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The life course effects of socioeconomic status on later life loneliness: The role of gender and ethnicity

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ABSTRACT

Precursors of loneliness include individual risk factors and experiences of social exclusion. Using the New Zealand Health Work and Retirement Life Course History Study, we investigated the impact of unequal access to material resources across the life course (from age 10 to present) on late life emotional and social loneliness and the moderating effects of gender and Māori ethnicity (indigenous population of Aotearoa/New Zealand) in 613 adults aged 65 to 81 years. Childhood and adult life socioeconomic status (SES) negatively predicted late life emotional and social loneliness, but their effects disappeared after controlling for late life SES, suggesting a mediation effect. Education was also a significant predictor; however, it exerted different effects on social (positive) and emotional (negative) loneliness. Education's effect was moderated by gender, indicating a protective effect for emotional and an exacerbating effect for social loneliness in men. These findings suggest that lifelong exclusion from material resources is a risk factor for late life loneliness.

There is increasing recognition that loneliness poses a serious health issue (Cacioppo and Cacioppo, 2018) based on a considerable body of evidence that demonstrates the negative effects of loneliness on mental and physical health (Hawkley et al., 2008; Luo et al., 2012; Mund et al., 2020). Older people are not necessarily lonelier than other population groups but are at risk of experiencing loneliness owing to the higher likelihood of loss of partners and friends, reduced social networks, and restrictions on mobility (Savikko et al., 2005; Schafer and Koltai, 2015). We consider theoretical models of life course trajectories that suggest early life social and structural situations contribute to loneliness in older age. Accordingly, we focus the present study on the life course influence of socioeconomic status, gender, and ethnicity on late life loneliness in the Aotearoa New Zealand context.

Loneliness has been defined as an emotional response to "a discrepancy between desired and achieved levels of social contact" (Robinson et al., 2013, p. 250) and understood as an affective response to dissatisfaction with one's social connections (Ciolfi and Jimenez, 2017). Multidimensional perspectives on loneliness further differentiate between emotional (absence of close and intimate emotional connections) and social (absence of engaging social connections) dimensions of loneliness (Dahlberg and McKee, 2014; De Jong Gierveld and Van Tilburg, 2006, 2010; Weiss, 1973). Despite this conceptual distinction, empirical studies commonly combine the two into a composite indicator of loneliness. In the present study, we distinguish between emotional and social loneliness in the empirical models. When discussing the literature, however, we refer to loneliness as conceptualized and measured by the papers reviewed.

Life course perspective on late life loneliness

A meta-analysis of studies of loneliness across the life course (Mund et al., 2020) indicated that loneliness at the population level generally remains stable from adolescence to old age. Although Mund et al. suggest that this apparent stability indicates that loneliness is a personality characteristic with unique trait like qualities, most researchers have focused on external factors that may explain individual differences, particularly those which may be ameliorated to prevent loneliness. A meta-analysis focusing specifically on the correlates of loneliness among older adults (Pinquart and Sorensen, 2001) showed that factors related to a greater sense of loneliness include poor quality social networks, fewer contacts with friends and neighbors, being a woman, having fewer economic resources, lower competence, living in nursing homes, and

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having poor health. More recent reviews of loneliness in older age (Cohen-Mansfield et al., 2016; Ong et al., 2016) noted broadly similar findings. Dahlberg et al. (2018b) suggest that such precursors to loneliness may have been established earlier in life, and thus late life loneliness is best studied using a life course perspective.

Life course theory postulates that late life outcomes, such as loneliness, are fundamentally shaped by past experiences (Elder, 1994). The context and timing of these experiences throughout the life course are particularly important. The broader socio-political context determines the social conditions of people in society, including who has access to social and economic resources at any given point in time (Elder, 1998). It also matters when during the life course critical life events happen (Lam et al., 2022; Victor et al., 2022) and how experiences of (dis) advantage accumulate over the life course (Dannefer, 2003; Ferraro and Shippee, 2009). This interaction between timing of life events and accumulation of (dis)advantage was demonstrated in Ejlskov et al.'s (2020) research. They showed that experiencing repeated adverse social relationships from childhood (e.g., separation from parents, difficulties in making friends) through adulthood (e.g., divorce, difficult relationships with children or friends) was associated with increased risk of loneliness in older age. However, it was relationship breakdowns in later adulthood (as opposed to earlier in life) that significantly exacerbated the detrimental impact of isolation on loneliness.

As shown by Ejlskov et al. (2020) and numerous reviews on loneliness (e.g., Cohen-Mansfield et al., 2016; Ong et al., 2016; Pinquart and Sorensen, 2001), social relationships and the networks they provide are one critical aspect of the pathway to loneliness later in life. The Convoy Model of social relations (Antonucci et al., 2014) has focused attention on the importance of the life course in the development of older people's support networks. Most people do not create new social networks once they have aged, but rather carry lifelong connections with them throughout the life course. Relationships may vary in their closeness, quality, function or structure and these differences are influenced by personal and contextual characteristics (p. 84). Indeed, Dahlberg et al. (2018b) have demonstrated that restricted forms of social engagement are long-term predictors of loneliness and that restricted types of social networks in older age may have been established at least 20 years earlier. A major contribution of the Convoy Model has been its focus on the development of social networks as a lifelong process. In considering the influences on the formation of social networks, the Convoy Model includes individual life span characteristics such as age, race, and gender, and the roles of contextual life course factors such as norms, social structures, and societal resources which shape developmental trajectories (Fuller et al., 2020).

Together, life course theories (Dannefer, 2003; Elder, 1994, 1998; Ferraro and Shippee, 2009) and the Convoy Model (Antonucci et al., 2014) suggest that attention must be paid to both individual and social determinants of loneliness across the life course. These theoretical approaches suggest that individual experience and social structural factors together contribute to loneliness in older age.

Inequalities across the life course

Socioeconomic status

Although most work on life course inequalities in socioeconomic status has focused on physical health outcomes (Cosco et al., 2019; Nurius et al., 2019), there is increasing research demonstrating life course effects on psychological outcomes, such as loneliness. For example, analysing data from the Irish Longitudinal Study on Ageing, Kamiya et al.'s (2014) study showed that poor childhood socioeconomic status directly influenced late life loneliness. Similar findings from the Survey on Health, Ageing and Retirement in Europe illuminated the powerful impact of childhood socioeconomic circumstances on late life loneliness (Guthmuller, 2022). In non-European contexts, Yang and Gu (2020) found that better family socioeconomic position and formal education in childhood and a white-collar job in adulthood reduced the risk of late life loneliness among Chinese older adults. Life course research on social networks, which provide the necessary social support for people to combat emotional and social loneliness (Berkman et al., 2000), report similar effects. For example, Ajrouch et al. (2005) demonstrated how education and occupational grade shape the size and proximity of social networks across the lifespan. Importantly, the impact of socioeconomic factors on social networks becomes greater as people age (Dannefer, 2003; Ferraro and Shippee, 2009). Older people who have experienced a lifetime of poorer socioeconomic resources are most likely to reach later life with greater feelings of both emotional and social loneliness.

Gender and ethnicity

Unequal access to material resources over the life course is patterned by social class (Kok et al., 2017), gender (Calasanti, 2007), and ethnic group membership (Shuey and Willson, 2008). Stoller and Gibson (2000) highlighted how life course experiences of disadvantage create further disparities in old age for both women and ethnic minorities. Here most research has focused on social networks and social support which contribute to experiences of loneliness (Berkman et al., 2000). Owing to the gendered nature of family and work trajectories, men and women develop different types of social networks, and these differences increase with age (Ajrouch et al., 2005; Fischer and Beresford, 2015). Women are generally understood to have wider networks and are more likely to receive social support from these connections (Antonucci et al., 2004; Harling et al., 2017). Men are more likely to be affected by network changes and loss of social support following retirement (McDonald and Mair, 2010). Several recent studies in the United States and Europe, focusing on change in social network composition (Fischer and Beresford, 2015; Harling et al., 2017) have reported widening gaps between men's and women's network composition with age; women tend to report increasing network size with additional outside members. Fischer and Beresford (2015) found an interaction between education and gender, such that late middle-aged men, particularly those who were less educated, became increasingly disadvantaged in social support. Yang and Gu (2020) found similar effects with older adults in China, highlighting that life course experiences of social support were protective against loneliness for older women, but not older men. These more recent findings using longitudinal data suggest greater disadvantage for older men in social resources.

At the same time, women's and men's health and social wellbeing in later life are greatly influenced by their socioeconomic position. Women generally have lower socioeconomic position and less access to social and economic capital across the life course (Hooyman et al., 2002). In contrast, men accumulate more socioeconomic advantage, which lowers their risks and exposure to diseases and increases their access to protective resources (Östlin et al., 2004). A meta-analysis of factors predicting loneliness demonstrated that older women, particularly those with lower socioeconomic status, were more likely to report loneliness than men (Pinquart and Sorensen, 2001). While men might be more susceptible to the negative impacts of losing social support and thus experiencing social loneliness, their higher socioeconomic position can act as a protective factor (Yang and Gu, 2020).

Ethnic group differences also illustrate how certain groups in a population systematically attain benefits over the life course (Lynch and Brown, 2011). For example, Shuey and Willson (2008) have demonstrated that White Americans obtained greater relative health benefits from material resources than Black Americans and that these disparities in health increased over the life course. Similar findings have been reported for Hispanic Americans (Villa et al., 2012). In the Aotearoa New Zealand context, there are persistent health and social inequalities between the indigenous Māori population and the majority non-Māori population (Woodward and Blakely, 2014). These inequalities are present from the early stages of education and extend over their

occupational career (Stephens et al., 2022). Further, Māori are more likely to live in deprived geographical areas and are less likely to become homeowners (Anderson et al., 2006; Szabo et al., 2018). Research has additionally found that older Māori were more likely to report feeling lonely and perceive lower social support than non-Māori (Stephens et al., 2010). These findings together contribute to our expectation that, in addition to socioeconomic status, both gender and ethnicity are the basis for different experiences across the life course which produce differing loneliness experiences in older age.

Study aims

Although there is a general lack of longitudinal research on loneliness in older age (Dahlberg et al., 2018b), life course theories (Dannefer, 2003; Elder, 1994; Ferraro and Shippee, 2009) and models of social relations across the life course (Antonucci et al., 2014) suggest that there are complex multifactorial pathways to loneliness that include the influence of structural factors (namely socioeconomic status), which accumulate over the life course and across generations. We draw on these models to suggest that precursors to loneliness, as a critical aspect of wellbeing in older age, include lifetime experiences of childhood socioeconomic status, education, and access to economic resources in adulthood and later life. We focus on the formative and predictive nature of these socially structured factors that have often been regarded as covariates or control variables in research on loneliness. We additionally argue that there are differences in the relationships between socioeconomic status and loneliness for different groups in society, specifically for indigenous people, and between men and women. Finally, in line with multidimensional perspectives on loneliness, we examine the differential effects of these variables on emotional and social loneliness.

We tested the following hypotheses:

1. Socioeconomic status (SES) across time (measured at different stages as childhood SES, educational qualification, adult life SES, and later life SES) is related to loneliness in older age. It was predicted that those with lower childhood SES, lower educational qualifications, and lower adult and later life SES would report higher levels of emotional and social loneliness in older age.
2. The relationship between life course SES and late life loneliness is moderated by gender and ethnicity. Specifically, we expected that the negative relationship between life course SES and late life emotional and social loneliness will be greater for women and Māori.

In addition, we controlled for differences in later life emotional and social loneliness based on age, gender, ethnicity and partner status. Research has identified gender differences in loneliness, although whether men or women experience greater emotional and social loneliness is not conclusive (Dahlberg et al., 2018a). Based on previous findings (Stephens et al., 2010), we expected Māori to score higher on late life emotional and social loneliness. Current literature also suggests that being married or in a relationship is a key protective factor against emotional loneliness among older adults (Dahlberg and McKee, 2014; Štípková, 2019).

Method

Design and sample

The Aotearoa New Zealand Health, Work and Retirement Study (NZHWR) is a longitudinal cohort study of New Zealanders aged 55 years and older. Since its commencement in 2006, data have been collected biennially via postal surveys. In 2006, using equal probability random sampling, $n = 13{,}044$ adults aged 55–70 years were randomly selected from the New Zealand Electoral Roll (Allen et al., 2022, 2023). The response rate was 51 % resulting in a baseline sample of $n = 6662$ participants in 2006, of which $n = 3065$ agreed to be approached for follow-up surveys every two years. From this baseline cohort, $n = 1133$ were active participants in the 2016 data collection wave, and they were invited to take part in a structured Life Course History (LCH) interview study, which collected information on life-course experiences, such as family history, childhood health and economic conditions, accommodation history, employment and financial history, adult health history, alcohol use, and difficult or stressful life events. Of the $n = 1133$ invited participants, $n = 787$ were successfully interviewed using computer assisted telephone interview software. In the current study, we utilized late life data on loneliness from the 2016 wave of the NZHWR and life course information on SES from the LCH interviews. The final analytic sample included $n = 613$ participants who provided information on childhood socioeconomic circumstances, education, adult socioeconomic status, and late life loneliness. The average age of the participants at the time of the interview was 72.1 years ($SD = 4.4$ years, range: 65–81 years). Sample description by gender (48 % men) and Māori descent (38 % Māori) are reported in Table 1.

Ethical approval for all data collection in this study was granted by the Massey University Human Ethics Committee. Informed consent was obtained from all participants at the time of response to questionnaire or interview.

Measures

Control variables

Gender (0 = men, 1 = women), ethnicity (0 = non-Māori, 1 = Māori), late life partner status (0 = not partnered, 1 = married or in a similar relationship) and age in years were included as demographic control variables.

Life course socioeconomic predictors

A composite indicator was created for *childhood socioeconomic status* using principal component analysis on five indicators (Table 2): availability of socioeconomic resources, main breadwinner's occupational grade, family literacy, housing quality and overcrowding at the age of 10. Eight items from the New Zealand Material Wellbeing Index (Perry, 2015) were used to measure availability of socioeconomic resources (e.g., "Did you have suitable clothes for important or special occasions when you were 10?"). Main breadwinner's occupational grade was categorized based on the International Standard Classification of Occupations skill levels: no main breadwinner, elementary, skilled, associate, and manager (International Labour Organization, 2012). Family literacy was estimated based on the number of books available in the household: 'none or very few (0-10 books)', 'enough to fill one shelf (11-25 books)', 'enough to fill one bookcase (26-100 books)', 'enough to fill two bookcases (101-200 books)', and 'enough to fill two or more

Table 1
Descriptive statistics of the sample displaying percentages within columns.

	Total	Gender		Māori descent	
		Men	Women	Non-Māori	Māori
	% / M (SD)	% / M (SD)	% / M (SD)	% / M (SD)	% / M (SD)
Gender					
Men	48 %			50 %	45 %
Women	52 %			50 %	55 %
Ethnicity					
Māori	38 %	36 %	40 %		
non-Māori	62 %	64 %	60 %		
Partner status					
Not married or de facto	25 %	15 %	35 %	20 %	33 %
Married or de facto	75 %	85 %	65 %	80 %	67 %
Age	72.1 (4.4)	72.2 (4.4)	72.1 (4.5)	72.3 (4.5)	71.9 (4.3)

Table 2
Childhood and adult life socioeconomic status: principal component analysis.

	Total variance explained	Component Loadings
Childhood socioeconomic status	41.0 %	
Material deprivation		0.81
Breadwinner's occupational grade		0.58
Family literacy		0.69
Overcrowding		0.34
Housing quality		0.68
Adult life socioeconomic status	39.8 %	
Occupational grade		0.69
Financial investments		0.74
Financial hardship		−0.42

bookcases (more than 200 books)'. To determine housing quality, participants indicated whether their house had any of the following features: fixed bath, cold running water supply, hot running water supply, inside toilet, and heating supply. Finally, overcrowding was calculated based on the number of people living in the household at the age of 10 and the number of rooms used as bedrooms in the house.

The highest level of *educational qualification* obtained over the life course was assessed as 'no formal qualification', 'secondary qualification', 'post-secondary qualification', and 'university degree'. Previous research (e.g., Ajrouch et al., 2005) has shown the differential and unique life course effects of education on the development of social networks; therefore, it was treated as a separate indicator of SES.

A composite indicator was created for *adult life socioeconomic status* using principal component analysis on three indicators (Table 2): highest occupational grade over the life course, financial history, and income security. Occupational grade was defined based on the International Standard Classification of Occupations skill levels as elementary, skilled, associate, and manager. Financial history was assessed with five items pertaining to investments (e.g., stocks, shares, property investments) and accumulation of assets (e.g., savings accounts, retirement accounts) over the adult life course. In addition, participants were asked to indicate if they had ever experienced any financial hardship. If they answered yes, they were asked to indicate for each decade of life whether they experienced hardship. Periods of financial hardship were counted across the adult life course (range: 0–4).

Late life socioeconomic status was assessed with the Short-Form Economic Living Standards Index (ELSI-SF) (Jensen et al., 2005). The ELSI-SF is a non-monetary measure of SES, which has been shown to be particularly useful in the older population for whom traditional indices, such as annual income, are less reliable indicators of material wealth. The ELSI-SF questions cover a wide range of material wellbeing indicators, including ownership of common household items (e.g., heater), capacity for social participation (e.g., having friends over for a meal), economizing behaviors (e.g., cutting back on shopping costs), and general satisfaction with one's living standard. A composite score can be created by summing all items (range: 0–31).

Late life loneliness

The short-form version of the De Jong Gierveld Loneliness Scale (De Jong Gierveld and Van Tilburg, 2006) was administered to measure late life loneliness. The 6-item scale assesses emotional (e.g., 'I experience a general sense of emptiness') and social (e.g., 'There are enough people I feel close to') aspects of loneliness on a 3-point scale ('no', 'more or less', 'yes'). After reversing the social loneliness items, responses of 'more or less' and 'yes' indicate experiences of loneliness and receive a score of '1', while 'no' responses receive a score of '0'. A composite score was created for emotional (range: 0–3) and social (range: 0–3) loneliness. Both subscales yielded good reliability (emotional: $\alpha = 0.61$; social: $\alpha = 0.75$).

Data analysis

Descriptive analyses were performed to assess differences in the study variables based on gender and ethnicity. Hypotheses were tested with two hierarchical regression analyses in SPSS with OLS estimation. The dependent variables were late life emotional and social loneliness assessed in 2016. After controlling for demographic variables, including gender, ethnicity, partner status and age, life course measures of socioeconomic status and their interactions with gender and ethnicity were entered into the model in a linear order. This allowed us to track how the explanatory power of life course socioeconomic variables changed with the inclusion of additional indicators and interaction terms. Specifically, we could test whether socioeconomic indicators from earlier in life predict unique variance in later life loneliness above and beyond later life socioeconomic status. Further, this approach highlighted how interactions with gender and ethnicity change as a function of other socioeconomic indicators.

Results

Descriptive analyses

Independent samples *t*-tests indicated significant differences based on gender in childhood and adult life SES, and late life social loneliness (statistical tests, means and standard deviations are reported in Table 3). Compared with women, men had significantly lower childhood SES but higher adult life SES. They also reported higher levels of late life social loneliness than women. There were no gender differences in education and late life emotional loneliness. Based on ethnicity, significant differences emerged in childhood SES and late life SES, with Māori scoring significantly lower on both. There were no differences in late life emotional and social loneliness or education level based on ethnicity.

Bivariate correlations indicated weak to moderate negative relationships between life course socioeconomic variables and emotional loneliness. Only later life socioeconomic status showed a weak and negative relationship with social loneliness (Table 4).

Hierarchical regression analysis

Emotional loneliness

The full model explained 14.3 % of the variance in late life emotional loneliness (Table 5). Gender, age, and partner status were significant correlates of late life emotional loneliness, with women, older participants and those partnered reporting lower levels of emotional loneliness. These effects were consistent across Steps. Childhood SES had a significant negative main effect on late life emotional loneliness in Step 2 and its interaction with gender was also significant in Step 3. Simple slope analysis suggested that better childhood SES was associated with lower later life emotional loneliness for men ($t(609) = -3.25$, $p = .001$), but not for women ($t(609) = -0.70$, $p = .486$). Importantly, once education was entered into the model in Step 4, the interaction between childhood SES and gender became non-significant; however, the main effect of childhood SES remained. In Step 5, a significant interaction emerged between education and gender, which remained significant after the inclusion of all additional variables. Specifically, higher levels of education was associated with lower levels of later life emotional loneliness for men ($t(609) = -2.01$, $p = .045$), but not for women ($t(609) = 0.23$, $p = .819$). In Step 6, adult life SES was added to the model, and it exerted a significant negative main effect. At this point, all life course socioeconomic variables were significant negative predictors of later life emotional loneliness. Adult life SES did not produce any significant interactions with gender or ethnicity in Step 7. In Step 8, later life SES was included and showed a significant negative main effect. While the significant main effects of childhood SES, education and the gender × education interaction remained, the effect of adult life SES became non-significant after the inclusion of later life SES. In Step 9, a significant interaction emerged between ethnicity and later life SES.

Table 3
Group difference in study variables based on gender and ethnicity.

	Gender				Difference test	Ethnicity				Difference test
	Men		Women			Non-Māori		Māori		
	M	*SD*	*M*	*SD*		*M*	*SD*	*M*	SD	
Childhood SES	−0.05	0.95	0.11	0.98	t(611) = −2.09, $p = .037$, $d = 0.17$	0.26	0.79	−0.33	1.11	t(611) = 7.70, $p < .001$, $d = 0.30$
Education	2.6	1.07	2.50	0.99	t(611) = 1.17, $p = .224$, $d = 0.10$	2.6	1.00	2.46	1.07	t(611) = 1.64, $p = .102$, $d = 0.14$
Adult Life SES	0.27	0.90	−0.12	0.99	t(611) = 5.06, $p < .001$, $d = 0.41$	0.12	0.94	−0.03	1.01	t(611) = 1.90, $p = .058$, $d = 0.15$
Late Life SES	25.69	4.83	25.18	5.11	t(611) = 1.27, $p = .204$, $d = 0.10$	25.88	4.67	24.69	5.36	t(611) = 2.89, $p = .004$, $d = 0.24$
Late Life Emotional Loneliness	0.60	0.87	0.5	0.79	t(611) = 1.55, $p = .123$, $d = 0.12$	0.56	0.84	0.53	0.81	t(611) = 0.38, $p = .707$, $d = 0.04$
Late Life Social Loneliness	1.17	1.15	0.84	1.09	t(611) = 3.76, $p < .001$, $d = 0.29$	1.01	1.16	0.98	1.09	t(611) = 0.31, $p = .756$, $d = 0.03$

Note. d = Cohen's d effect size measure.

Table 4
Bivariate correlations.

	1	2	3	4	5	6
1. Childhood SES	1					
2. Educational level	0.218**	1				
3. Adult life SES	0.231**	0.240**	1			
4. Later life SES	0.136**	0.090*	0.340**	1		
5. Emotional loneliness	−0.097*	−0.113**	−0.131**	−0.295**	1	
6. Social loneliness	−0.055	0.056	−0.054	−0.233**	0.342**	1

*$p < .05$; **$p < .01$.

Table 5
Hierarchical regression for the prediction of late life emotional loneliness.

	Step 1	Step 2	Step 3	Step 4	Step 5	Step 6	Step 7	Step 8	Step 9
	β	β	β	β	β	β	β	β	β
Female gender	−0.105*	−0.096*	−0.098*	−0.102*	−0.103*	−0.119**	−0.126**	−0.119**	−0.125**
Māori descent	−0.040	−0.067	−0.067	−0.066	−0.065	−0.063	−0.065	−0.082*	−0.074
Age	−0.071	−0.083*	−0.087*	−0.089*	−0.082*	−0.087*	−0.092*	−0.087*	−0.088*
Being in a relationship	−0.173***	−0.171***	−0.173***	−0.169***	−0.172***	−0.155***	−0.161***	−0.137**	−0.137**
Childhood SES		−0.088*	−0.243**	−0.225**	−0.214**	−0.194*	−0.188*	−0.151*	−0.139
Gender × Childhood SES			0.140*	0.144*	0.113	0.110	0.091	0.100	0.110
Ethnicity × Childhood SES			0.069	0.063	0.072	0.071	0.085	0.042	0.032
Education				−0.074	−0.161*	−0.142*	−0.128	−0.134*	−0.137*
Gender × Education					0.127*	0.126*	0.110	0.112*	0.116*
Ethnicity × Education					0.002	0.003	0.002	0.005	0.004
Adult life SES						−0.099*	−0.158*	−0.078	−0.062
Gender × Adult SES							0.100	0.098	0.110
Ethnicity × Adult SES							−0.028	−0.027	−0.063
Late life SES								−0.256***	−0.304***
Gender × Late life SES									−0.051
Ethnicity × Late life SES									0.123*
R2	0.034	0.041	0.052	0.058	0.065	0.074	0.078	0.134	0.143
ΔR2	0.034***	0.007*	0.011*	0.005	0.008	0.008*	0.004	0.056***	0.009*

Note. *; $p < .05$; **; $p < .01$; ***; $p < .001$.

Better later life SES was associated with less emotional loneliness for non-Māori ($t(609) = -4.16$, $p < .001$), but not for Māori ($t(609) = -1.58$, $p = .114$). In the final step, only education and later life SES were significant life course predictors of emotional loneliness.

Social loneliness

The final model explained 10.5 % of the variance in late life loneliness (Table 6). Gender and partner status were significant predictors of late life social loneliness, with women and those partnered reporting lower levels of social loneliness. The effect of gender was consistent across Steps, while the effect of partner status disappeared once later life SES was added to the model. Childhood SES did not have a significant negative main effect on late life social loneliness and its interactions with gender and ethnicity were also consistently non-significant. Education did not have a significant main effect or interaction with gender and ethnicity in Steps 4–6. However, after including the significant negative impact of adult life SES into the model in Step 6, the negative main effect of education and its interaction with gender became significant in Step 7 and remained consistently significantly. Specifically, higher levels of education was associated with greater later life social loneliness for men ($t(609) = 1.99$, $p = .046$), but not for women ($t(609) = -0.32$, $p = .746$). After the inclusion of later life SES in Step 8, the main effect of adult life SES became non-significant. Later life SES had a significant negative main effect on later life social loneliness, but it did not interact with gender or ethnicity. In the final step, only education and later life SES were significant life course predictors of social

Table 6
Hierarchical regression for the prediction of late life social loneliness.

	Step 1	Step 2	Step 3	Step 4	Step 5	Step 6	Step 7	Step 8	Step 9
	β	β	β	β	β	β	β	β	β
Female gender	−0.174***	−0.172***	−0.170***	−0.167***	−0.165***	−0.184***	−0.191***	−0.184***	−0.184***
Ethnicity descent	−0.018	−0.025	−0.025	−0.025	−0.026	−0.024	−0.027	−0.043	−0.043
Age	0.001	−0.002	−0.001	0.001	−0.004	−0.009	−0.012	−0.007	−0.007
Being married	−0.102*	−0.101*	−0.101*	−0.104*	−0.100*	−0.081	−0.086*	−0.063	−0.063
Childhood SES		−0.021	−0.033	−0.046	−0.048	−0.025	−0.017	0.017	0.017
Gender × Childhood SES			−0.031	−0.033	−0.006	−0.010	−0.021	−0.013	−0.013
Ethnicity × Childhood SES			0.045	0.050	0.030	0.028	0.029	−0.010	−0.010
Education				0.055	0.095	0.116	0.134*	0.129*	0.129*
Gender × Education					−0.105	−0.107	−0.121*	−0.119*	−0.119*
Ethnicity × Education					0.048	0.049	0.039	0.042	0.042
Adult life SES						−0.112**	−0.180*	−0.106	−0.106
Gender × Adult SES							0.025	0.026	0.026
Ethnicity × Adult SES							0.067	0.065	0.065
Late life SES								−0.238***	−0.237**
Gender × Late life SES									0.001
Ethnicity × Late life SES									−0.002
R2	0.033	0.033	0.034	0.037	0.043	0.054	0.056	0.105	0.105
ΔR2	0.033***	0.000	0.001	0.003	0.006	0.011**	0.002	0.048***	0.000

Note. *; $p < .05$; **; $p < .01$; ***; $p < .001$.

loneliness.

Discussion

In this study, we examined SES across the life course, assessed in terms of greater SES in childhood, adulthood and later life and higher levels of education, as precursors of emotional and social loneliness in older age. In line with literature on demographic disparities in life course accumulation of disadvantage (Stoller and Gibson, 2000; Whelan and Maître, 2008), we also investigated whether the extent to which greater SES can function as a protective factor against emotional and social loneliness later in life differs for Māori and between men and women.

The first hypothesis was supported by the finding that greater SES across the life course was reliably associated with lower levels of late life emotional loneliness. When examining later life social loneliness, however, only adult life SES indicators (education and later life SES specifically) had significant effects. Life course theories of accumulation of disadvantage highlight the link between economic position and late life outcomes (Cosco et al., 2019; Dannefer, 2003; Ferraro and Shippee, 2009; Nurius et al., 2019), and previous research has provided some evidence for the association between lack of economic resources and loneliness in older adults (Dahlberg and McKee, 2014; De Jong Gierveld and Van Tilburg, 2010; Kamiya et al., 2014; Yang and Gu, 2020). Our study lends further support for the argument that exclusion from material resources presents a risk factor for late life loneliness (Berkman et al., 2000; Burholt et al., 2019).

Later life SES proved to be a robust negative predictor of emotional and social loneliness in this sample. Childhood and adult life SES were also negatively associated with late life loneliness outcomes, but their effects disappeared once later life SES was factored in. This suggests a mediation effect, in which childhood SES directly influences people's ability to access and accumulate financial resources throughout their adult life (Hempel et al., 2021), which in turn impacts late life outcomes, including loneliness. In addition, education was a significant predictor even after controlling for other measures of SES across the life course; however, it exerted different impacts on social (positive) and emotional (negative) loneliness. Previous findings regarding the relationship between education and loneliness in older adults are mixed, with some studies suggesting greater levels of loneliness among those with a lower educational level (Savikko et al., 2005; Stephens et al., 2011), while others reported no effects (Dahlberg et al., 2018a; Heylen, 2010). Since education is an important intervention, it would be worthwhile for future investigations to unpack these conflicting results to understand under what life course conditions educational attainment is associated with later life emotional or social loneliness.

In addition to the main effects, the relationship between education and later life emotional and social loneliness was moderated by gender in distinctive ways. Education was a protective factor for men against emotional loneliness, but a risk factor for social loneliness in older age. In other words, men with higher levels of education reported significantly less emotional, but more social, loneliness than women. This suggests that highly educated men may have fewer engaging and fulfilling social relationships, but they can derive more emotional support and intimacy from these relationships. This was not the case for women, whose loneliness scores did not differ according to their resources. Although research regarding gender differences in social loneliness is not conclusive (Dahlberg et al., 2018a), prior studies suggest that older men report more loneliness (Hawkley et al., 2008), tend to have smaller social networks, and are more negatively affected by changes within their networks, such as spousal bereavement (McDonald and Mair, 2010; Štípková, 2019) or reduction of social contact (Dahlberg et al., 2015).

When examining differences between men and women in access to resources, our data showed that men had significantly better childhood and adult life SES – that is, higher occupational grade, less financial strain, more investments, and greater accumulation of assets – compared with women, even though there was no difference between men and women in educational qualifications and later life SES. In the generation represented by the present sample, women's ability to benefit from and accumulate resources has been shown to be dependent on their partner's socioeconomic position (Ajrouch et al., 2005; Arber, 2004). Although we did not have information about spousal socioeconomic position, our findings are in line with previous research demonstrating gender inequalities in ability and opportunity to accumulate socioeconomic resources over the lifespan and that this disparity has consequences for late life outcomes (Corna, 2013).

Ethnicity was also a significant moderator of the relationship between late life emotional loneliness and later life SES. As expected, greater SES was a protective factor for non-Māori only against emotional loneliness in later life. This supports previous research both in Aotearoa New Zealand and internationally showing that members of ethnic and cultural minority groups are less likely to attain health-related benefits from their economic resources (Lynch and Brown, 2011; Shuey and Willson, 2008; Stephens et al., 2022; Villa et al., 2012). Additionally, there were differences between Māori and non-Māori in life course

indicators of SES. Māori participants had lower socioeconomic position throughout the life course, with the disparity being particularly large in childhood and later life. However, these differences between the two groups were not reflected in level of education. Patterns of inequalities between Māori and non-Māori in health, work, economic standards of living, and social connectedness are well-established, and previous research suggests that the gap is increasing in most areas (Marriott and Sim, 2015).

Limitations and strengths

Although the study revealed important findings regarding the relationship between life course access to socioeconomic resources over the lifespan and later life emotional and social loneliness, some limitations need to be noted. At the time of data collection, life course history interview participants had been part of the NZHWR for over a decade. This means that the sample was impacted by selection and survival bias; that is, participants were healthier and wealthier than the overall Aotearoa New Zealand population of adults aged 65 or older (Allen et al., 2022). Therefore, it is possible that some of the associations, particularly the differential impact of ethnicity, are attenuated in the analyses.

With retrospective assessment of life course information, recall bias is often a limitation. While previous research suggests good congruency between retrospective and prospective assessment of socioeconomic circumstances (Jivraj et al., 2020; Warren et al., 2022), our measures of life course socioeconomic status were limited to a few indicators and there may be other influential dimensions, such as the financial and economic resources of a spouse, that were not captured in this study.

One of the strengths of the NZHWR data is the high proportion of Māori participants. Population studies that oversample for ethnic minorities enable more detailed investigations of the processes through which inequities in access to resources shape social outcomes for marginalized communities. Importantly, ethnic differences were investigated based on Māori descent. However, having ancestral ties does not necessarily mean self-identification; neither does it give us information about the strength of one's cultural identity or the impact of multiple, intersectional ethno-cultural identities. Including multiple and more nuanced indicators of ethnicity and ethnic identification could be helpful in clarifying the complex patterns of inequalities across the life course not only in Aotearoa New Zealand but in other contexts of diversity as well (Stevenson, 2023).

Theoretical contributions

Life course studies are a powerful tool to illuminate how experiences of exclusion from economic resources can have long-term influences on people's social wellbeing. The present research highlights both the impact of cumulative (dis)advantage/inequity (Dannefer, 2003; Ferraro and Shippee, 2009, respectively) and the importance of timing of life events (Lam et al., 2022) on later life loneliness. Similar to Ejlskov et al.'s (2020) study on social adversities, even after controlling for a range of sociodemographic variables, life course SES indicators showed reliable and meaningful associations with later life emotional and social loneliness, with more recent experiences of socioeconomic disadvantage having the largest impact. Although the models explained a reasonable amount of variance in late life emotional (14 %) and social (11 %) loneliness, future studies using multiple and more nuanced indicators of life course socioeconomic disadvantage are recommended.

Another important contribution of the present study to research on later life loneliness is the differentiation between social and emotional loneliness both conceptually and in the measurement models. Findings suggest that emotional and social loneliness may have distinctive antecedents throughout the life course. Emotional loneliness was more strongly impacted by exclusion from resources earlier in life, while social loneliness seemed to be influenced by more recent economic indicators, such as later life SES. It is possible that the relative stability of loneliness across the life course found in other studies (Mund et al., 2020) is mostly driven by early life influences on emotional loneliness. Social loneliness, on the other hand, may be more likely to shift with changing social and economic circumstances across the life course. A multidimensional perspective on loneliness would help clarify these effects and support better social policy planning.

Conclusion

Late life loneliness has long been a focus in ageing research; however, studies investigating loneliness from a life course perspective are still limited. People do not suddenly become lonely or isolated as they enter older adulthood; they develop social relationships and accumulate resources that enable social participation over their entire life course. To tackle late life loneliness, we need to consider how life course socioeconomic circumstances, in particular, inequalities in accessing and accumulating financial resources, contribute to late life outcomes. This requires the development of social policy to reduce poverty and structural inequalities across the entire life course and to promote equitable social and health outcomes. Such social and economic policies have been implemented in the Aotearoa New Zealand context, such as legislation on child poverty reduction and wellbeing and programs to create affordable housing. A universal pension for those aged over 65 years provides economic security for older New Zealanders; however, there remain disparities in economic wellbeing among older people which are linked to physical and mental health trajectories (Allen and Alpass, 2020). Prospective longitudinal and retrospective life course research on indicators of socioeconomic position can play a key role in monitoring the long-term impact of policy on changing the direction of socioeconomic disparities and promoting equitable outcomes for older adults.

CRediT authorship contribution statement

Ágnes Szabó: Writing – review & editing, Writing – original draft, Visualization, Formal analysis, Data curation, Conceptualization. **Christine Stephens:** Writing – review & editing, Writing – original draft, Funding acquisition, Conceptualization. **Mary Breheny:** Writing – review & editing, Project administration, Methodology, Funding acquisition, Conceptualization.

Declaration of competing interest

The authors declare no conflict of interest.

Data availability

Data will be made available on request.

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