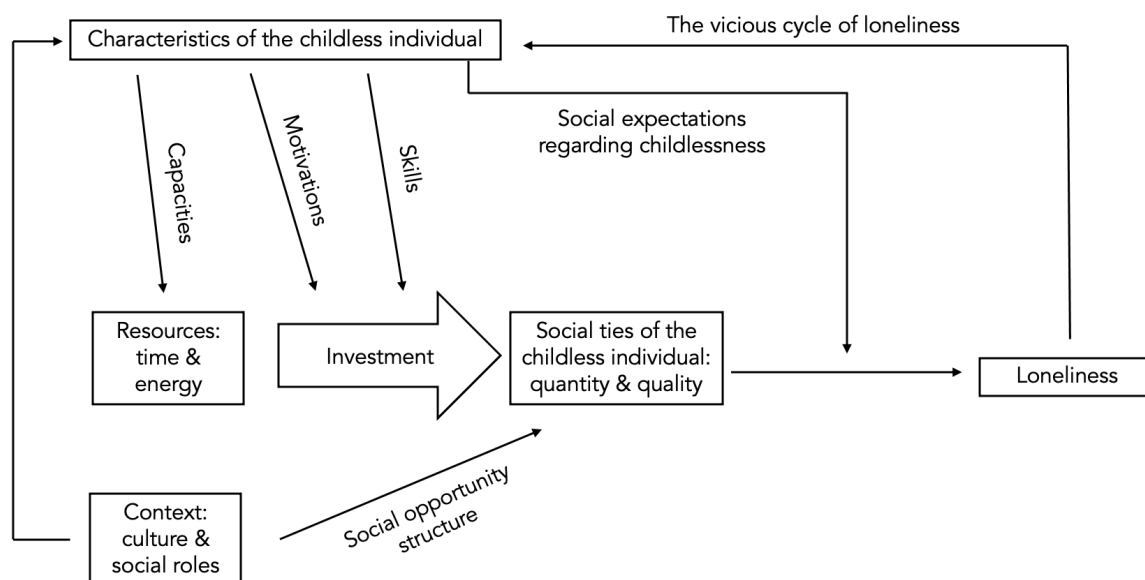


Figure 2. Differential Investment of Resources model (DIRe) (Huxhold & Fiori, 2024) in relation to childlessness

The Differential Investment of Resources Model (DIRe) explains how both personal traits (i.e. capacities, motivations, and skills) and environmental factors (e.g. retirement) influence the formation and maintenance of social bonds throughout adulthood (Huxhold et al., 2022). Social relationships require time and effort to maintain, and for childless older adults, investing in friendships and community ties can become crucial. Nevertheless, older adults can avoid loneliness by focussing on close confidants, which might not necessarily be children. Close friends or other family members such as godchildren or nephews and nieces can also fulfil this role, as shown in Chapter 7. Furthermore, older adults generally may experience losses in

broader networks and engage less in the community. Childless older adults however often develop strong social networks and community ties to compensate for the absence of children (Schnettler & Wöhler, 2016), which can help them avoid loneliness. Chapter 5 shows that older adults without children have significantly more contact with other family members, friends and acquaintances. Building up these contacts requires intentional social engagement and may not come naturally to everyone though. However, neglecting these second and third layers of the social structure – broader networks and the community – can make it difficult to overcome chronic loneliness once those feelings are present (Huxhold & Fiori, 2024). Childless older adults might be particularly vulnerable if they do not actively invest in alternative social networks, making it harder to recover from loneliness once it sets in.

While childlessness thus does not automatically result in loneliness in later life, it presents specific challenges in meeting social expectations in terms of intimacy and support. By understanding these dynamics, childless individuals and their support networks can address potential sources of loneliness and develop strategies to build meaningful connections and fulfilment in later life, such as pursuing hobbies and interests, building close friendships and establishing a support network.

1.4. Cognitive discrepancy can be countered by other contacts than children

The fact that older people without children are not lonelier compared to older people with children, can also be framed within the cognitive discrepancy theory, as recently updated by Switsers et al. (Switsers, 2021; Switsers et al., 2023). The cognitive discrepancy model of loneliness posits that loneliness results from a discrepancy between desired and actual social relationships. This theory highlights the importance of subjective perceptions and expectations regarding social connections (Burholt et al., 2016; Perlman & Peplau, 1981; Switsers et al., 2023) (see Figure 3). In terms of expectations, in Chapter 5, one of the questions that was part of the study, was about people that had influenced older adult's childlessness. Besides 'themselves', the childless older adults mentioned often (ex-)partners as well as parents and siblings that had been of influence on their childlessness. This shows that there might have been some expectations of the social network that had to be fulfilled earlier in life.

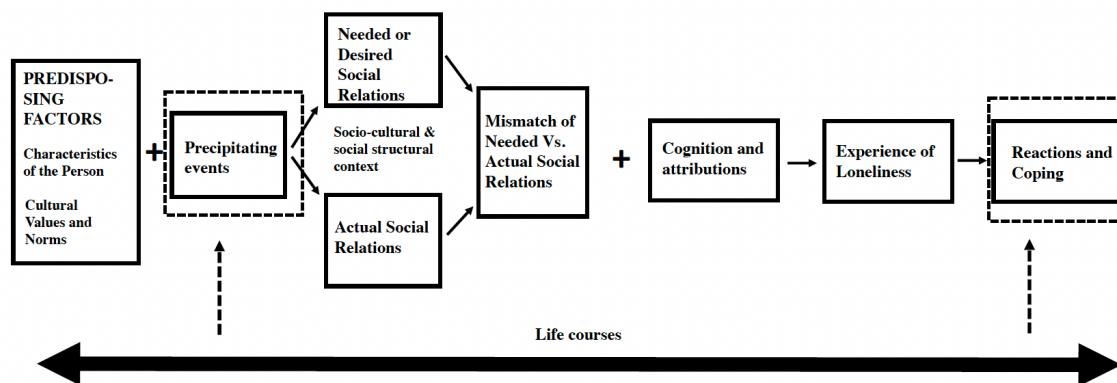


Figure 3. The cognitive discrepancy theory as updated by Burholt et al. (2016) and Switsers et al. (2021, p. 150)

The different insights of this model can be linked to the fact that people without children are not necessarily lonelier than people with children. First of all, **predisposing factors** refer to more general aspects such as cultural values and norms (Van Staden & Coetzee, 2010), but also to individual personality characteristics such as low self-esteem, anxiety, and introversion (Hawkey et al., 2008; Sha'ked & Rokach, 2015). When it comes to cultural norms and values, societal attitudes towards childlessness can affect one's expectations. In Chapter 7, the life stories of childless older adults revealed that some of the older adults felt unable to meet certain societal expectations, since their generation was expected to have children. The more childlessness is accepted in a country's culture, the smaller the discrepancy between desired and actual social relations (Liefbroer et al., 2015). **Precipitating events** are specific circumstances or events that cause a person's actual and desired social ties to diverge, possibly resulting in feelings of loneliness (Perlman & Peplau, 1981). Accordingly, the degree of loneliness depends not only on one's desired and undesired social ties, but also on one's capacity for situational adaptation and the likelihood that bad relationships will alter over time (Perlman & Peplau, 1981). Chapter 7 also shows that events such as health issues, loss of a partner or earlier life events can impact social networks. Childless older adults might face these events differently compared to older parents, since they rely more on a broader network of friends, kin, or community resources (Wenger et al., 2007).

In terms of the discrepancy between **needed or desired social relations** and **actual social relations**, the absence of children might occupy this field of tension. Nevertheless, older adults without children may adjust their expectations over time, seeking fulfilment from friends, extended family, or community involvement, thereby narrowing the gap between needed and actual social relations, which was also shown in Chapter 5. There was indicated that childless older adults have significantly more contact with other family members, friends or acquaintances. Thus, by adapting their expectations and cultivating alternative sources of support, childless older adults can minimise the mismatch between needed and actual social

relations. Moreover, they may develop high-quality, meaningful relationships with others (e.g. nieces and nephews, godchildren, friends (Chapter 7)) that provide sufficient emotional support, reducing the discrepancy with their desired social relations. The availability of **social resources and community support** can help adapting the actual social relations of childless older adults, which helps to meet their social needs (Maes & Vanhalst, 2024). Furthermore, certain **cognitions and attributions** (e.g. controllability) can make childless older adults perceive their social situation differently (Perlman & Peplau, 1981) – for example, by focussing on the quality rather than the quantity of relationships, which can influence their feelings of loneliness. This means that if the cognitive discrepancy is small due to adjusted expectations and fulfilled social needs, childless older adults may not **experience** significant loneliness. Moreover, effective **coping mechanisms**, such as engaging in hobbies, volunteering, or building strong friendships (Chapter 4 and 7), can help childless older adults manage their feelings and reduce loneliness. Coping strategies may focus on enhancing the attained degree of social ties and adjusting desired levels of social contact to realistic levels (Schoenmakers et al., 2015). Kharicha et al. (2018) developed a model in which they make a distinction between two dimensions of coping, namely prevention and action (i.e. problem-focussed) vs. acceptance or endurance (i.e. emotion-focussed) on the one hand, and coping alone (i.e. individually) vs. coping with, or in reference to others (i.e. socially) on the other hand. In terms of loneliness, recent research shows that older adults, both lonely and non-lonely, consider few coping practices and prefer active and individual coping practices over social and passive ones for coping with loneliness (Marsillas & Schoenmakers, 2022). This can also count for childless older adults, since childlessness in later life can lead older adults to develop a preference for active and individual coping practices over social and passive ones due to their reliance on self-sufficiency, resilience, and proactive engagement in the absence of familial support.

1.5. Relationship between reasons for childlessness and loneliness in later life

1.5.1 Importance of the context

In this dissertation, the importance of the context could not be underestimated. There are different contexts that can play an important role: the context of the research, the micro-context, and the macro-context. The **context of research** refers to the specific factors that shape how research is conducted and interpreted. These include the measurement instruments used, modes of data collection, and the geographical and cultural settings where studies take place. Chapter 3 demonstrates the high variability in loneliness prevalence rates

among community-dwelling older adults, which can be explained by these three kinds of factors related to the research context.

The micro-context focusses on the immediate social environment and personal relationships that affect individuals' experiences. A supportive social setting can alleviate negative experiences of both childlessness and loneliness among older adults by strengthening connections among kin, friends, neighbours, and strangers, as shown in e.g. Chapter 5, where was shown that the childless have stronger contacts with a broader range of kin and acquaintances compared to older parents.

The macro-context involves broader societal and cultural factors that influence individual experiences and behaviours, particularly regarding loneliness and childlessness. The perception and experience of loneliness namely can vary across cultures. For example, the analyses in Chapter 3 revealed that four of Hofstede's six cultural dimensions (Hofstede, 2011) impacted loneliness prevalence: Power Distance Index, Uncertainty Avoidance Index, and Indulgence increased loneliness, while Individualism decreased it. This means that the country where a study was conducted played a significant role, and that this can lead to diverse findings (Hofstede, 2011). In individualistic cultures, such as those in North America and Western Europe, loneliness is often viewed as a personal issue related to social isolation or a lack of close relationships (Heu et al., 2021). In contrast, collectivist cultures, like those in East Asia and Latin America, perceive loneliness more in terms of the quality of social connections and perceived community support (Maes et al., 2016). Also childlessness can have different meanings and implications depending on cultural norms and societal expectations. Health outcomes related to childlessness, such as poor self-rated health, difficulties with activities of daily living, chronic conditions, and feelings of depression, can vary significantly based on the broader context (Quashie et al., 2019). The studies conducted as part of this dissertation were based in Belgium, a country with relatively lower familialism compared to other European nations, such as Poland, Italy, or Slovakia (Conkova et al., 2018). In more traditional, familistic countries, loneliness is particularly associated with childlessness (Zoutewelle-Terovan & Liefbroer, 2018), which might explain why in Chapter 6 of this dissertation, this was not the case. This suggests that the cultural macro-context significantly impacts research findings and interpretations, demonstrating the need to consider societal factors when examining complex issues like childlessness and loneliness.

1.5.2. Importance of the life course

In Chapters 4, 5 and 6, a diversity of reasons for childlessness is addressed. These reasons reflect how different contexts and events can shape one's experience of childlessness, and by extension, loneliness in later life. In Chapter 6, it was shown that 'life events' was one of the reason categories that impacted (in particular social) loneliness among childless older adults.

Following this, it becomes clear that the life course of older adults can play a determining role in terms of loneliness in later life. A life course perspective on childlessness and loneliness in later life can help to understand both concepts in-depth. For this, the life course paradigm of Giele & Elder (1998) is used (see Figure 4). Overall, the life course paradigm offers a dynamic and comprehensive perspective on human development, highlighting the interaction between individual lives and broader social forces. It emphasises that life is a complicated interaction of interpersonal choices, cultural influences, historical settings, and personal decisions rather than a linear path (Elder & George, 2016). This perspective is helpful in understanding the range of life experiences and the numerous elements that affect different outcomes at different stages of life (Kendig et al., 2016).

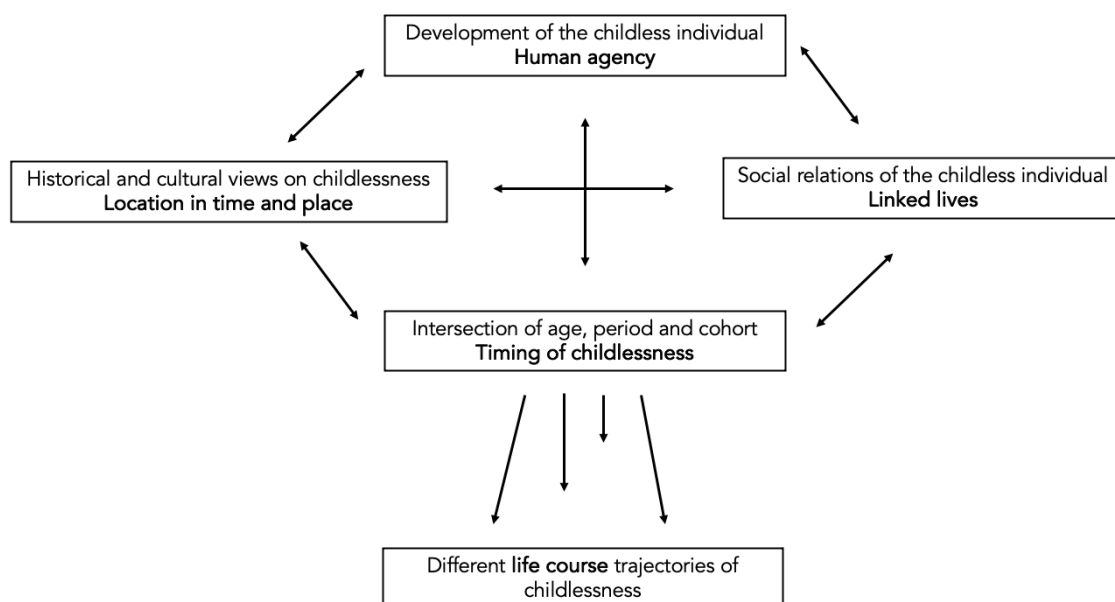


Figure 4. The life course paradigm of Giele & Elder (1998) in relation to childlessness

First of all, the concept of **linked lives** emphasises the interdependence of individuals and the influence of relationships with significant others on one's life course. While children can be one aspect of linked lives, older adults without children often form deep connections with friends, extended family, and community members instead, fulfilling the need for meaningful social ties and reducing loneliness. This can be with close friends or other (young) family members, such as nieces, nephews and godchildren, as shown in Chapter 7. Furthermore, decisions about parenthood are often made jointly with partners, and if one partner is unable or unwilling to have children, this can significantly influence the other partner's circumstances. In Chapter 4, several childless older adults talked about the partner that they considered as a reason for their childlessness. In Chapter 5, partner-related factors were a childlessness reason for 21.2% of the childless older adults. Moreover, 51.3% of the older adults in this same study

said that their childlessness could be attributed to their (ex-)partner. Next, also family and social networks can play a role; those with strong support systems may feel more confident in choosing parenthood, while those without such support may face involuntary childlessness due to a lack of resources or assistance (Elder & Shanahan, 2007).

Second, the **timing of life events**, such as marriage, retirement, and the experience of childlessness, affects individuals differently, as well as their decisions about having children. In Chapters 4 and 7, the different life chapters of the childless older adults show the heterogeneity of life course trajectories there exists, as well as the different life events that can impact one's childlessness and loneliness throughout the life course. For some, the absence of children may lead to the development of alternative social roles and networks earlier in life, which can provide substantial support and companionship in later years (Schnettler & Wöhler, 2016). For instance, individuals who prioritise higher education and career advancement may delay or forego having children to achieve their professional goals, as shown in Chapter 4 with the 'liberated careerist'-profile. Biological timing also plays a role; advances in reproductive technology and changing perceptions of the ideal age for parenthood can influence decisions. The postponers might have delayed their decision to have children because of the different possibilities to have children later in life, but eventually might end up without children after all. In this respect, individuals may face involuntary childlessness due to age-related fertility issues or health conditions that emerge later in life (Gietel-Basten & Yeung, 2023).

Thirdly, the **principle of historical time and place** plays a significant role in shaping experiences of childless older adults. In terms of not having children, this can be understood within the broader socio-historical context. Societal norms around family and gender roles, which have evolved significantly over time, can impact decisions and circumstances related to parenthood (Elder, 1994). Despite the fact that in Chapter 7, it is mentioned that there are still some societal expectations felt in terms of having children, the increasing acceptance of diverse family structures and lifestyles can reduce the pressure to conform to traditional expectations of having children, as shown by the life stories of the voluntarily childless older adults in Chapter 4, who deliberately chose to remain childless.

Lastly, **human agency**, referring to the capacity of individuals to make choices and take control of their own lives within the constraints of their circumstances, is also of great importance: individuals actively make choices that shape their life course. In particular when childlessness is considered voluntary, a specific choice was made, as was the case for the voluntarily childless older adults in Chapter 4. Older adults without children often take proactive steps to build and sustain social networks, engage in community activities, and seek out social opportunities, thereby mitigating potential loneliness. The life course paradigm thus recognises that individuals actively construct their life paths, and the experience of not having children can be seen as a complex interplay of voluntary choices and involuntary

circumstances, as can be the case when life course events (e.g. in Chapter 5) are seen as the reason for one's childlessness.

The life course paradigm by Giele and Elder (1998) highlights that the presence of children is not the sole determinant of loneliness in older adults. By considering linked lives, timing of life events, historical context, and human agency, it becomes clear that older adults without children can cultivate rich, fulfilling social lives. These elements help explain why they are not necessarily lonelier than those with children, as was shown in Chapter 6. The ability to adapt, form quality relationships, and engage in meaningful activities plays a crucial role in mitigating loneliness regardless of parental status.

2. Critical reflections and implications for policy, practice and research

With the insights of this dissertation in mind, this part focusses on the implications for research, policy and practice. After an overview of the limitations and critical reflections, some implications for policy and practice are highlighted, followed by possible directions for future research.

2.1. Limitations and critical reflections

The limitations that are treated in this part, focus on selection bias, pitfalls of the life stories that were conducted in Chapters 4 and 7, and the 'real' meaning of loneliness.

Selection bias

One of the biases that might have occurred in both our quantitative and our qualitative research, was selection bias (Arias et al., 2023; Hernán et al., 2004). For the life story interviews in Chapters 4 and 7, a call was spread in real life (posters and leaflets) and online (via social media and online newsletters), so that potential participants could get in touch to participate in the life story interviews. Also for the quantitative survey in Chapters 5 and 6, an online call was used for possible participants to fill in the survey. Selection bias therefore happened in three ways: first of all, **sampling bias** occurred because not all participants had the same chance to be part of the sample. They had to come in contact with one of the calls and respond to them if they wanted to be included, or had to be part of the broader social network of the involved researchers. Second, there was **volunteer bias**: some older people came

across the calls that were distributed, but may have preferred not to participate and, therefore, did not register for participation (Stevenson et al., 2018). The studies thus relied on volunteer participation (Arias et al., 2023). As a result of this, the diversity of the researched population may not be reflected in the people who actually participated (Stevenson et al., 2018). For example, the purposive nature of our sample in Chapters 5 and 6 may limit the generalisability of our findings (Hernán et al., 2004).

Lastly, also **undercoverage bias** occurred (Eckman & Kreuter, 2013). As older adults from diverse ethnic backgrounds were not equally present in this dissertation, the variety within the ageing community is not adequately represented. In Chapter 4 and 7, for instance, every participant had Belgian roots. Given the vulnerability of older adults from ethnic minorities (Reus-Pons et al., 2017) and the fact that an increasing number of migrants are reaching old age in Europe (United Nations, 2020), including in Belgium (Statbel, 2024), it might be valuable to clarify the role of ethnicity in old age loneliness. The experience of childless older adults with a migration background might also be of great relevance to study potential cultural differences that help explain the potential link between childlessness and loneliness throughout the life course and in later life. This means that, when looking at older adults and taking into account their ethnicity, the diversity within and across immigrant populations should be taken into consideration and older adults should be considered as a heterogeneous group (Phillipson, 2015). Two other similar characteristics were that both for the quantitative part as well as for the qualitative part of this dissertation, the participants were more often between 60 and 79 years old, and heterosexual. This means that older adults older than 80 as well as non-heterosexual older adults were less represented in our research. Nevertheless, also here, the inclusion of the oldest old (Brittain et al., 2017) as well as non-heterosexual (Fredriksen-Goldsen et al., 2017) older adults could add insights to the data that now were not taken into account.

Pitfalls of life stories

In Chapters 4 and 7, data collection was done by using the life story interviews of McAdams (2005). A first pitfall to acknowledge, is the fact that life stories are never complete (Switsers et al., 2021). Life stories are not static but are always in development, and there will always be matters not mentioned in the interviews. In view of our second wave of data collection using life story interviews (with the eye on Chapter 7, after the data collection for Chapter 4), I realised that this should not form an insurmountable problem: this does not take away the added value of conducting and analysing life story interviews.

Also the timing of a life story is important, because individual as well as societal events can influence the life story someone is telling (Switsers et al., 2021). Therefore, no interviews from Chapters 4 and 7 (or surveys from Chapter 5 and 7) were conducted in the middle of the

COVID-19 pandemic, since these events can impact the experience of loneliness among older adults (Lampraki et al., 2022). Furthermore, 'infantile amnesia' (Alberini & Travaglia, 2017), which is the inability of adults to reproduce memories of their young childhood, as well as the 'reminiscence bump', a tendency for older adults to access more personal memories from approximately 10–30 years of age (Munawar et al., 2018), can have an impact on the life stories people tell. To accommodate this, each life story chapter was treated equally since time was taken extensively to address each one, by asking supplementary questions where necessary. Moreover, people often tend to recall more positive than negative memories in their life story (Switsers et al., 2021). The retrospective nature of this research means that people might not tell parts of their life story that might be of great relevance.

The 'real' meaning of loneliness?

One of the aims of this study was to dive deeper into the complexity of loneliness among (childless) older adults. In the existing literature, loneliness is mostly contrasted with social isolation (De Jong Gierveld et al., 2018). When types of loneliness are distinguished, it is often social, emotional and existential loneliness that are mentioned (van Tilburg, 2020). By positioning loneliness as a contrast to social isolation and by distinguishing these types, attempts are made to make the concept of loneliness more measurable. However, we can question whether it is necessary to make loneliness so unambiguously measurable, as there is a range of varied realities behind loneliness (Baart, 2021). In Chapter 7, this also became clear: childless older adults talked about feelings of social exclusion and a lack of meaning. Many stated that they did not experience feelings of loneliness as a result of childlessness as such, but the question remains to what extent this is indeed the case, as the line between loneliness and feelings like social exclusion and giving meaning is never so straightforward. When childless older adults say they feel excluded, their loneliness may manifest in *feeling like an outsider*. 'Loneliness' is not always 'loneliness': the experience of loneliness can manifest itself in different ways, even if it is not always named or perceived as 'loneliness' by people themselves (Baart, 2021). Loneliness often has to do with social identity: who are you in the eyes of others, and in your own eyes? To what extent are you alienated from others? Those who do not have children may therefore experience this alienation and consequently experience loneliness, even if they do not name it so by the meaning they give to it themselves. For example, when older adults consider the term 'loneliness' as 'being alone', they may not recognise themselves in this, since they are well embedded in a dense network for example, leading to the fact that they do not perceive themselves as lonely. But precisely those feelings such as social exclusion and lack of meaning can still be very close to the experience of loneliness.

In this dissertation, loneliness was studied with a very scientific lens, meeting the requirements required by the scientific literature (e.g. with the measurement of loneliness in Chapters 5 and 6). A broader view of the concept however can sometimes bring more nuance to the complexities in which loneliness is embedded.

2.2. Implications for policy and practice

Make the childless more visible

With this dissertation, I hope to make the group of childless older adults more visible, referring to the fact that their childlessness is frequently a stigmatised and misunderstood part of their lives. Examples of this could be found especially in Chapters 4 and 7, where childless older adults said they experienced many reactions throughout the life course on the fact they did not have children. Fostering a more accepting and encouraging society requires addressing and lowering the stigma of childlessness in later life (De Pottel, 2024; Stahnke et al., 2020), because for many older adults, being childless – whether by choice or by circumstance – is a reality.

Reducing the stigma associated with childlessness in later life requires promoting a change in culture from one of rejection to acceptance and understanding. We can build a culture in which all older adults – regardless of whether they are parents or not – are respected and supported by enacting inclusive laws, involving communities, and increasing public awareness (Singh et al., 2023). In this respect, more and more can be done to make childless older adults more visible, since they form a substantial group that is worth to be *seen* in policy and practice. There are several ways of doing so, e.g. organising educational workshops to raise awareness on the various aspects on childlessness (including causes, effect and possible emotional impact), setting up online campaigns in which stories, facts and tips on childlessness can be shared to foster discussion and understanding, establishing local support groups where individuals can share their experiences, or offering training to professionals on how to support and engage with people experiencing childlessness. With this strategy, childless older individuals will be able to live more happily and respectably since their social integration and general well-being will be improved. In short, by elevating different narratives and achievements that can assist in dispelling myths and normalising childlessness, and by encouraging positive portrayals of childless older individuals in the media and popular culture, the visibility of childless older adults will increase (Archetti, 2019). Informing the general public about the diversity and realities of older adults' life, especially those without children, and focussing on inclusive attitudes, respect, and empathy (De Pottel, 2024; Singh et al., 2023), can also contribute to this.

Silver Empowerment

Also the concept of Silver Empowerment can be used to formulate recommendations for both policy and practice (De Witte & Van Regenmortel, 2019; Van Regenmortel, 2009). The three core concepts of empowerment are (1) social inclusion and active citizenship, (2) the socialisation of care and the reintegration of individuals into communities ('kwartiermaken'), and (3) individual strength and shared responsibility (Van Regenmortel, 2009). Strengthening and connecting people, groups, and organisations within society is the essence of empowerment. The empowerment paradigm gives vulnerable people and groups priority, emphasising their strengths while also acknowledging and honouring their weaknesses and life experiences. Empowerment entails strengths-oriented care, for which a positive basic attitude and suitable participation is needed. The application of empowerment is possible with the help of suitable approaches. Organisations that focus on strengths and an empowerment philosophy are necessary for all of this (Van Regenmortel, 2009).

When talking about *Silver Empowerment*, it is specifically about the empowerment of lonely and socially isolated older adults (De Witte & Van Regenmortel, 2019). Silver Empowerment highlights the process of empowering older adults in our society and demonstrates how mastery and vulnerability can coexist. Moreover, it emphasises the significance of (intergenerational) solidarity among various generations to promote empowerment among older adults.

For childless older adults, who may lack traditional family support and informal care because they do not have children, social inclusion is crucial. Creating supportive environments that encourage participation in community activities can help mitigate loneliness and promote a sense of belonging. The socialisation of care involves integrating older adults into community networks, offering alternative sources of support (e.g. instead of children), and creating opportunities for meaningful engagement. Individual strength and shared responsibility highlight the importance of recognising the strengths and experiences of childless older adults, empowering them to take control of their lives while fostering intergenerational solidarity. By incorporating these three principles into policies and practices, society can ensure that childless older adults enjoy a high quality of life marked by autonomy, social inclusion, and active participation, without focussing on their parental status. This approach not only enhances their well-being, but also underscores the coexistence of mastery and vulnerability, promoting a compassionate and inclusive society.

Have attention for the 'non-traditional family'

In our current society, many different family forms exist next to the traditional 'male breadwinner–female homemaker nuclear family' (Sear, 2021). Older adults can remain single, can divorce, or find a new partner who might have children on their own. Legislation should have attention for the definition of 'family' so that childless older adults, but also e.g. single older adults and same-sex couples feel better included, to ensure they receive equal benefits and support (Gouni et al., 2022). For example, in Flanders, the term 'family' (Dutch: 'gezin') refers currently to "a household, traditionally with one or two parents and one or more children" (Vlaanderen.be, 2024). To better support childless older adults, policy and practice should recognise and address these diverse family structures beyond this traditional idea of a family. This inclusive strategy will enhance social inclusion, reduce loneliness, and ensure equitable resource access.

2.3. Directions for future research

Study childlessness as a multilayered concept

The complexity of childlessness has drawn more attention to the field's study in recent years (Leocádio, 2022).

As shown throughout this dissertation, childlessness can result from a variety of motivations, ranging from personal choice to involuntary circumstances. Future research should aim to differentiate between voluntary and involuntary childlessness, and go even further by exploring the nuanced reasons individuals and couples may have for not having children. This includes examining factors such as career aspirations, lifestyle preferences, health concerns, relationship dynamics, and personal values that all play a certain role in the life course. By identifying these diverse motivations, researchers can provide a more realistic description of childlessness throughout the life course (Rybińska & Morgan, 2019).

Furthermore, longitudinal studies are necessary to capture the changing face of childlessness. Such studies can shed light on how views toward childlessness evolve over time, how life circumstances affect decisions about having children, and how these choices ultimately affect people's lives (Maximova & Quesnel-Vallée, 2009). However, cross-cultural research can illuminate the parallels and discrepancies in childlessness among various communities, providing a more worldwide outlook on the issue (Miettinen et al., 2015).

In conclusion, future studies on childlessness should adopt a holistic approach, taking into account the variety of reasons for childlessness (as was done in Chapter 6) as well as the complex context surrounding these choices (Bauer et al., 2023). By doing so, researchers may further deepen the understanding of this complex problem and provide guidance for practices and policies that help people deal with the opportunities and challenges that come with being childless.

Study loneliness as a multidimensional concept

The complex phenomenon of loneliness is becoming more widely acknowledged as a major issue in modern society. Nevertheless, as shown in Chapter 3, much of the existing research conceptualises loneliness as a unidimensional phenomenon, frequently ignoring its complexity and the various forms it might take (Goossens et al., 2017). This oversimplification is also noticeable in research on childlessness, while Chapter 6 shows that a variety of reasons for not having children can result in different types and experiences of loneliness. In terms of loneliness measurement, future studies should therefore take into account the multidimensionality of loneliness as was done in this dissertation.

Furthermore, loneliness varies depending on the culture. Future research should have attention for the community structures, cultural norms, and societal values (Jylhä & Jokela, 1990) that can affect loneliness in childless older people. Cross-cultural research can shed light on how various societies perceive and respond to childlessness and the loneliness that goes along with it. This can help identify cultural resilience factors and appropriate coping mechanisms. It is essential to understand these influences in order to create culturally sensitive strategies for dealing with loneliness.

Look beyond older adults' parental status

Loneliness, and the well-being of older adults in general, is influenced by a variety of factors that extend beyond parental status. The limited perspective of existing research, which frequently considers having children as a determinant of loneliness and well-being, ignores the wide range of complicated elements that affect an individual's overall quality of life as they age (Kafková, 2023). Because childlessness as such does not impact loneliness (see Chapter 6), future studies should take a wider variety of personal characteristics into account, such as relationship status, social networks, health, and economic factors, in order to develop a more comprehensive knowledge of well-being among older adults.

Numerous elements, including physical health, social networks, financial stability, and personal interests influence older individuals' well-being. Future research ought to use a multifaceted and intersectional approach, taking into account the ways in which these factors, but also different identities shaped by gender, race, sexual orientation and socioeconomic status, interact to affect well-being (Victor & Bowling, 2012). Regardless of their parental status, a more complete picture of the factors that affect older individuals' well-being can be obtained by looking at the importance of social support networks, involvement in community activities, and access to healthcare, with an eye for varying backgrounds and life experiences.

The presence or absence of a partner for example plays a significant role on older persons' well-being, since it affects how they feel about social interaction, emotional support, and companionship (Deindl & Brandt, 2017). Future studies should examine the connections between loneliness and well-being and married status, cohabitation, and personal relationships, going beyond parental status. Strategies to improve relationship quality and support networks for single, divorced, or widowed people can be informed by an understanding of the dynamics of these relationships, particularly how they evolve over time and in reaction to life events.

While having children and partners can be important sources of support, older adults often rely on a broader social network for assistance and companionship (Deindl & Brandt, 2017). Future research should consider the benefits of community, extended family, and friendships in reducing loneliness and improving well-being. Examining how older persons establish and preserve these relationships, particularly when there are no conventional family structures such as children (as was the case in this dissertation), might shed light on ways to encourage social interaction and lessen feelings of loneliness.

Loneliness and well-being in general are greatly influenced by one's personal resilience and coping mechanisms (Marsillas & Schoenmakers, 2022). Future studies should look into how coping strategies, personality qualities, and events from a person's past affect their capacity to adjust to changes and difficulties in later life. This involves investigating the ways in which non-parental trajectories – like professional successes, pastimes, and volunteer work – contribute to a feeling of fulfilment and purpose.

3. General conclusion

This PhD dissertation contributes to the existing literature on childlessness and loneliness in later life. The research aims focussed on the relationship between childlessness and loneliness in, as well as on the relationship between reasons for childlessness and loneliness. The pooled prevalence of loneliness among community-dwelling older adults is 31.6%, but no differences between older adults with and without children in terms of loneliness are found. The reasons for childlessness however do play an important role, since loneliness can vary depending on the reason someone has for their childlessness. In this dissertation, a focus was on the complexity of both childlessness and loneliness throughout the life course and in later life. Future research should keep having an eye for these complexities to grasp both concepts comprehensively.

References

- Alberini, C. M., & Travaglia, A. (2017). Infantile Amnesia: A Critical Period of Learning to Learn and Remember. *The Journal of Neuroscience*, 37(24), 5783-5795. <https://doi.org/10.1523/JNEUROSCI.0324-17.2017>
- Archetti, C. (2019). No life without family: Film representations of involuntary childlessness, silence and exclusion. *International Journal of Media & Cultural Politics*, 15(2), 175-196. https://doi.org/10.1386/macp.15.2.175_1
- Arias, F. D., Navarro, M., Elfanagely, Y., & Elfanagely, O. (2023). Biases in research studies. In *Translational Surgery* (pp. 191-194). Elsevier. <https://doi.org/10.1016/B978-0-323-90300-4.00082-3>
- Baart, A. (2021). *Wat heet eenzaam? Een essay*. Stichting Presentie, Utrecht.
- Basten, S. (2009). Voluntary childlessness and being Childfree. *The Future of Human Reproduction: Working Paper*, 5, 1-23.
- Bauer, G., Brandt, M., & Kneip, T. (2023). The Role of Parenthood for Life Satisfaction of Older Women and Men in Europe. *Journal of Happiness Studies*, 24(1), 275-307. <https://doi.org/10.1007/s10902-022-00600-8>
- Blackstone, A., & Stewart, M. D. (2012). Choosing to be Childfree: Research on the Decision Not to Parent. *Sociology Compass*, 6(9), 718-727. <https://doi.org/10.1111/j.1751-9020.2012.00496.x>
- Brittain, K., Kingston, A., Davies, K., Collerton, J., Robinson, L. A., Kirkwood, T. B. L., Bond, J., & Jagger, C. (2017). An investigation into the patterns of loneliness and loss in the oldest old – Newcastle 85+ Study. *Ageing and Society*, 37(1), 39-62. <https://doi.org/10.1017/S0144686X15001142>
- Burholt, V., Windle, G., Morgan, D. J., & on behalf of the CFAS Wales team. (2016). A Social Model of Loneliness: The Roles of Disability, Social Resources, and Cognitive Impairment. *The Gerontologist*, gnw125. <https://doi.org/10.1093/geront/gnw125>
- Coates-Davies, J. (2020). The Experience of Being a Childfree Woman. In C. Arnold-Baker (Red.), *The Existential Crisis of Motherhood* (pp. 241-256). Springer International Publishing. https://doi.org/10.1007/978-3-030-56499-5_13
- Conkova, N., Fokkema, T., & Dykstra, P. A. (2018). Non-kin ties as a source of support in Europe: Understanding the role of cultural context. *European Societies*, 20(1), 131-156. <https://doi.org/10.1080/14616696.2017.1405058>
- De Jong Gierveld, J., van Tilburg, T. G., & Dykstra, P. A. (2018). New Ways of Theorizing and Conducting Research in the Field of Loneliness and Social Isolation. In A. L. Vangelisti & D. Perlman (Red.), *The Cambridge Handbook of Personal Relationships* (2de dr., pp. 391-404). Cambridge University Press. <https://doi.org/10.1017/9781316417867.031>
- De Pottel, C. (2024). Creative solutions to embedded cultural norms: Childlessness shame

- transformed by relational analysis. *Psychoanalysis, Self and Context*, 19(2), 176-186.
<https://doi.org/10.1080/24720038.2024.2301961>
- De Witte, J., & Van Regenmortel, M. (2019). *Silver Empowerment. Loneliness and social isolation among elderly. An empowerment perspective.*
- Deindl, C., & Brandt, M. (2017). Support networks of childless older people: Informal and formal support in Europe. *Ageing and Society*, 37(8), 1543-1567.
<https://doi.org/10.1017/S0144686X16000416>
- DePaulo, B. (2006). *Singled out: How singles are stereotyped, stigmatized, and ignored, and still live happily ever after* (p. 325). St Martin's Press.
- Dykstra, P. A. (2009). Childless Old Age. In P. Uhlenberg (Red.), *International Handbook of Population Aging* (pp. 671-690). Springer Netherlands. https://doi.org/10.1007/978-1-4020-8356-3_30
- Eckman, S., & Kreuter, F. (2013). Undercoverage Rates and Undercoverage Bias in Traditional Housing Unit Listing. *Sociological Methods & Research*, 42(3), 264-293.
<https://doi.org/10.1177/0049124113500477>
- Elder, G. H. (1994). Time, Human Agency, and Social Change: Perspectives on the Life Course. *Social Psychology Quarterly*, 57(1), 4. <https://doi.org/10.2307/2786971>
- Elder, G. H., & George, L. K. (2016). Age, Cohorts, and the Life Course. In M. J. Shanahan, J. T. Mortimer, & M. Kirkpatrick Johnson (Red.), *Handbook of the Life Course* (pp. 59-85). Springer International Publishing. https://doi.org/10.1007/978-3-319-20880-0_3
- Elder, G. H., & Shanahan, M. J. (2007). The Life Course and Human Development. In W. Damon & R. M. Lerner (Red.), *Handbook of Child Psychology* (1ste dr.). Wiley.
<https://doi.org/10.1002/9780470147658.chpsy0112>
- Fredriksen-Goldsen, K. I., Bryan, A. E. B., Jen, S., Goldsen, J., Kim, H.-J., & Muraco, A. (2017). The Unfolding of LGBT Lives: Key Events Associated With Health and Well-being in Later Life. *The Gerontologist*, 57(suppl 1), S15-S29.
<https://doi.org/10.1093/geront/gnw185>
- Giele, J. Z., & Elder, G. H. (1998). Life Course Research: Development of a Field. In J. Z. Giele & G. H. Elder, *Methods of Life Course Research: Qualitative and Quantitative Approaches* (pp. 5-27). SAGE Publications, Inc.
<https://doi.org/10.4135/9781483348919.n1>
- Gietel-Basten, S., & Yeung, A. S. W. (2023). Self-Definition and Evaluation of the Term "Childfree" Among Hong Kong Women. *SAGE Open*, 13(4), 21582440231198994.
<https://doi.org/10.1177/21582440231198994>
- Goossens, L., Maes, M., Danneel, S., Vanhalst, J., & Nelemans, S. A. (2017). Differential Loneliness Scale. In V. Zeigler-Hill & T. K. Shackelford (Red.), *Encyclopedia of Personality and Individual Differences* (pp. 1-4). Springer International Publishing.
https://doi.org/10.1007/978-3-319-28099-8_23-1
- Gouni, O., Jarašiūnaitė-Fedosejeva, G., Kömürçü Akik, B., Holopainen, A., & Calleja-Agius, J.

- (2022). Childlessness: Concept Analysis. *International Journal of Environmental Research and Public Health*, 19(3), 1464. <https://doi.org/10.3390/ijerph19031464>
- Hawkley, L. C., Hughes, M. E., Waite, L. J., Masi, C. M., Thisted, R. A., & Cacioppo, J. T. (2008). From Social Structural Factors to Perceptions of Relationship Quality and Loneliness: The Chicago Health, Aging, and Social Relations Study. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, 63(6), S375-S384. <https://doi.org/10.1093/geronb/63.6.S375>
- Hernán, M. A., Hernández-Díaz, S., & Robins, J. M. (2004). A Structural Approach to Selection Bias. *Epidemiology*, 15(5), 615-625. <https://doi.org/10.1097/01.ede.0000135174.63482.43>
- Heu, L. C., Hansen, N., Van Zomeren, M., Levy, A., Ivanova, T. T., Gangadhar, A., & Radwan, M. (2021). Loneliness across cultures with different levels of social embeddedness: A qualitative study. *Personal Relationships*, 28(2), 379-405. <https://doi.org/10.1111/pere.12367>
- Hofstede, G. (2011). Dimensionalizing Cultures: The Hofstede Model in Context. *Online Readings in Psychology and Culture*, 2(1). <https://doi.org/10.9707/2307-0919.1014>
- Huxhold, O., & Fiori, K. L. (2024). Understanding loneliness in late life. *Current Opinion in Psychology*, 57, 101801. <https://doi.org/10.1016/j.copsyc.2024.101801>
- Huxhold, O., Fiori, K. L., & Windsor, T. (2022). Rethinking Social Relationships in Adulthood: The Differential Investment of Resources Model. *Personality and Social Psychology Review*, 26(1), 57-82. <https://doi.org/10.1177/10888683211067035>
- Jylhä, M., & Jokela, J. (1990). Individual Experiences as Cultural – a Cross-cultural Study on Loneliness Among the Elderly. *Ageing and Society*, 10(3), 295-315. <https://doi.org/10.1017/S0144686X00008308>
- Kafková, M. P. (2023). Sources of Loneliness for Older Adults in the Czech Republic and Strategies for Coping With Loneliness. *Social Inclusion*, 11(1). <https://doi.org/10.17645/si.v11i1.6185>
- Kendig, H., Loh, V., O'Loughlin, K., Byles, J., & Nazroo, J. Y. (2016). Pathways to Well-Being in Later Life: Socioeconomic and Health Determinants Across the Life Course of Australian Baby Boomers. *Journal of Population Ageing*, 9(1-2), 49-67. <https://doi.org/10.1007/s12062-015-9132-0>
- Kharicha, K., Manthorpe, J., Iliffe, S., Davies, N., & Walters, K. (2018). Strategies employed by older people to manage loneliness: Systematic review of qualitative studies and model development. *International Psychogeriatrics*, 30(12), 1767-1781. <https://doi.org/10.1017/S1041610218000339>
- Kreyenfeld, M., & Konietzka, D. (Eds.). (2017). *Childlessness in Europe: Contexts, causes, and consequences*. Springer Open.
- Lampraki, C., Hoffman, A., Roquet, A., & Jopp, D. S. (2022). Loneliness during COVID-19: Development and influencing factors. *PLOS ONE*, 17(3), e0265900.

<https://doi.org/10.1371/journal.pone.0265900>

- Leocádio, V. A. (2022). Childlessness: A review of the theoretical frameworks and a proposition of general pathways. *International Journal of Population Studies*, 7(2), 352. <https://doi.org/10.36922/ijps.v7i2.352>
- Liefbroer, A. C., Merz, E.-M., & Testa, M. R. (2015). Fertility-Related Norms Across Europe: A Multi-level Analysis. In D. Philipov, A. C. Liefbroer, & J. E. Klobas (Red.), *Reproductive Decision-Making in a Macro-Micro Perspective* (pp. 141-163). Springer Netherlands. https://doi.org/10.1007/978-94-017-9401-5_6
- Maes, M., & Vanhalst, J. (2024). Loneliness as a double-edged sword: An adaptive function with maladaptive consequences. *European Journal of Developmental Psychology*, 1-13. <https://doi.org/10.1080/17405629.2024.2333584>
- Maes, M., Wang, J. M., Van Den Noortgate, W., & Goossens, L. (2016). Loneliness and Attitudes Toward Being Alone in Belgian and Chinese Adolescents: Examining Measurement Invariance. *Journal of Child and Family Studies*, 25(5), 1408-1415. <https://doi.org/10.1007/s10826-015-0336-y>
- Marsillas, S., & Schoenmakers, E. (2022). Older adults' mentioned practices for coping with loneliness. *European Journal of Ageing*, 19(3), 753-762. <https://doi.org/10.1007/s10433-021-00658-y>
- Maximova, K., & Quesnel-Vallée, A. (2009). Mental health consequences of unintended childlessness and unplanned births: Gender differences and life course dynamics. *Social Science & Medicine*, 68(5), 850-857. <https://doi.org/10.1016/j.socscimed.2008.11.012>
- McAdams, D. P. (2005). Studying Lives in Time: A Narrative Approach. *Advances in Life Course Research*, 10, 237-258. [https://doi.org/10.1016/S1040-2608\(05\)10009-4](https://doi.org/10.1016/S1040-2608(05)10009-4)
- Miettinen, A., Rotkirch, A., Szalma, I., Donno, A., & Tanturri, M.-L. (2015). Increasing childlessness in Europe: Time trends and country differences. *Families and Societies*, 33, 1-46.
- Moore, J. (2014). Reconsidering Childfreedom: A Feminist Exploration of Discursive Identity Construction in Childfree LiveJournal Communities. *Women's Studies in Communication*, 37(2), 159-180. <https://doi.org/10.1080/07491409.2014.909375>
- Munawar, K., Kuhn, S. K., & Haque, S. (2018). Understanding the reminiscence bump: A systematic review. *PLOS ONE*, 13(12), e0208595. <https://doi.org/10.1371/journal.pone.0208595>
- Perlman, D., & Peplau, L. A. (1981). Toward a social psychology of loneliness. In S. W. Duck & R. Gilmour (Red.), *Personal Relationships. 3: Personal relationships in disorder* (pp. 31-56). Academic Press.
- Phillipson, C. (2015). Placing ethnicity at the centre of studies of later life: Theoretical perspectives and empirical challenges. *Ageing and Society*, 35(5), 917-934. <https://doi.org/10.1017/S0144686X14001032>

- Quashie, N. T., Arpino, B., Antczak, R., & Mair, C. A. (2019). Childlessness and Health Among Older Adults: Variation Across Five Outcomes and 20 Countries. *The Journals of Gerontology: Series B*, *gbz153*. <https://doi.org/10.1093/geronb/gbz153>
- Reus-Pons, M., Kibele, E. U. B., & Janssen, F. (2017). Differences in healthy life expectancy between older migrants and non-migrants in three European countries over time. *International Journal of Public Health*, *62*(5), 531-540. <https://doi.org/10.1007/s00038-017-0949-6>
- Rojas Betancur, H. M., Quirama, A. H., & Rubio, C. R. (2023). Voluntary childlessness in a society reluctant to change. *Sociology Compass*, *17*(2), e13040. <https://doi.org/10.1111/soc4.13040>
- Rybińska, A., & Morgan, S. P. (2019). Childless Expectations and Childlessness Over the Life Course. *Social Forces*, *97*(4), 1571-1602. <https://doi.org/10.1093/sf/soy098>
- Schnettler, S., & Wöhler, T. (2016). No children in later life, but more and better friends? Substitution mechanisms in the personal and support networks of parents and the childless in Germany. *Ageing and Society*, *36*(7), 1339-1363. <https://doi.org/10.1017/S0144686X15000197>
- Schoenmakers, E. C., Van Tilburg, T. G., & Fokkema, T. (2015). Problem-focused and emotion-focused coping options and loneliness: How are they related? *European Journal of Ageing*, *12*(2), 153-161. <https://doi.org/10.1007/s10433-015-0336-1>
- Sear, R. (2021). The male breadwinner nuclear family is not the 'traditional' human family, and promotion of this myth may have adverse health consequences. *Philosophical Transactions of the Royal Society B: Biological Sciences*, *376*(1827), rstb.2020.0020, 20200020. <https://doi.org/10.1098/rstb.2020.0020>
- Sha'ked, A., & Rokach, A. (2015). *Addressing Loneliness: Coping, prevention and clinical interventions*. Routledge, Taylor & Francis group.
- Singh, V., Rajpal, G., Majumdar, S., Mandal, S., & Sahu, R. (2023). Awareness, knowledge, and psycho-emotional aspect of infertility among women seeking fertility assistance at a tertiary care hospital in Chhattisgarh, a cross-sectional study. *Journal of Education and Health Promotion*, *12*(1), 3. https://doi.org/10.4103/jehp.jehp_581_22
- Skirbekk, V. (2022). The New Have-Nots: Childlessness in the Twenty-First Century. In V. Skirbekk, *Decline and Prosper!* (pp. 105-140). Springer International Publishing. https://doi.org/10.1007/978-3-030-91611-4_7
- Stahnke, B., Blackstone, A., & Howard, H. (2020). Lived Experiences and Life Satisfaction of ChildFree Women in Late Life. *The Family Journal*, *28*(2), 159-167. <https://doi.org/10.1177/1066480720911611>
- Statbel. (2024). *Structuur van de bevolking*. <https://statbel.fgov.be/nl/themas/bevolking/structuur-van-de-bevolking>
- Stevenson, J., Keogh, P., Smith, J., & West, E. (2018). Reaching the Right People: Reflexive Practice to Support Effective Recruitment, Participation, and Engagement in

- Research With Communities Affected by Stigma. *International Journal of Qualitative Methods*, 17(1), 1-7. <https://doi.org/10.1177/1609406918819376>
- Switsers, L. (2021). "Only the lonely?!" Challenging stereotypes on loneliness among older people. perlman.
- Switsers, L., Stegen, H., Dierckx, E., Heylen, L., Dury, S., & De Donder, L. (2023). Life stories from lonely older adults: The role of precipitating events and coping strategies throughout the lifecourse. *Ageing and Society*, 1-24. <https://doi.org/10.1017/S0144686X23000715>
- Switsers, L., Stegen, H., Van Regenmortel, S., & De Donder, L. (2021). Onderzoek naar de levensloop van ouderen: Ervaringen met het McAdams-levensverhaalinterview. *KWALON*, 26(1), 53-63. <https://doi.org/10.5117/KWA2021.1.006.SWIT>
- Teerawichitchainan, B., & Ha, J.-H. (2024). Social and psychological implications of actual and defacto childlessness among older persons in East and Southeast Asia. *The Journal of Chinese Sociology*, 11(1), 6. <https://doi.org/10.1186/s40711-024-00208-w>
- Teerawichitchainan, B., Kim, D., & Ho, C. (2024). Childlessness, Social Network Profiles in Midlife and Late Adulthood, and Their Implications for Subjective Well-Being. *The Journals of Gerontology, Series B: Psychological Sciences and Social Sciences*, 79(6), gbae055. <https://doi.org/10.1093/geronb/gbae055>
- United Nations. (2020). *International Migration 2020 Highlights*. United Nations; United Nations. <https://www.un.org/en/desa/international-migration-2020-highlights>
- Van Regenmortel, T. (2009). Empowerment als uitdagend kader voor sociale inclusie en moderne zorg. *Journal of Social Intervention*, 18(4), 22-42.
- Van Staden, W. (Cw), & Coetzee, K. (2010). Conceptual relations between loneliness and culture. *Current Opinion in Psychiatry*, 23(6), 524-529. <https://doi.org/10.1097/YCO.0b013e32833f2ff9>
- van Tilburg, T. G. (2020). Social, Emotional, and Existential Loneliness: A Test of the Multidimensional Concept. *The Gerontologist*, gnaa082. <https://doi.org/10.1093/geront/gnaa082>
- Victor, C. R., & Bowling, A. (2012). A Longitudinal Analysis of Loneliness Among Older People in Great Britain. *The Journal of Psychology*, 146(3), 313-331. <https://doi.org/10.1080/00223980.2011.609572>
- Vlaanderen.be. (2024). *Gezin / Familie*. Vlaanderen.be. <https://www.vlaanderen.be/team-taaladvies/taaladviezen/gezin-familie>
- Vozikaki, M., Papadaki, A., Linardakis, M., & Philalithis, A. (2018). Loneliness among older European adults: Results from the survey of health, aging and retirement in Europe. *Journal of Public Health*, 26(6), 613-624. <https://doi.org/10.1007/s10389-018-0916-6>
- Wenger, G. C., Dykstra, P. A., Melkas, T., & Knipscheer, K. C. P. M. (2007). Social Embeddedness and Late-Life Parenthood: Community Activity, Close Ties, and

Support Networks. *Journal of Family Issues*, 28(11), 1419-1456.
<https://doi.org/10.1177/0192513X07303895>

Zoutewelle-Terovan, M., & Liefbroer, A. C. (2018). Swimming Against the Stream: Non-normative Family Transitions and Loneliness in Later Life Across 12 Nations. *The Gerontologist*, 58(6), 1096-1108. <https://doi.org/10.1093/geront/gnx184>

English summary

This doctoral dissertation uses a multi-method approach, integrating existing literature, survey data, and life story interviews to comprehensively explore the concepts of childlessness and loneliness in later life, as well as their interrelationship. A systematic review and meta-analysis identifies a pooled prevalence of loneliness among community-dwelling older adults of 31.6%, and shows the impact of measurement instrument used, mode of data collection and country. Furthermore, it identifies several reasons for voluntary childlessness, including career-related choices, critical views on society, partner dynamics, and life course circumstances. Importantly, the heterogeneity of the childless population is highlighted, distinguished by diverse personal and social characteristics. Childlessness itself does not inherently lead to increased loneliness in later life; rather, loneliness levels among childless older adults may vary significantly based on the reasons for their childlessness. Themes from the life stories of these individuals – such as making space for other pursuits and acceptance – further explain why childless older adults are not lonelier compared to older adults who have children. By focusing on these complexities, the dissertation shows that not childlessness as such impacts loneliness in later life and throughout the life course, but the surrounding context and other life events, such as reasons for childlessness, play a more decisive role in the experience of loneliness.

Nederlandstalige samenvatting

Dit doctoraatsonderzoek maakt gebruik van een multi-methodische benadering, waarbij bestaande literatuur, enquêtegegevens en levensverhaalinterviews worden onderzocht om de concepten 'kinderloosheid' en 'eenzaamheid' in het latere leven en hun onderlinge relatie beter te begrijpen. Een systematische review en meta-analyse identificeert een gepoolde prevalentie van 31.6% van eenzaamheid bij thuiswonende ouderen, en toont de impact van het gebruikte meetinstrument, de manier van dataverzameling en het land waar een studie wordt uitgevoerd. Verder identificeert dit onderzoek verschillende redenen voor bewuste kinderloosheid, waaronder carrière-gerelateerde keuzes, een kritische blik op de samenleving, de partner en gebeurtenissen doorheen de levensloop. Belangrijk is dat de heterogeniteit van de kinderloze populatie wordt benadrukt, die zich onderscheidt door verschillende specifieke persoonlijke en sociale kenmerken. Kinderloosheid op zich leidt niet automatisch tot meer eenzaamheid op latere leeftijd; eenzaamheid bij kinderloze ouderen kan namelijk aanzienlijk variëren afhankelijk van de redenen voor hun kinderloosheid. Thema's uit de levensverhalen van deze personen – zoals ruimte maken voor andere bezigheden en acceptatie – kunnen verklaren waarom kinderloze ouderen niet eenzamer zijn in vergelijking met ouderen die wel kinderen hebben. Door te focussen op deze complexiteiten laat het proefschrift zien dat niet kinderloosheid als zodanig van invloed is op eenzaamheid in het latere leven en gedurende de levensloop, maar dat de omringende context en andere levensloopgebeurtenissen, zoals redenen voor kinderloosheid, een meer bepalende rol spelen in de ervaring van eenzaamheid.

List of publications and contributions

Publications in international scientific journals

Stegen, H., Duppen, D., Savieri, P., Stas, L., Pan, H., Aartsen, M., Callewaert, H., Dierckx, E., & De Donder, L. (2024). Loneliness prevalence of community-dwelling older adults and the impact of the mode of measurement, data collection and country: A systematic review and meta-analysis. *International Psychogeriatrics*. <https://doi.org/10.1017/S1041610224000425>

Stegen, H., Switsers, L., & De Donder, L. (2021). Life Stories of Voluntarily Childless Older People: A Retrospective View on Their Reasons and Experiences. *Journal of Family Issues*, 42(7), 1536-1558. <https://doi.org/10.1177/0192513X20949906>

De Donder, L., **Stegen, H.**, & Hoens, S. (2024). Caring neighbourhoods in Belgium: Lessons learned on the development, implementation and evaluation of 35 caring neighbourhood projects. *Palliative Care and Social Practice*, 18, 26323524241246533. <https://doi.org/10.1177/26323524241246533>

Switsers, L., **Stegen, H.**, Dierckx, E., Heylen, L., Dury, S., & De Donder, L. (2023). Life stories from lonely older adults: the role of precipitating events and coping strategies throughout the lifecourse. *Ageing and Society*, 1–24. <https://doi.org/10.1017/S0144686X23000715>

Switsers, L., **Stegen, H.**, Van Regenmortel, S., & De Donder, L. (2021). Onderzoek naar de levensloop van ouderen: ervaringen met het McAdams-levensverhaalinterview. *KWALON*, 26(1), 53-63. <https://doi.org/10.5117/KWA2021.1.006.SWIT>

Juma, F., Fernández-Sainz, A., Vercauteren, T., **Stegen, H.**, Häussermann, F., De Donder, L., & Delaruelle, K. (2025). Intensity and changes in grandparental caregiving: Exploring the link to loneliness in Europe. *Archives of Gerontology and Geriatrics*, 128, 105630. <https://doi.org/10.1016/j.archger.2024.105630>

Pan, H., Qualter, P., Barreto, M., **Stegen, H.**, & Dury, S. (2023). Loneliness in Older Migrants: Exploring the Role of Cultural Differences in Their Loneliness Experience. *International Journal of Environmental Research and Public Health*, 20(4), 1-21. <https://doi.org/10.3390/ijerph20042785>

Commissioned reports of research projects and vulgarising publications

Stegen, H. (2024). Geen kinderen hebben maakt je later niet eenzamer. *EOS wetenschap* (website). <https://www.eoswetenschap.eu/psyche-brein/geen-kinderen-hebben-maakt-je-later-niet-eenzamer>

Stegen, H., Dierckx, E., & De Donder, L. (2024). Zijn ouderen zonder kinderen echt eenzaam? *Geron*.

Stegen, H. (2024). "Ook wie geen kinderen heeft, vult het leven zinvol in": Onderzoek naar kinderloosheid en eenzaamheid bij ouderen. *Actueel*, 25(3), 23-24.

Stegen, H. (2020). Huisje-tuintje-kindje: Niet zo vanzelfsprekend? *Actueel*, 21(2), 21-22.

Stegen, H., Studenten van de faculteit PE, & De Donder, L. (2020). Studentenparticipatie aan de faculteit PE – een blik op vandaag en de toekomst: Aanzet tot visie- en actieplan. Vrije Universiteit Brussel. 38 p.

De Donder, L., Hoens, S., **Stegen, H.,** Kint., O., & Smetcoren., A.-S. (2021). Lokaal samenwerken in zorgzame buurten. Fonds Dr. Daniël De Coninck, 138 p.

De Donder, L., Hoens, S., **Stegen, H.,** Kint, O., Smetcoren, A.-S. (2022). Zorgzame buurten komen er niet vanzelf. *Geron*, 24(3), 1-4.

De Donder, L., Hoens, S., **Stegen, H.,** Kint, O., & Smetcoren, A.-S. (2021). Lokaal samenwerken in zorgzame buurten. *Actueel*, 22(3), 24-25.

Hoens., S., **Stegen., H.,** Brosens, D., & Smetcoren, A.-S. (2020). ENCOUNTER#8, de oudere als verander-expert: Evaluatierapport. Vrije Universiteit Brussel, 15 p.

Smetcoren, A.-S., Dawance, T., Rifaad, Y., **Stegen, H.,** Aernouts, N., Ryckewaert, M. & De Donder, L. (2020). Care and Living in Community, CALICO, Intermediate evaluation. CALICO, 203 p.

Communications at international conferences as speaker

Stegen, H. et al. (2024). A life without children: loneliness among childless older adults from a life course perspective. 27NKG, Stockholm, Sweden, June 12-14, 2024.

Stegen, H. et al. (2023). Childlessness and Loneliness in Later Life? The Moderating Role of Reasons for Childlessness – Poster presentation. GSA2023, Tampa, Florida, USA, Nov. 8-11, 2023.

Stegen, H. et al. (2023). Loneliness Among Involuntarily Childless Older Adults: A Life Course Perspective. GSA2023, Tampa, Florida, USA, Nov. 8-11, 2023.

Stegen, H. & De Donder, L. (2023). Breaking the taboo of serious illness, dying, and loss in the community: Caring Neighbourhoods in Belgium. GSA2023, Tampa, Florida, USA, Nov. 8-11, 2023.

Stegen, H. et al. (2023). Impact of unrealized life events: childlessness and loneliness among older people. BSG2023, Norwich, UK, July 5-7, 2023.

Stegen, H. et al. (2023). Loneliness among community-dwelling older adults: a systematic review and meta-analysis on the impact of used measurement instrument and mode of data collection. BSG2023, Norwich, UK, July 5-7, 2023.

Stegen, H. et al. (2023). Caring neighbourhood and loneliness: Importance of applying a place-based perspective. ICIC23, Antwerp, Belgium, May 22-24, 2023.

Stegen, H. (2022). Participation at conference "Linking Ages – How methods matter in childhood and age(ing)research". Heidelberg, Germany, September 21-22, 2022.

Stegen, H. et al. (2022). A systematic review and meta-analysis of loneliness prevalence studies and corresponding study characteristics in the older population. 26NKG, Odense, Denmark, June 8-10, 2022.

Stegen, H. & Dury, S. (2022). Social Inclusion, Exclusion and Loneliness in Neighbourhoods: an International Perspective (keynote). Mid-term conference I2I Isolation to Inclusion, Aalst, Belgium, May 12, 2022.

Stegen, H. et al. (2021). Childlessness and loneliness in later life: A research protocol (poster presentation). BSG 2021 50th Anniversary Conference - Online, Lancaster, United Kingdom, July 7-9, 2021.

Stegen, H. et al. (2021). The prevalence of different types of loneliness amongst community-dwelling older people (as part of a symposium). BSG 2021 50th Anniversary Conference - Online, Lancaster, United Kingdom, July 7-9, 2021.

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Title doctoral thesis: Beyond the usual path: Exploring childlessness and loneliness in later life

Project code in PURE (if relevant): FWOTM1026

Contact information:

VUB email address: hannelore.stegen@vub.be

Private email address (for possible contact after the defence): hannelore.stegen@skynet.be

- I hereby consent to this email address being used in the future for emails about *career tracking* for doctoral graduates.

Signature:

The doctoral candidate

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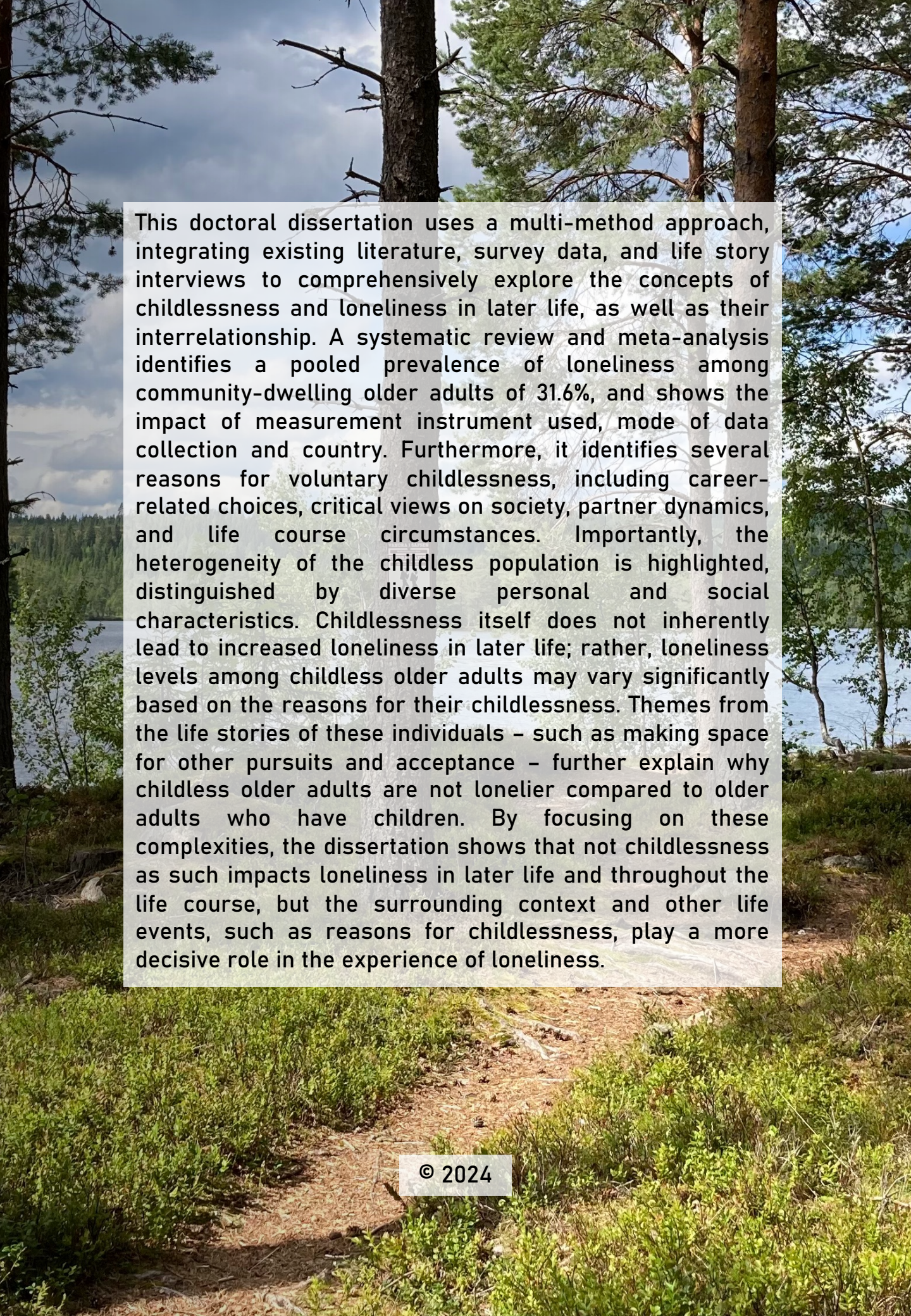
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Name: Koen Lombaerts

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A scenic view of a forest path leading to a lake, with a large text overlay. The path is dirt and surrounded by green bushes and trees. The lake is visible in the background under a blue sky with some clouds.

This doctoral dissertation uses a multi-method approach, integrating existing literature, survey data, and life story interviews to comprehensively explore the concepts of childlessness and loneliness in later life, as well as their interrelationship. A systematic review and meta-analysis identifies a pooled prevalence of loneliness among community-dwelling older adults of 31.6%, and shows the impact of measurement instrument used, mode of data collection and country. Furthermore, it identifies several reasons for voluntary childlessness, including career-related choices, critical views on society, partner dynamics, and life course circumstances. Importantly, the heterogeneity of the childless population is highlighted, distinguished by diverse personal and social characteristics. Childlessness itself does not inherently lead to increased loneliness in later life; rather, loneliness levels among childless older adults may vary significantly based on the reasons for their childlessness. Themes from the life stories of these individuals – such as making space for other pursuits and acceptance – further explain why childless older adults are not lonelier compared to older adults who have children. By focusing on these complexities, the dissertation shows that not childlessness as such impacts loneliness in later life and throughout the life course, but the surrounding context and other life events, such as reasons for childlessness, play a more decisive role in the experience of loneliness.