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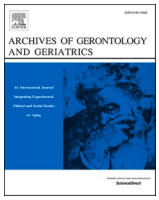

Older adults' experiences of loneliness over the lifecourse: An exploratory study using the BBC loneliness experiment

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ABSTRACT

Purpose: : To explore older adults' experiences of loneliness across the lifecourse and the relationship with current loneliness.
Methods: : Our sample is 6,708 people aged 65 years and older, resident in the UK, who participated in the BBC Loneliness Experiment in spring 2018. Loneliness was assessed using the 3 item UCLA Loneliness Scale, using a threshold score of 6+ to define loneliness. Participants were asked if they had experienced loneliness in 5 life-stages ranging from childhood to old age and, if so, at which stage had they experienced loneliness most intensely. Multivariate logistic regression analysis was used to estimate the odds ratios of experiencing loneliness in relation to previous experiences of loneliness and key covariates.
Findings: : 41% of participants reported current feelings of loneliness and were more likely than those who did not to spend time alone, have poorer self-rated health, be unmarried, have fewer financial resources, and lower levels of neighbourhood trust. 71% reported they had experienced loneliness at some previous stage in their life, with 26% experiencing it in childhood (5–15 years and 39% as a young adult (16–24 years). Having had three or more prior life stage experiences of loneliness was an independent risk factor for current loneliness.
Conclusion: : We highlight the potential importance of examining older adults' experience of loneliness within a lifecourse perspective. We suggest a research agenda that examines the importance of the number and timing of previous loneliness experiences and investigates the strategies used to cope with loneliness across the lifecourse as a pathway to developing more effective and personalised loneliness interventions.

1. Introduction

Loneliness is an evaluative concept that articulates the unwanted gap or discrepancy between an individual's desired quantity and/or quality of social relationships and the relationships they have (Victor et al., 2005). This presents the paradox that individuals may have a wide circle of family and friends, but experience loneliness because these relationships do not fulfil their expectations. Conversely others may have a small number of social relationships, but not experience loneliness because of their quality. Importantly, loneliness is considered 'unwanted', unlike solitude, which an individual may actively seek (De Jong Gierveld & Havens, 2004). Conceptually we can identify three main types of loneliness: social, which is largely derived from deficits in social relationships (in terms of quality, quantity, or mode); emotional, largely resultant from the loss/lack or deficits in key relationships such as widowhood or compromised marital relationships; and existential, a more philosophical conceptualisation centred around meaning and purpose of existence (Mansfield et al., 2021).

The established representation of loneliness in the UK has been as a social problem of old age with a substantial body of work investigating prevalence and risk factors. Cross-sectional evidence suggests that approximately 9% of those aged 65 years and over report that they always or often feel lonely, a further 30% experience loneliness sometimes (Victor & Bowling, 2012) and these estimates have remained broadly stable since 1948 (Victor et al., 2002). The development of longitudinal studies offers a dynamic perspective on loneliness in later life over time

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periods ranging from 12 months (Victor et al., 2015) up to 5 (Hawkley & Kocherginsky, 2018) or 8 years (Yang, 2018). Studies with a single follow up characterise populations into four groups: the never lonely, the always lonely, and two groups with increasing/decreasing loneliness while multiple follow up supports the identification of a further group who fluctuate between the lonely/not lonely groups.

Alongside work enumerating the prevalence of loneliness in older adults cross-sectionally and longitudinally, there is an emerging body of work examining lifespan approaches to loneliness (Hawkley and Capitanio, 2015; Brown and Munson, 2020; Goossens et al., 2021). This involves the comparison of loneliness prevalence across different age groups across the adult life span (e.g., 16 to 90 and over) (Yang & Victor, 2011; Jopling & Sserwanja, 2016). Cross-sectional studies of loneliness across the lifespan demonstrate two main age-related trends. Data from the UK and other countries report a steady decrease in loneliness with age from young to old (Barreto et al., 2020; Office for National Statistics, 2018a) while a U-shaped non-linear distribution with two loneliness 'peaks' reported by those aged under 25 years and those aged over 65 years has been observed across a range of European countries (Victor & Yang, 2012), Germany (Luhmann & Hawkley, 2016), and the United States (Hawkley et al., 2020). All these studies confirm that loneliness is experienced by all age groups and is not an experience unique to older adults (Mund et al., 2020).

A lifecourse approach to understanding loneliness in later life links this outcome to long term biological, behavioural, psycho-social, and environmental processes, and exposures. This approach examines adult health outcomes and disparities in the context of biological, social, and environmental exposures and distinguishes between the timing and number of exposures. The focus of the critical exposure model is on the timing of exposures hypothesising that negative (or positive) exposures have a differential effect on health outcomes if experienced at specific development points. As initially conceptualised the model, sometimes referred to as biological programming, emphasised in utero or early childhood exposures. For example, Russ et al. (2021) reported that exposure to air pollution in utero was associated with cognitive trajectories between ages 11 and 70 (Russ et al., 2021).This model has been expanded to include adolescence as a critical time point and to include social transitions such as the transfer from primary to secondary school (Heikkinen, 2011). The cumulative deficit, or disadvantage model, focuses upon the cumulative effect of multiple exposures on health outcomes in later life. This model emphasises the total numbers of exposures across the lifecourse rather than their temporality (Crystal, 2020). Applications of cumulative deficit theory in gerontology are dominated by frailty which is associated with arrange of negative outcomes (see Rockwood & Howlett, 2019).

Studies adopting a lifecourse approach to understanding social health as conceptualised as loneliness in later life are rare. Ejlskov et al., (2019) examined social relationship adversities such as maternal separation, relationship difficulties with friends, family or spouse, divorce, and bereavement, in three life stages, childhood, mid and late adulthood, and their relationship to loneliness at age 68 years measured by the 3-item UCLA scale. Using the British Medical Research Council National Survey of Health and Development (NSHD): a sample of 5,362 birth to married mothers in mainland Britain during one week in March 1946. Levels of loneliness for the sample of 2543 were low: mean UCLA score of 3.8 (range 3-9). Using a critical exposure lens, they suggest that relationship adversities experienced at each stage of the lifecourse were independently associated with loneliness at 68. Proximal adversities were more strongly related to current loneliness than more distant experiences.

Two longitudinal studies examined loneliness in later life with retrospective recall of adverse events, or critical exposures, at previous life stages. Nicolaisen and Thorsen's (2014) study from Norway asked participants aged 40-59 and 60-80 about three aspects of their childhood: a conflictual parental relationship, prolonged bullying, and economic hardship, and current loneliness as measured by the 6-item scale by de Jong Gierveld and colleagues (de Jong Gierveld & van Tilburg, 2010) and a single item question. For those aged 60+, economic hardship and a conflictual parental relationship predicted loneliness for women, while bullying was linked to loneliness among men. Kamiya, Doyle, Henretta and Timonen (2013) focused on those aged 65+ in the first wave of the Irish Longitudinal Study of Ageing. They investigated retrospective recall of early childhood disadvantage (family socioeconomic conditions, childhood health, and parental substance abuse) and current loneliness measured by the 3 item UCLA scale. Poverty in childhood and parental substance abuse were associated with late life loneliness, the latter for men only. Merz and Jac (2013) and Merz and de Jong Gierveld (2016) looked at relationships with parents during childhood and loneliness in adulthood (aged 50+). They reported that a strong childhood relationship with fathers was protective against loneliness for older widows. The qualitative work by Tiilikainen and Seppanen (2017) reinforces the potentially important role of childhood experiences, especially parental and sibling relationships, as antecedents of loneliness in later life.

The literature investigating older adults previous experiences of loneliness across their life course and it's importance as a predictor of late life loneliness is sparse. Victor, Scambler and Bond (2009) asked participants aged 65+ to compare current loneliness with their experiences 10 years earlier and reported that 10% were lonelier and 13% less lonely. Pikhartova et al., (2016), in the context of understanding stereotypes about loneliness in later life, reported that one third of their participants expected to experience loneliness in old age. Prior experiences of loneliness are absent from both cross sectional (Berg-Warner and Morley, 2020) and longitudinal (Dahlberg et al., 2021) reviews of loneliness risk factors. Given this evidence gap the aims of this study are two-fold: (1) to enumerate older adults' self-reported experiences of loneliness across their lifecourse and (2) to investigate if previous experiences of loneliness are an independent risk factor for current loneliness.

2. Materials and methods

Data are drawn from the 2018 BBC Loneliness Experiment; an online survey open to people aged 16 years and over worldwide from 14 February to 17 May 2018. Data were provided by over 55,000 participants, aged 16-99 years from 237 countries, islands, and territories. The experiment was not designed to be a prevalence study of loneliness. Rather the study focused explicitly on exploring what loneliness feels like, how it is experienced at different stages of life, and how it links with a range of cultural (Barreto et al., 2020) and psycho-social factors (e.g., stigma, personality, friendship networks Barreto et al., 2022). The study took about forty minutes to complete, but participants were able to take as long as they wished to answer the questions.

2.1. Analytic sample

The current study includes only participants aged 65 years and older because they are the only group in our sample that could reflect on all prior life stages. Overall, 6970 adults aged 65 years and over completed the survey the majority of whom, 6,708 (96%), were resident in the UK. Given the small numbers resident outside the UK, our analytic sample consists of the UK residents.

2.2. Loneliness

We use the three-item short form UCLA Loneliness Scale (Hughes et al., 2004), one of the two loneliness measures recommended by the UK Government (Office for National Statistics, 2018b), to enhance the comparability of our findings with previous studies. The three questions were 'How often do you '- (a)...feel you lack companionship, (b) feel left out and (c) feel isolated from others' using a 5-point Likert response scale ranging from never (1) to very often (5) (Score range 3-15, mean

=9, median= 7, mode= 3, Cronbach's alpha = 0.88). To draw comparisons with other surveys, such as the English Longitudinal Study of Ageing (ELSA), responses were converted to a 3-point scale combining those who selected (a) hardly ever/never (initial score 2 or 1 recoded to 1) and (b) often/very often (initial score 4 or 5 recoded as 3) (Victor & Pikhartova, 2020). Scores were summed giving a range from 3 to 9 (mean =6.1, median=5, mode=3, Cronbach's alpha = 0.83) with higher scores indicating greater loneliness. To facilitate comparison with the literature on loneliness risk factors our primary analysis uses the UCLA scale as a dichotomised variable. There is no specified threshold score to dichotomise the lonely from non-lonely for this scale. We followed Steptoe et al. (2013) and Pikhartova et al. (2014) with those who scored between 3 and 5 classified as 'not lonely' and a score of between 6 and 9 as 'lonely'.

2.3. Experiences of loneliness across the lifecourse

Because there were no existing measures/questions that asked about loneliness in previous stages of life our measure was developed for the BBC Loneliness Experiment. Participants were asked if they had experienced loneliness at five distinct phases of their life and could select all that applied to them: Childhood (5-14 years), Young Adult (15-24 years), Adult (25-44 years), Mid-life (45-64 years), and Older Adult (65+ years). Participants that applied and were then asked: 'Of these periods, when was the experience of loneliness the strongest?' For this question, only one of the five options could be selected. These questions enable us to investigate the 'critical exposure' model. To examine cumulative disadvantage, we created a composite variable enumerating the number of life stages when loneliness was experienced ranging from 0 (never previously experienced loneliness) to 5 (experienced loneliness in each of 5 life stages).

2.4. Covariates

We included the following co-variates relating to circumstances and characteristics of individuals: age, sex, marital status, self-rated health (fair or poor, good, very good or excellent), whether they had children, or were a carer, how well they felt their needs are met by their financial resources (poorly, fairly well, very well), living alone, and life events such as bereavement (Zebhauser et al., 2015). We also included a question on how much time participants spent alone (always, often, seldom, or never) as Djundeva et al. (2019) suggests that it is not living alone per se that confers vulnerability to loneliness, but rather time spent alone.

Neighbourhood factors such as trust in the community are associated with loneliness for older adults (Yang and Moorman, 2021; Nyqvist et al., 2016). We measured this using a 7-item social capital measure adapted from Martin et al. (2004), which assesses the sense of cohesion and support people have in their local community or neighbourhood, using a 5-point Likert-type scale, ranging from strongly disagree (1) to strongly agree (5). An example item is 'This is a close-knit, or ''tight'' neighbourhood where people generally know one another' ($\alpha = 0.82$) (Qualter et al., 2021). Item scores were summed and then divided by seven giving a range from 1 to 5, where higher scores indicated greater neighbourhood trust (Qualter et al., 2021).

Before proceeding with the main analysis, we examined the correlations between the three variables of living alone, time spent alone, and marital status. A high correlation, $r = .71$, was observed between living alone and marital status, a moderate correlation was seen for living alone and time alone ($r = .57$), and there was a modest association between time spent alone and marital status ($r = .43$). As such our analysis includes (1) time spent alone and (2) marital status, but not living alone. All other variables were retained in the analysis.

2.5. Main statistical analyses

To answer our research questions, we undertook our analysis in 3 sections using the dichotomised UCLA scale. First, we report the sociodemographic characteristics of our sample and the prevalence of loneliness. We use chi-squared tests to evaluate the relationship between our 'risk factors' and loneliness. We then examine the relationship between current loneliness and previous experiences of loneliness across the lifecourse. Finally, we use multivariate logistic regression analysis to estimate the odds ratios (ORs) of experiencing loneliness adjusting for all covariates including previous exposure to loneliness. Given the large sample size we focus on relationships significant at the threshold of $p < .001$. We repeated this analysis using loneliness as a continuous variable, reported in supplementary Table 2, and the single item loneliness question, reported in supplementary Table 3.

One important aspect of on-line surveys is the issue of missing data (Nayak & Narayan, 2019). Missing data ranged from 0.5% (gender) to 19.1% and 19.5% for self-rated health and neighbourhood trust respectively. Overall, just over one fifth (22%) of participants had missing data on one or more variable of interest which is lower than observed in many on-line surveys (Nayak and Narayan, 2019). To investigate the influence of this, we imputed missing values using multivariate imputation by chained equations. We included all variables from the analysis in the imputation model. Estimates from 25 imputed datasets were combined using Rubin's rules (Rubin, 1996). All data were analysed using Stata 14.2 (TX: StataCorp LP). The complete case analysis without imputation showed broadly similar results (see supplementary Table 1).

3. Results

The characteristics of the study population: Of our analytic sample of 6708, 72% were female, 83% were aged between 65 and 74 years, and almost two-thirds, 63%, lived alone with 81% reporting that they were often or always alone. In terms of civil status, 33% were married/partnered, 31% divorced, and 24% widowed; 72% had children and 7.8% identified themselves as a carer. The majority were in good health, with 43% rating their health as very good/excellent; and 43% evaluated that their financial resources met their needs very well (Table 1).

The prevalence of loneliness: Using the dichotomised UCLA scale, 40.7% of participants were categorised as lonely and 13% had a maximum score of 9. Replicating established findings participants categorised as lonely were:- more likely to be widowed/divorced, childless, have poorer self-rated health, spend more time alone, have fewer financial resources and less trust in their community (Table 1: $p < .001$). No relationship was observed with age, gender, or carer status.

Loneliness across the lifecourse: For the overall sample previous experience of loneliness was reported by 71% of participants (Table 2). Of the 5 life stages, experience of loneliness was highest for young adulthood (39%), lowest for childhood (26.0%) and young adulthood was the life stage selected as being when loneliness was most intense (23.9%). We compared prior experiences of loneliness by current loneliness status. Those currently lonely were significantly more likely to have experienced loneliness previously than their non-lonely peers (75.2% v 68.%) and across each life stage. For example, almost a third, 31% experienced loneliness as a child compared with 18% of the not lonely. Of those currently experiencing loneliness, 35.7%, reported this was strongest in their current life stage (i.e., as an older adult) whilst for those not currently experiencing loneliness it was as a young adult (29.5%). Adopting a cumulative disadvantage lens, we summed the number of life stages loneliness had been experienced. No experience of loneliness was reported by 29% of participants with 9.2% reporting experiencing loneliness at every life stage (Table 2). Comparing the cumulative experience of loneliness almost half of the non-lonely, 45.6%, had experienced up to 2 episodes of loneliness: for the lonely group 44.3% had experienced 3 or more episodes of loneliness and for

Table 1
Characteristics of total sample and loneliness category.

Variable	Total (*N* = 6708)	Not Lonely (*N* = 3747)	Lonely (*N* = 2567)	*P*
	%	%	%	
		59.3	40.7	
Age group				
65-74	83.0	82.4	85.0	0.005
75+	17.1	17.6	15.0	
Sex (missing=32)				
Men	28.1	27.1	30.1	0.008
Women	71.9	72.9	69.9	
Time Spent Alone (missing=348)				
Never/Seldom	18.9	24.7	9.5	<0.001
Often	70.8	68.6	73.8	
Always	10.3	5.7	16.8	
Marital Status (missing=134)				
Married/Partnership	32.5	37.6	24.6	<0.001
Single (never married)	13.1	12.3	14.5	
Divorced/Separated	30.5	28.0	34.8	
Widowed	24.0	22.1	26.2	
Perceived financial situation (missing=82)				
Poorly	10.6	6.2	16.9	<0.001
Fairly well	46.7	42.5	52.0	
Very well	42.7	51.3	31.1	
Self-Rated health (missing=1,280)				
Fair/Poor	26.7	19.4	37.1	<0.001
Good	30.2	30.2	30.1	
Very Good/Excellent	43.2	50.5	32.8	
Parent (missing=133)				
Yes	72.0	73.8	68.7	<0.001
No	28.0	26.2	31.3	
Carer(missing=138)				
No	92.2	7.0	8.6	0.019
Yes	7.8	93.0	91.4	
	Mean (SD)	Mean (SD)	Mean (SD)	
NeighbourhoodTrust (missing=1310)	3.3 (0.8)	3.5 (0.8)	3.0 (0.8)	<0.001

Table 2
Current loneliness and previous experiences of loneliness across the life course.

	Total (*N=6708*) %	Not Lonely (*N=3747*) %	Lonely (*N=2567*) %	
Previous experience of loneliness*				
Yes	71.0	68.2	75.2	<0.001
No	29.0	31.8	24.8	
Life stage loneliness experienced				
Child	26.0	18.0	31.0	<0.001
Young adult	39.2	32.7	43.3	<0.001
Adult	36.4	31.5	39.5	<0.001
Mid Life	36.9	24.6	44.6	<0.001
Older adult	37.1	16.1	50.3	<0.001
Life stage loneliness most intense**				
Child	10.4	11.8	8.4	<0.001
Young adult	23.9	29.5	16.9	
Adult	19.9	25.7	12.5	
Mid Life	23.1	20.2	26.5	
Older adult	22.8	12.9	35.7	
Number of previous loneliness experiences*				
0	29.0	31.8	24.8	<0.001
1	19.9	24.5	13.2	
2	19.7	21.1	17.7	
3	14.7	11.7	19.0	
4	7.5	4.8	11.5	
5	9.2	6.1	13.8	

Notes: *356 missing responses; **4435 completed this follow-up question.

13.8% it had been experienced at every stage of life.

The role of lifecourse experience in predicting loneliness: For our multivariate analysis relationships with established loneliness risk factors followed previous studies. Increased odds of experiencing loneliness were demonstrated for those who were widowed (OR 1.44; 95 % CI 1.20-1.72), a carer (OR 1.47; 95% CI 1.18-1.82), experienced poor health (2.03; 95% CI 1.74-2.36) and were always alone (OR 4.49; 95% CI 3.75-6.38) (Table 3). Reduced odds of experiencing loneliness were demonstrated by those in a secure financial situation (0.39; 95% CI 0.32-0.48) and who had high levels of trust in their neighbourhood (OR 0.59; 95% CI 0.55-0.64). In line with the cumulative disadvantage model, the odds of experiencing loneliness in later life increased with the number of prior experiences, demonstrating a dose-response relationship. However, this only attained statistical significance for those with 3 or more experiences. We repeated the analysis using loneliness as a continuous variable and our single item loneliness question with results broadly comparable across the three analyses (see supplementary Tables 2 and 3).

4. Discussion and conclusions

Quantitative research focused upon the experience of loneliness in later life has focused upon establishing (a) prevalence rates, (b) individual vulnerability factors including psycho-social, demographic, and resource factors (health, social and material), and (c) adverse health outcomes. Little attention has been given to understanding loneliness in later life from a lifecourse perspective including both what life stages older adults had experienced loneliness and the number of life stages they had experienced loneliness. Our study addresses these evidence gaps by (1) enumerating older adults' experiences of loneliness across their lifecourse and (2) examining if these were related to current loneliness.

Before we consider our substantive findings, it is important to acknowledge the strengths and limitations of this study. The BBC Loneliness Experiment is, because of the sample size and inclusion of a large proportion of lonely people (41%), a unique data set for generating insight into what the experience of loneliness is like for adults of all ages. The study used established measures of loneliness and other key factors (e.g., stigma, psychological factors, health status).

Data collection was via a self-completion on-line survey raising two key methodological issues: (a) sample representativeness and (b) missing data. For this paper our analytic sample was adults aged 65 years and older, because they are the only age group able to fully reflect on their lifecourse experiences of loneliness, resident in the UK to minimise cultural variations in question responses. Compared to the UK population aged 65+ years, our analytic sample over represents females (72% v 55%), those aged 65-74 years (83% v 60%), and those living alone (67% v 33%); it under-represents the married/civil partnered (33% v 60%) (AGE UK, 2019). On-line COVID studies of loneliness also report an over-representation of women and under representation of the married (e.g., Groarke et al., 2020) and we fully acknowledge this limitation.

There were no existing scales we could use to determine lifecourse experiences of loneliness either in terms of the number or timing of life stages when it was experienced. Based upon existing evidence about loneliness prevalence across the life span, we used a five-stage model which included childhood and young adulthood as well as established adulthood, mid-life, and later life. This approach enabled us to start to address both the critical exposure and cumulative deficit perspectives on late life loneliness. Is loneliness in later life the outcome of the number of times an individual has experienced loneliness across their lifecourse or

Table 3
Adjusted odds ratios of reporting loneliness ($N = 6708$).

	OR (95% CI)	*P*
Age group		
65-74		
75 and over	0.80 (0.69, 0.94)	0.006
Sex		
Male	1.00	
Female	0.99 (0.87, 1.13)	0.848
Other periods of loneliness		
0	1.00	
1	0.74 (0.62, 0.88)	0.001
2	1.03 (0.87, 1.22)	0.712
3	1.84 (1.53, 2.20)	<0.001
4	2.89 (2.30, 3.63)	<0.001
5	2.63 (2.13, 3.25)	<0.001
Times spent alone		
Never/Seldom	1.00	
Often	2.44 (2.01, 2.95)	<0.001
Always	4.89 (3.75, 6.38)	<0.001
Marital Status		
Married/Cohabiting	1.00	
Single (never married)	0.72 (0.57, 0.91)	0.005
Divorced or separated	0.95 (0.81, 1.13)	0.578
Widowed	1.44 (1.20, 1.72)	<0.001
Perceived financial situation		
Poorly	1.00	
Fairly well	0.61 (0.50, 0.74)	<0.001
Very Well	0.39 (0.32, 0.48)	<0.001
Self-rated health		
Very good or excellent	1.00	
Good	1.29 (1.11, 1.50)	0.001
Fair or poor	2.03 (1.74, 2.36)	<0.001
Parent		
Yes	1.00	
No	1.12 (0.96, 1.30)	0.145
Carer		
No	1.00	
Yes	1.47 (1.18, 1.82)	<0.001
NeighbourhoodTrust	0.59 (0.55, 0.64)	<0.001

is the specific times of life at which they experienced loneliness (or a combination of the two)?

As with all self-completion modes of data collection there were missing responses to items in our survey. However, 97% of participants completed the loneliness measure which is the same as that reported by Groarke et al. (2020); for self-rated health and neighbourhood trust, missing items were approximately 20%, potentially because these came towards the end of the survey. We repeated our analysis using imputed and complete case data which are broadly comparable. This offers confidence that our findings are not unduly influenced by missing data.

In terms of loneliness prevalence, approximately 41% of participants were defined as lonely using the dichotomised 3 item UCLA scale: double the prevalence of 18% to 20% from the English Longitudinal Study of Ageing, using the same questions and loneliness definition threshold (Pikhartova et al., 2014; Steptoe et al., 2013). Responses to the single-item question indicated that almost a third, 31%, of participants were often/always lonely which is approximately 3 times the national norm (Office of National Statistics, 2018a). Whilst the prevalence of loneliness is higher than population norms, our findings in terms of loneliness predictors align with the established literature. Having better self-rated health, perceived financial situation and increased levels of neighbourhood trust were associated with reduced odds of loneliness (De Jong Gierveld & Van Tilburg, 2010) while increased time spent alone, widowhood, and being a carer were associated with increased odds of current loneliness (Nyqvist et al., 2016; Victor et al., 2020).

We adopted a lifecourse perspective by asking participants about experiences of loneliness at previous life stages ranging from childhood through to old age and which life stage they felt the experience was most intense. This tested the critical exposure model. For those currently reporting loneliness, 31% reported experiencing loneliness as a child compared with 18% of those who were not lonely. Identifying the life stage where the experience had been most intense, those who were lonely described old age as the loneliest phase of their life, while for the non-lonely this was young adulthood (29.5%). Notably approximately 10% of participants who had experienced loneliness reported that childhood was the phase at which their loneliness was most intense. Further research is required to confirm this observation and then consider what childhood experiences of loneliness mean for our theories of loneliness, understanding loneliness in later life (and potentially other stages of adulthood) and the design and delivery of interventions. To address cumulative disadvantage, we calculated the number of life stages participants had experienced loneliness. Overall, 71% of participants had experienced loneliness at previous phases of their life and 9.2% at each stage of life. The number of prior experiences of loneliness demonstrate a dose-response cumulative disadvantage relationship with loneliness in later life with statistical significance demonstrated for 3+ prior experiences of loneliness.

We suggest that our study develops the loneliness research agenda in three distinct ways: (1) enhancing our suite of vulnerability factors; (2) the potential of a lifecourse approach; and (3) and implications for research, policy, and practice. First, we highlight the importance of time spent alone, rather than living alone, as a loneliness risk factor (Lim et al., 2020). This is a physical form of isolation which has become more common during the COVID-19 pandemic. We suggest more studies of loneliness should include time spent alone and additionally distinguishing been voluntary time alone, which can be conceptualised as solitude, and involuntary time alone (O' Sullivan et al., 2021).

Second, our findings demonstrate the potential of taking a lifecourse approach to loneliness. We addressed both cumulative and critical exposure models. In terms of cumulative exposures to loneliness 51% had experienced it on multiple occasions, and 3+ experiences of loneliness was an independent risk factor predicting loneliness in later life. There is little consensus of what defines chronic loneliness as most studies operationalise this as loneliness across successive waves of longitudinal studies of ageing rather than lifelong. We showed that 9.2% experienced loneliness at all phases of life. Even given the nature of our sample, this suggests that there is a cohort of individuals for whom this is an enduring aspect of their lifecourse and who may demonstrate specific combinations of vulnerabilities.

Our critical exposure results highlighted that a third of lonely participants, 31%, experienced loneliness as a child and 43% as a young adult and 69% identified life stages other than old age as the loneliest phase of their life. We suggest that the critical exposure/cumulative disadvantage models can be seen as offering a complementary approach to understanding loneliness in later life. For example, is it simply the number of stages loneliness is experienced or is it the specific 3 life stages when these occur? We need to explore the factors that result in multiple experiences across the lifecourse. Is this the consequence of key critical exposures at a specific life stage such as the high levels of loneliness in childhood/early adulthood? Does it result from the accumulation of loneliness experiences or it the presence of established vulnerabilities in terms of physical, mental, and social health conditions and resources that drive the experiences of loneliness at multiple time points? Together, these key findings merit further research from both quantitative and qualitative perspectives to understand the complexity of loneliness in later life and the links with previous phases of life.

Finally, we demonstrate that 71% of our sample have experienced loneliness at earlier phases of their life. Thus, at least a significant proportion of older adults do not experience later life naïve to loneliness and may have developed strategies for coping with loneliness. These potential experiences and coping strategies are largely unrecognised in previous research, policy, or practice. With the reconceptualisation of loneliness as a public health problem a range of countries have developed loneliness strategies (e.g., the UK and Ireland), established third sector organisations to raise awareness (e.g., Campaign to End Loneliness-UK; ALONE-Ireland and ACEL-Australian Coalition to End

Loneliness) and developed a plethora of interventions. According to Fakoya et al., (2020), there were 24 different reviews of loneliness interventions for older adults. Despite this activity evidence to support effectiveness of current intervention strategies is sparse. We suggest that those seeking to develop interventions to mitigate loneliness for older adults could build upon these prior life experiences, which might generate more effective and more personalised interventions (Victor et al., 2018).

These novel findings have implications for research and policy. In terms of research, we suggest that more studies should include a life-course perspective to replicate our findings as we fully acknowledge the limitations of our work. There is also additional potential for quantitative and qualitative research examining the groups with no previous loneliness prior to old age and those for whom it is a repeated experience. The identification of these two groups highlights the heterogeneity of those experiencing loneliness in later life, potentially suggesting that these groups may be experiencing different types of loneliness (social, emotional, or existential). In terms of policy, we suggest that interventions for loneliness need to reflect the life experience of older adults and potentially build upon this rather than develop interventions based on the implicit premise that older adults are naïve to the experience of loneliness.

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Ethical approval

The study was given a favourable review by the University of Manchester.

CRediT authorship contribution statement

Christina R Victor: Conceptualization, Investigation, Validation, Writing – original draft. **Isla Rippon:** Writing – review & editing, Data curation, Formal analysis. **Manuela Barreto:** Conceptualization, Investigation, Writing – review & editing. **Claudia Hammond:** Conceptualization, Writing – review & editing. **Pamela Qualter:** Conceptualization, Investigation, Writing – review & editing.

Declaration of Competing Interest

None.

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Data Access Statement

The data underpinning this publication can be accessed from Brunel University London’s data repository, Brunelfigshare here: https://doi.org/10.17633/rd.brunel.20005355 under a CCBY licence

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