Depression in later life: The impact of early stressors, marital status and later life circumstances

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Abstract

Objectives: This article examines the impact of early and later life events on depression among people aged 65 and over in Ireland, and how this relationship is mediated by gender and marital status differentials.

Method: Data are from the first wave of The Irish Longitudinal Study on Ageing (TILDA), a nationally representative sample of 8,504 community-dwelling adults aged 50 years and older. 3,507 respondents aged 65 years and over were included in the analysis. Multinomial logistic regression was used to examine the childhood and early adult life factors associated with marital status. A series of nested models were estimated to evaluate which childhood and adulthood circumstances are associated with depressive symptoms.

Results: Marital status and gender are significant predictors of depression in later life. The impact of marital status is attenuated when early and later life events are considered. Ill health in childhood and later life, and income in later life are strongly associated with depression in later life. When later life circumstances are included, widowhood and, for men, divorce, are associated with depression, but singlehood is not.

Conclusion: Research exploring the impact of marital status and gender on depression needs to critically explore the impact and interaction of early and later life events on depression. Our findings indicate that previous studies which did not adopt such a strategy may underestimate or overestimate the effect of marital status, education, current health and education on depression. Furthermore, gender differentials across marital status groups may have been overlooked.

Key Words: depression, life course, gender, marital status

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Introduction

This article explores how childhood and later life circumstances impact on depressive symptoms in later life. In recent decades, life course epidemiology has yielded evidence of association between early life circumstances and later life depression (Colman and Ataullahjan, 2010). Research suggests that early life circumstances such as educational attainment (Gallo, Royall and Anthony, 1993), childhood abuse (Felitti, Anda and Nordenberg, 1998; Weich et al., 2009), parental occupation, parental divorce (Ross and Mirowsky, 1999) and poverty in childhood (George, 1994) predict depression in later life. In research focused on older populations, the association between proximal issues (later life events) and depression has also received attention, revealing associations between physical and cognitive health and depression in later life (Carney and Freedland, 2000; Smyer and Qualls, 1999; Copeland et al. 1992; Devanand, et al. 1996; Henderson, 1990; Potter and Steffens, 2007). Later life circumstances such as occupation, stressful circumstances, and financial strain (Zimmerman and Katon, 2005; George, 1994) have also been found to predict depression. Little attention, however, has been given to the impact of early *and* later life circumstances on depression, and variables which may mediate the influence of early or later life events on depression in later life. Such an approach

allows us to acquire an improved understanding of the impact of different life trajectories on depression and to identify particular sub-groups that may be at an increased risk of depression in later life.

An improved understanding of the causes of depression in later life is important because depression is linked to increased risk of cardiac morbidity (Alexopoulos, 1997), functional impairment (Blazer, 2003), and mortality (Unützer et al., 2002). Depression is also consequential to quality of life (Gurland, 1992), use of health care services (Callahan et al. 1994), and caregiver burden (Fadden, Bennington and Kuipers, 1987; Battison, 2004). While clinical rates of depression are higher in the younger than in the older population, the prevalence of depression in the older community-dwelling population is significant, ranging from 1.8 per cent for major depression to 9.8 per cent for a milder depressive disorder (Beekman, Copeland and Prince, 1999). Rates of depression are significantly higher among older people in residential care (Blazer, 2003).

Across the lifespan and extending into old age, women have been found to experience higher rates of depression than men (Helmchen et al., 1999), although some research suggests that gender differentials decrease with age (Barefoot et al., 2001). Research exploring subgroup heterogeneity within the male and female older population is sparse. Furthermore, the relationship between depression, gender and marital status and associated impact of early and later life events in old age remains elusive. This deficiency is noteworthy in the light of protective effects of marriage on health and psychological well-being (Goldman, 1993; Gove, 1972; Murphy, Grundy and Kalogirou, 2007; Waite and Gallagher, 2001; Whyte, 1992). Widowhood has

been identified as a risk factor for depression (Zisook and Shucter, 1991; Harlow, Goldbery and Comstock, 1991; Mendes de Leon and Kasl, 1994), with men being more vulnerable to depression than women following the death of a spouse (van Grootheest, Beekman, Broese van Groenou and Deeg, 1999; Umberson, Worktman and Kessler, 1992; Wisocki and Skowron, 2000). Turvey et al. (1999) found that newly bereaved older people were nine times more likely to suffer from syndromal depression than their married counterparts and the rate of depressive symptoms among them was almost four times as high. Divorce has also been associated with higher rates of depression in the general population (Cohen, et al 2007, Menagham and Lieberman, 1986), although the impact of divorce on depression in later life has received less attention.

The psychosocial and economic resources which accompany marriage may moderate the impact of depression and mediate the impact of early life events on later life depression. Married men and women fare better financially than unmarried individuals. Divorce and widowhood are associated with economic disadvantage (Arber, 2004; Holden and Kuo, 1996). Koropeckyj-Cox and Call's (2007) comparative analysis of nine European countries found that unmarried women (including widowed and divorced) had the lowest incomes. Never married males have lower incomes than ever-married males (Helmchen et al. 1999; Dykstra & Wagner, 2007). The situation of unmarried women is less clear than that of their male counterparts. Arber (2004) and others (for example, O'Rand and Henretta, 1999) note that even though women are more likely to have limited pensions earnings and savings relative

to men, single never married women are more likely to have greater levels of savings and pensions than married or formerly married women.

Marriage is also thought to provide psychosocial resources which may moderate the impact of depression and become particularly relevant in later life (Dykstra, 2004). The protective role of a spouse is argued to be of greater importance to men than women. This gender difference is attributed to women's preference for a greater number of affective relationships than men (Pinquart, 2003; Dykstra and De Jong Gierveld, 2004).

The literature therefore points to associations between early life (distal) events and depression, and later life (proximal) events and depression. However, several important questions remain unanswered. For example, can later life events moderate the impact of early life events on depression in old age, and does this vary by gender? Do factors such as marital status, education or health status moderate the importance of early life events on later life depression? Adopting a life-course framework, we hypothesize that early childhood and later life circumstances impact on depressive symptoms. On the basis of the international literature which highlights the differential impact of marital status on men's and women's economic and social well-being, we postulate that the relationship between early and later life events on depression is mediated by gender and marital status differentials. We hypothesize that the impact of earlier life events on later life depression will be buffered for married men and women, and that the differential life trajectories of never married males and females may mediate the impact of early life events on later life depression.

Marital status in the older population - some unique features of the Irish context

While a significant upward trend in marriage rates occurred in Ireland from the 1950s onwards (Walsh, 1972), the proportion of never-married men and women in the older population of Ireland remains higher than in other European countries (Rallu and Blum, 1991; Table 1 below). The reason for the high proportion of never-married adults in the Irish population can be attributed to the impact of agrarian inheritance traditions instituted following the Irish Famine in the 1850s and the limited employment opportunities available to both men and women (Kennedy, 1973, MacCurtain, and Ó Corráin, 1979). Marriage was prohibitive or not possible for a large proportion of men who were not in line to inherit the farm but had little incentive or ability to leave the family holding since it would likely lead to a downward economic trajectory as landless farm labourers or emigrants. Women, in contrast to many other European countries were more likely to complete their schooling and to emigrate than men (MacCurtain, and Ó Corráin, 1979). A marriage bar which prohibited the employment of married women in the public service, in force from 1932 to 1973, may also have acted as a disincentive for some women to marry (Kennedy. 1973, MacCurtain, and Ó Corráin, 1979). The profiles of never married men and women in Ireland consequently differ significantly, as discussed below in the Results section.

Method

Data

The data used in this study come from the first wave of the Irish Longitudinal Study on Ageing (TILDA). TILDA is a nationally representative dataset containing information on 8,507 individuals aged 50 and older and living in Ireland. The survey has been designed to mirror other longitudinal studies on ageing such as the Health and Retirement Study (HRS) in the United States, the English Longitudinal Study on Ageing (ELSA) and the pan-European Survey of Health, Ageing and Retirement (SHARE). The fieldwork for Wave 1 was completed between late 2009 and mid-2011. Data was collected using three modes. First, respondents provided answers to questions on issues such as age, educational attainment, mental and physical health, labour force status, income and wealth through a computer-assisted personal interview (CAPI) conducted in their own home. The second mode of data collection was a self-completion questionnaire (SCQ). Respondents who completed the CAPI were also invited to participate in a health assessment. The response rate for the CAPI component was 62% (n=8,507). Of those, 83% returned the self-completion questionnaire and 72% participated in a health assessment. In this paper, we restrict the analysis to the 1,665 men and 1,842 women aged 65 and over in the TILDA sample i.e. excluded respondents aged 50-64. The 1970s were a time of change in the marriage pattern (marriage boom) and employment among women (the marriage bar was abolished in 1973) in Ireland. People aged 65 and over are less likely than younger older adults aged 50-64 to have been strongly affected by these changes. In addition, those who are aged 65 and over are less likely to be in

employment, a factor which has a significant impact on their social and economic resources. Weights have been constructed to adjust for sampling techniques (stratification and clustering) and for non-response and these are used in the analysis.

Measures

Depression: The Center for Epidemiologic Studies Depression Scale (CES-D) was used to measure the level of depressive symptoms in the older population. The CES-D consists of 20 items and each item on the scale is a statement about how the respondent felt in the last week: ''Much of the time in the last week I felt . . .''. The response for each item ranges from 0 (rarely or none of the time, less than one day during the past week) to 3 (most or all of the time, five – seven days during the past week) to give a possible total score of 60, with higher scores indicating more depressive symptoms (Radloff, 1977). The Cronbach's alpha coefficient for CES-D 20 was 0.85.

Demographic variables. Because of the expected differences in the life experiences among the married, never married, separated/divorced and widowed, marital status is represented by four dichotomous variables (never married, married, divorced/separated and widowed). Age is a continuous variable. Current residential location is coded by three dichotomous variables (Dublin, other city or town than Dublin, and rural part of Ireland).

Early life circumstances: Early life circumstances were measured by three major sources of childhood adversity (stressors): childhood economic conditions, childhood

health and family distress. Childhood economic conditions at age 14 were assessed by father's social class and family's financial well-being. Father's social class was measured by the respondent's report on father's main occupation during childhood. Occupation is classified using the Irish Census Social Class Scale, and coded as managerial or professional, non-manual, manual, or farmer. Family's financial well being was assessed by the question on whether the family was financially "pretty well off", "about average" or "poor" when the respondent was age 14. Childhood residential location was coded by three dichotomous variables (Dublin, other city or town than Dublin, and rural part of Ireland). To establish childhood self-reported health, respondents were asked to rate their health before age 14 as "poor", "fair", "good" or "excellent", and this was coded as 1 for excellent/good health. Childhood family distress was measured by the following question: "Before you were 18 years old, did either of your parents drink or use drugs so often that it caused problems in the family?" This is coded as 1 for "yes" and zero for "no" or if item was left unanswered.

Early adulthood circumstances: Early adulthood circumstances are measured by educational attainment. Educational attainment is a categorical variable measuring the respondent's highest degree of education obtained (primary, secondary or tertiary education). Because of the high level of emigration out of Ireland up to the 1980s, we included a dummy variable for individuals who had emigrated for more than six months.

Late life circumstances: Late adult socioeconomic status was measured by income and wealth (home ownership). Income is an aggregate figure capturing the totality of

household income. Home ownership is a dichotomous variable capturing lifetime wealth. Current self-reported health was included as dummy variable equal to 1 when the respondent reported “poor” or “bad” health (vs. “good” or “excellent” health). Social support is a variable which measures the number of children, friends and relatives that the respondent feels at ease with, can call on for help or can talk to about private matters. Having two or more of these close ties was coded as 1, those with less than two close ties were coded as 0.

Statistical methods

The analysis can be divided into a number of distinctive phases. In the first phase a multinomial logistic model examines the association between marital status and childhood and early adult life factors. The base outcome is ‘married’ and the results presented are odds ratios. Separate analyses for men and women were conducted.

In the second phase of analysis, a series of nested models are estimated to evaluate which childhood life circumstances, if any, and adulthood circumstances are associated with depressive symptoms. Such a design enables identification of possible indirect effects of early life conditions on depressive symptoms. The first model estimated the approximate total effects of a vector of childhood life circumstances adjusted by age (model 1). In the second model educational attainment was added to examine the changes in the effects of childhood life circumstances and to assess whether the conditions operate indirectly via educational achievement (model 2). Marital status was added in model (3). In model 4, late life conditions were added to examine whether the associations between

childhood conditions and depressive symptoms are reduced when late life circumstances are controlled. Finally, in model 5 we evaluate whether the effects of late life circumstances on depressive symptoms are biased when childhood conditions are omitted from the model. In addition, to test the hypothesis that regression coefficients for men and women are different within each marital status category, we combined the two samples including an interaction term for marital status and gender.

Results

The distribution of marital status is presented in Table 1. Men are more likely to have never married than women (17% men, 13% women). Among men, 15% of those aged 65-74 years are never married compared to 21% of those aged 75 years and older, evincing a strong cohort pattern in marriage rates. Among women, 11% of those aged 65-74 years are never married compared to 17% of those aged 75 years and over. Most men are married (65%), while the most prevalent marital status among women is widowed (44%), reflecting the higher life expectancy of women and the tendency of men to marry younger women. It is noteworthy that the never married status is the second most prevalent marital status among men aged 65 and over in Ireland.

---Table 1 around here

Table 2 presents the descriptive statistics for all variables used in the analysis, both dependent and control variables, by sex. Looking firstly at men, never married men are more likely to be poorly educated, to have grown up in a poor family or in a rural

area, to have had fathers who were farmers and to live currently in a rural area. Divorced/separated men are more likely to have migrated abroad for a period of 6 months or longer and to live currently in urban areas. Compared to married men, widowers are more likely to be older and have primary education. Turning to women, a different picture emerges especially for the never married. Never married women are more likely to come from average or well-off families, to be highly educated, and to live in urban areas. Separated/divorced women are more likely to have parents who were not farmers, and to live in urban areas. Within the female population, widows are more likely to be older, have a primary degree, own a house, and live in rural areas. As was the case for men, married women are more likely to own a house and have a higher household income than the never married or the ever-married (widowed/divorced/separated). Among both men and women, divorced/separated individuals are more likely to report poor childhood health and parental substance abuse in childhood. Overall, both men and women reported to have at least two close ties. Turning to the dependent variable, there are differences in depressive symptoms by gender and marital status. Women have higher scores in depressive symptoms than men. When differences in depression scores are examined by marital status, the divorced/separated have the highest depressive scores among both men and women, followed by widows, never married women, never married men and widowers. Both men and women who are married report the lowest depressive scores among marital status categories.

---Table 2 around here

The multinomial logistic regression results are presented in Table 3. First, the relationship between childhood, early adult life circumstances and marital status is examined. In this model the most interesting explanatory variable is education. Women with higher education and men with lower education are more likely to remain single. For example, the odds of men to be married (vs. never married) are 1.8 times higher for those with tertiary education compared with men with only primary education. Widowhood was also negatively associated with education for women. Father's occupation, especially having a father who was a farmer, is associated with the likelihood to remain never married for men and it is inversely associated with being divorced/separated for women. The odds for men to be never married (vs. married) are 2.9 times greater for those whose fathers were farmers.

---*Table 3 around here*

Tables 4 and 5 present linear regression models to evaluate which childhood and adulthood circumstances are associated with depressive symptoms. Focusing first on men, the results from model 1 indicate that men who grew up in poor families, had a parent with substance abuse problem, or reported poor health in childhood are at a significantly higher risk of depressive symptoms at old age, even when father's occupation is controlled. For women, depressive symptoms are associated with growing up in a poor family or poor health in childhood. No statistical association was found between depressive symptoms and father's occupation and respondents' childhood place of residence (urban/rural) for men and women.

Model 2 incorporated the effects of education into the regression analysis. The association between educational attainment and depressive scores shows a strong negative gradient for both men and women. Family financial well-being becomes not statistically significant with the incorporation of education, suggesting that the association between family financial well-being and depressive symptoms in the model operates through educational attainment. Parental substance abuse and childhood health remain stable when education is added for men, suggesting that they operates independently of education attainment.

In Model 3 marital status is added to the regression analysis. The addition of marital status attenuates slightly the effects of parental substance abuse for men and higher education for both men and women on depressive symptoms. Childhood health is still an independent predictor of depressive symptoms. Marital status has a significant net effect. Both men and women who are separated/divorced or widowed have higher depressive symptoms relative to their married peers. However, among never married older people, only never married men have higher depressive symptoms.

----*Table 4 and 5 around here*

Including later life conditions in model 4, childhood health remains a robust and significant predictor of depressive symptoms. Those who had poor childhood health have higher depressive symptoms even when current health status and socio-economic status are controlled. The effect of marital status remains significant for divorced men and widowers. The effect of marital status on depression becomes

stronger for widowed men, but it attenuates for divorced/separated men. For example, the difference in depressive scores between never married (vs. married) is 1.55 in model 3, and this difference becomes 1.95 in model 3. For women, only widowhood remains significantly associated with depressive symptoms. The effects of late life conditions, net of the childhood measures, also have statistical associations with depressive symptoms in the expected directions. Poor health in later life is significantly associated with depressive symptoms for both men and women. Interestingly, current income is negatively associated with depressive symptoms only for women. We did not find any association between social support and depression.

We also estimated the model taking out the early childhood conditions from model 4 to examine whether there is an overestimation of effects of late adult conditions when childhood variables are not included in the model. The effect of tertiary education would be overestimated by 65% for men (from β=-0.61 to β=-1.1). The effect of marital status would be underestimated for widowers, and overestimated for never married and divorced/separated men and slightly overestimated for women, and current health would be slightly overestimated.

In order to verify whether men's and women's coefficients are different from the separate model, a joint model was estimated. We added interactions of gender with each early and late life circumstances variables to model 4 (Table 6). The model includes interaction of marital status with gender, because of the important and differential role that marital status has played for men and women in Ireland. The model shows that the associations between marital status and depression do not

significantly differ for women or men, in other words, never married, divorced and widowed men are not significantly more depressed than unmarried women. It may be surprising that the female* never married interaction coefficient is not significant. Readers are reminded that Model 4 including late life events rendered never-married status non-significant for men also.

----*Table 6 around here*

Discussion

Many studies have explored the impact of early or later life events on depression, but few examine the relationship between early and later life events and the variables which mediate this relationship. In this article we sought to explore whether the impact of early and later life events on depression is mediated by gender and marital status differentials. We hypothesize that the impact of early life events on later life depression will be buffered for married men and women and that the differential life trajectories of never married men and women may mediate the impact of early life events on later life depression. Our findings suggest that marital status is a significant predictor of depressive symptoms in the older population and that gender differences by marital status exist. Specifically, widowed men and women are more likely to have higher depressive symptoms than married individuals. This result is consistent with previous studies (van Grootheest, Beekman, Broese van Groenou and Deeg, 1999; Umberson, Worktman and Kessler, 1992; Wisocki and Skowron, 2000). In line with the findings of Cohen et al (2007), our

results confirm that divorced men are more likely to be depressed than married men. Our results did not find a significant association between being never married and depression among men and women once late life events were considered. However, gender differences within the never married group were evident, with never married men having higher rates of depression than never married women when early life events were excluded from the model.

The results of this study highlight the benefit of using a life course framework to explore the impact of early and later life events on the association between marital status and gender. Incorporating a life course framework to explore the differential impact of early and later life circumstance on depression reveals vulnerable populations who may be more susceptible to depression than others. It also has the potential to reveal risk factors across the life course which may influence the prevalence of depression. Our results suggest that negative childhood events (stressors) are consequential to depression in later life. In particular, they indicate that ill health in childhood is strongly associated with depression in later life for both men and women. The results also suggest that when later life circumstances are included, marital disruption (divorce and widowhood) is associated with depression, but singlehood is not.

Most studies relating the impact of early life events on later life depression do not consider the impact of later life events on depression, or vice versa. Our results show that later life circumstances are also implicated in depression in later life. Corroborating existing studies in the area, our results indicate that current health for both men and women, and income for women, affect depressive symptoms.

However, the impact of childhood health on later life depression remains stronger for men and is attenuated for women when later life circumstances are included. No association between education and depressive symptoms for men and women was found, once late life circumstances were included. These findings point to the importance of childhood health to adult mental health, independent of later life socio-economic status. Overall, the associations between early life circumstances and depressive symptoms in later life were mediated through late life circumstances.

The findings of this study also signal the possible shortcomings of previous studies which did not include in their analysis early life circumstances. Our findings suggest that when childhood circumstances are excluded, there is an overestimation of the effect of higher education for men on depression. Our findings also show that the effect of marital status would be overestimated for men and slightly overestimated for women, and current health would be slightly overestimated. These findings suggest that previous studies examining the impact of current socioeconomic status and health on depression may have underestimated or overestimated the association between marital status, current health, education and depression.

The strengths of the study lie in its ability to explore the impact of early and later life circumstances on depression in old age. The limitations include the fact that the study is a cross-sectional analysis which cannot capture changes over time. Information on childhood circumstances was gathered retrospectively when the respondents were aged 65 and over; such retrospective accounts may be compromised by poor recall (Looker, 1989). Mood congruency bias may be a problem as depressed people “selectively recall negative experiences and hence may

exaggerate or misrepresent the presence of childhood adversity" (Fergusson, Horwood and Woodward, 2000). We cannot rule out the reverse causation between depression and some of the late life variables such as current health and social support. For instance, poor health causes depression but depression may also lead to poor health. However, adjudicating this complex relationship is beyond the data available in the present study.

References

Alexopoulos GS, Meyers BS, Young RC, Campbell S, Silbersweig D, Charlson M. (1997) "Vascular depression hypothesis", *Archives General Psychiatry*, 54:915-922.

Arber, S. (2004) "Gender, marital status, and ageing: Linking material, health and social resources." *Journal of Aging Studies* 18: 91-108.

Barefoot, J. C., Mortensen, E. L., Helms, M. J., Avlund, K., & Schroll, M. (2001) 'A longitudinal study of gender differences in depressive symptoms from age 50 to 80', *Psychology and Aging, 16,* 342–345.

Battison, T (2004) *Caring for someone with depression*. London: Age Concern.

Beekman, A.T.F., Copeland, J.R. M and Prince, M. J (1999) 'Review of community prevalence of depression in later life', *British Journal of Psychiatry*, 174, 307-311.

Blazer, D. G (2003) 'Depression in late life: Review and commentary', *Journal of Gerontology: Medical Sciences*, 58 A, 249-65.

Callahan, C. M., Hui, S. L., Nienaber, N.A., Musick, B. And Tierney, W. (1994) 'Longitudinal study of depression and health service use among elderly primary care patients', *Journal of the American Geriatrics Society*, 42, 7, 833-838.

Cano, A. and O' Leary, K.D. (2000) 'Infidelity and separations precipitate major depressive episodes and symptoms of nonspecific depression and anxiety', *Journal Consulting and Clinical Psychology*, 68: 774-781.

Carney, R. M. and Freedland, K. E. (2000) 'Depression and medical illness', In: Lisa F. Berkman and Ichiro Kawachi (Eds.) *Social Epidemiology*, Oxford University Press, New York, pp. 191-212.

Cohen, S., Klein, D. N., O' Leary, K. D, (2007) 'The role of separation/divorce in relapse into and recovery from major depression', *Journal of Social and Personal Relations*, 24:855-873.

Colman, I. and Ataullahjan, A. (2010) Life course perspectives on the epidemiology of depression. *Canadian Journal of Psychiatry*, 55(10):622-32.

Copeland JR, Davidson IA, Dewey ME, Gilmore C, Larkin BA, McWilliam C, Saunders PA, Scott A, Sharma V, Sullivan C. (1992) 'Alzheimer's disease, other dementias, depression and pseudodementia: prevalence, incidence and three-year outcome in Liverpool', *British Journal of Psychiatry*, 161:230–239.

Deeny, J. (1971). *The Irish Worker: A demographic study of the labour force in Ireland.* Dublin, Institute of Public Administration.

Devanand DP, Sano M, Tang MX, Taylor S, Gurland BJ, Wilder D, Stern Y, Mayeux R. (1996) 'Depressed mood and the incidence of Alzheimer's disease in the elderly living in the community', *Archives of General Psychiatry*, 53:175–182.

Dykstra, P. A. (2004) 'Changes in family patterns and people's lives: Western European trends', *Solidarity between the sexes and the generations: Transformation in Europe*. A. Komter. Aldershot, UK, Edward Elgar**:** 89-100.

Dykstra, P. A. and M. Wagner (2007) "Pathways to childlessness and late-life outcomes." *Journal of Family Issues* 28(11): 1487-1517.

Dykstra, P. A., & De Jong Gierveld, J. (2004) 'Gender and marital-history differences in emotional and social loneliness among Dutch older adults', *Canadian Journal of Aging*, 23(2), 141-155.

Fadden, G. Bebbington, P. and Kuipers, L. (1987) 'The burden of care: the impact of functional psychiatric illness on the patients family', *British Journal of Psychiatry*, 15, 5, 660-667.

Felitti VJ, Anda RF, Nordenberg D et al. (1998) 'The relationship of adult health status to childhood abuse & household dysfunction', *American Journal of Preventive Medicine* 14(4):245-258.

Fergusson, D. M., Horwood, L. J., & J.Woodward, L. (2000) 'The stability of child abuse reports: a longitudinal study of the reporting behaviour of young adults', *Psychological Medicine, 30*(3), 529-544.

Gallo J.J., Royall D.R., Anthony J.C. (1993) 'Risk factors for the onset of major depression in middle age and late life', *Social Psychiatry and Psychiatric Epidemiology,* 28:101-108.

George, L. K. (1994) 'Social factors and depression in late life', In: L. S. Schneider, C.F. Reynolds, B. D. Lebowitz, and A. J. G Friedhoff (Eds.) *Diagnosis and treatment of depression in late life*. Washington, DC: American Psychiatric Press, pp. 131-53.

Goldman, N. (1993) 'Marriage selection and mortaility patterns: Inferences and fallacies', *Demography, 30*(2), 189-208.

Gove, W. (1972) 'The relationship between sex roles, mental illness and marital status', *Social Forces,* 51, 44.

Gurland, B. J. (1992) 'The impact of depression on quality of life of the elderly', *Clinical Geriatric Medicine*, 8, 377-386.

Harlow S.D., Goldberg E.L., Comstock G.W. (1991) 'A longitudinal study of risk factors for depressive symptomatology in elderly widowed and married women', *American Journal of Epidemiology,* 134:526-538.

Helmchen, H., Baltes, M. M., Geiselmann, B., Kanowski, S., Linden, M., Reischies, F. M., Wagner, M., Wernicke, T. And Wilms, H. U. (1999) Psychiatric Illness in old age. In: Paul B. Baltes and Karl Ulrich Mayer (Eds.) *The Berlin Aging Study: Aging from 70 to 100*. Cambridge: Cambridge University Press, pp. 197-226.

Henderson, A. S. (1990) 'Co-occurrence of affective and cognitive symptoms: The epidemiological evidence', *Dementia*, 1, 119-123.

Henretta, J. C (2010) 'Lifetime marital history and mortality after age 50', *Journal of Aging Health*, 22, 8, 1198-1112.

Holden, K. C. and Kuo, H.H.D. (1996) 'Complex marital histories and economic well-being: The continuing legacy of divorce and widowhood as the HRS cohort approaches retirement.', *The Gerontologist*, 36, 383-390.

Kennedy, R., E. (1973) *The Irish: Emigration, Marriage and Fertility*. London, University of California Press.

Koropeckyj-Cox, T. and V. R. A. Call (2007) "Characteristics of older childless persons and parents: Cross national comparisons" *Journal of Family Issues* 28: 1362-1414.

Larsson, K. and Silverstein, M. (2004) 'The effects of marital and parental status on informal support and service utilization: A study of older Swedes living alone', *Journal of Aging Studies*, 18, 231-244.

Looker, E. D (1989) 'Accuracy of proxy reports of parental status characteristics', *Social Education*, 62, 257-276.

MacCurtain, M. and Ó. Corráin, D (1979) *Women in Irish society the historical dimension*. Nass, Co. Kildare: Arlen House.

Menaghan, E.G., Lieberman, M.A. (1986) 'Changes in depression following divorce – a panel study', *Journal of Marriage and Family*, 48:319-328.

Mendes de Leon C.F., Kasl S.V., Jacobs S. (1994) 'A prospective study of widowhood and changes in symptoms of depression in a community sample of the elderly', *Psychological Medicine*, 24:613-624.

Murphy, M., Grundy, E., & Kalogirou, S. (2007) 'The increase in marital status differences in mortality up to the olderst age in seven European countries 1990-1999', *Population Studies, 61*(3), 287-298.

O' Rand, A. and J. C. Henretta (1999) *Age and inequality: Diverse pathways through later life*. Boulder, CO, Westview.

Pinquart, M. (2003) 'Loneliness in married, widowed, divorced, and never-married older adults', *Journal of Social and Personal Relationships* 20, 31-53.

Potter, C.G. and Steffens, D.C. (2007) 'Contribution of depression to cognitive impairment and dementia in older adults', *The Neurologist*, 13, 105-17.

Prince, M. J., Harwood, R., Blizard, R., Thomas, A. and Mann, A (1997) 'Social support deficits, loneliness and life events as risk factors for depression in old age', *Psychological Medicine*, 27, 2, 323-32.

Rallu, J.L and Blum, A. (1991) *European Population 1: Country Analysis*. John Libbey and Company, London.

Ross, C. E and Mirowsky, J. (1999) Parental Divorce, Life-Course Disruption, and Adult Depression. *Journal of Marriage and Family*, 61: 4, 1034-1045.

Sandberg, J.G. & J. M. Harper (2000) 'In search of a marital distress model of depression in older marriages', *Aging & Mental Health*, 4:3, 210-222.

Saunders P.A., Copeland J.R.M., Dewey M.E., et al (1991) 'Heavy drinking as a risk factor for depression and dementia in elderly men: findings from the Liverpool Longitudinal Community Study', *British Journal of Psychiatry,* 159: 213-216.

Smyer, M. A. and Quall, S. H. (1999) *Aging and Mental Health*, Blackwell Publishing, Malden, Massachusetts.

Turvey, C. L., Carney, C., Arndt, S., Wallace, R. B., & Herzog, R. (1999) 'Conjugal loss and syndromal depression in a sample of elders aged 70 years or older', *American Journal of Psychiatry*, 156, 1596-1601.

Umberson, D., Wortman, C. B. and Kessler, R.C. (1992) 'Widowhood and Depression: Explaining Long-Term Gender Differences in Vulnerability', *Journal of Health and Social Behavior*, 33(1), 10-24.

Unützer, J., Patrick, D.L., Marmon, T., Simon, G.E., Katon, W.J. (2002) 'Depressive symptoms and mortality in a prospective study of 2,558 older adults', *American Journal of Geriatric Psychiatry,* 10(5): 521-30.

van Grootheest, D.S. Beekman, A.T.F., Broese van Groenou, M.I. and Deeg, D.J.H. (1999) 'Sex differences in depression after widowhood. Do men suffer more?' *Social Psychiatry Psychiatric Epidemiology (*1999) 34: 391-398.

Waite, L., & Gallagher, M. (2001) *The case for marriage: Why married people are happier, healthier and better off financially*. New York: Boradway Books.

Weich, S., Patterson, J., Shaw, R., & Steward-Brown, S. (2009). Family relationships in childhood and common psychiatric disorders in later life: systematic review of prospective studies. *The British Journal of Psychiatry*, 194, 392-398.

Whyte, S. (1992) 'Competing explanations for associations between marital status and health', *Social Sceince Medicine, 34*, 523-532.

Wisocki, P. A., & Skowron, J. (2000) 'Effects of gender and culture on adjustment to widowhood', In: R. M. Eisler (Ed.), *Handbook of gender, culture, and health*. Mahwah, NJ: Lawrence Erlbaum, pp. 429-447.

Wu, Z. and Pollard, M. (1998) 'Social support among unmarried childless elderly persons', *Journal of Gerontology*, 53 B, 6, 324-335.

Zimmerman, F. J. and Katon, W. (2005) Socioeconomic Status, Depression Disparities, and Financial Hardship: What Lies Behind the Income – Depression Relationship? *Health Economics,* 14: 12, 1197-1215.

Zisook S, Shuchter S.R. (1991) 'Depression through the first year after the death of a spouse', *American Journal of Psychiatry*, 148:1346-1352.

Table 1: Distribution of marital status among people aged 65 and over in Ireland

	Married		Never married		Sep/divorced		Widowed		Total	Number in sample
	%	95% CI	%	95% CI	%	95% CI	%	95% CI		
Male										
65-74	71.9	[68.9-74.7]	15.2	[12.8-18.0]	4.4	[3.4-5.8]	8.5	[7.1-10.2]	100	1069
>=75	55.3	[50.6-59.8]	20.8	[16.7-25.6]	1.6	[0.7-3.7]	22.2	[18.9-26.0]	100	596
Total	*65.5*	*[62.9-68.0]*	*17.4*	*[15.1-19.8]*	*3.4*	*[2.6-4.4]*	*13.8*	*[12.2-15.6]*	*100*	*1665*
Female										
65-74	56.3	[52.9-59.7]	10.5	[8.3-13.2]	3.8	[2.8-5.0]	29.4	[26.3-32.6]	100	1094
>=75	21.8	[18.6-25.4]	16.7	[13.1-21.1]	0.7	[0.2-2.0]	60.8	[56.2-65.2]	100	748
Total	*40.1*	*[37.6-42.7]*	*13.4*	*[11.3-16.0]*	*2.3*	*[1.7-3.1]*	*44.1*	*[41.4-46.9]*	*100*	*1842*
Total										
65-74	63.9	[61.4-66.3]	12.8	[11.1-14.7]	4.1	[3.4-5.0]	19.2	[17.4-21.2]	100	2163
>=75	35.3	[32.1-38.6]	18.4	[15.6-21.5]	1.1	[0.6-2.0]	45.3	[41.9-48.7]	100	1344
Total	*51.6*	*[49.4-53.7]*	*15.2*	*[13.6-17.0]*	*2.8*	*[2.3-3.4]*	*30.5*	*[28.6-32.4]*	*100*	*3507*

Table 2: Descriptive statistics: Socio-demographic characteristics of TILDA sample by sex and marital status

	Men				Women			
	married	never married	separated/ divorced	widowed	married	never married	separated/ divorced	widowed
Demographic characteristics								
Age (mean)	72.3	74.1	70.8	77.1	71.2	75.6	69.8	77.5
Current residence								
Dublin	23.4	15.8	28.4	26.9	27.8	33.7	36	25
Other city or town	29.5	26.4	33.7	31.3	30.5	38.1	41.1	22.9
Rural area	44.1	51.8	37.7	41.2	41.7	28.2	22.9	43.7
Early life circumstances								
Father's occupation								
Professional	10.2	3.4	18.7	6.3	10.1	18	20.5	5.9
Manual	56.6	53.3	54.5	61.1	56.3	44.1	65.8	55.9
Non-manual	9.1	5	9.1	6.5	8.5	11	5.7	6.1
Farmers	24.3	38.2	17.6	25.9	25	26.8	8	32.1
Family financial well-being								
well-off	9.5	7	9.6	7.2	9.1	13.6	25.1	7.9
average	62.9	62.6	60.9	60.4	69.7	65.6	58.3	72.3
poor	27.5	30.3	29.5	32.4	21.2	20.9	16.6	19.8

Residential location (=rural)	58.5	75.4	56.3	62.5	59.1	62.2	48.1	69.6
Childhood health (=poor)	5.9	7.5	11.3	4.8	6.2	9.9	10.3	8.1
Parental substance problem	4.9	7.1	9.5	4.9	6.5	4.3	11.6	4.6
Early adult life circumstances								
Education								
primary	52.1	74.3	58.7	64.9	48.8	31.7	38.7	69.4
secondary	32.4	17.1	28.3	26.8	38.6	45.7	35.3	23.8
tertiary	15.4	8.5	13	8.2	12.5	22.5	25.9	6.7
Late adult life circumstances								
Household Income (mean)	32702	15591	24396	21261	26790	17661	19020	15692
Own a house	97.2	78.1	61	87.1	95.9	78.9	72.4	90.2
Self-reported health (=poor)	17.9	18.2	18.5	17.1	15.1	18.8	24.4	19.5
Social Support	98.9	93.8	96.5	95.3	98.3	95.4	96.9	99.1
Mental Health								
Depressive symptoms (mean)	4.3	5.9	6.6	5.8	5.4	6.2	8.3	7.7

Table 3: Multinomial logistic regression for marital status (odds ratios)

	men			women		
	never married	separated/ divorced	Widowed	never married	separated /divorced	Widowed
age	1.016	0.931*	1.115***	1.098***	0.913*	1.153***
	(0.0158)	(0.0303)	(0.0144)	(0.0186)	(0.0326)	(0.0126)
poor childhood health	1.726	1.915	1.106	1.832	1.522	1.354
	(0.574)	(0.966)	(0.376)	(0.639)	(0.770)	(0.325)
childhood residence	2.027**	1.648	0.934	1.071	1.138	1.317
(=rural)	(0.491)	(0.563)	(0.176)	(0.251)	(0.359)	(0.194)
father occupation	1.909	0.573	1.597	0.656	0.536	1.199
(=manual)	(0.843)	(0.263)	(0.517)	(0.198)	(0.216)	(0.266)
father occupation	1.697	0.843	1.248	1.073	0.509	1.168
(=non-manual)	(0.902)	(0.465)	(0.493)	(0.406)	(0.307)	(0.342)
father occupation	2.955*	0.364	1.386	0.888	0.211**	1.277
(=farmer)	(1.342)	(0.207)	(0.503)	(0.292)	(0.116)	(0.307)
childhood family	1.298	1.081	1.044	1.001	0.438*	0.814
(=average)	(0.457)	(0.528)	(0.302)	(0.290)	(0.173)	(0.163)
childhood family	1.132	0.812	1.377	1.215	0.477	0.835
(=poor financially)	(0.447)	(0.492)	(0.446)	(0.477)	(0.258)	(0.209)
parental substance abuse	1.676	1.424	1.432	0.903	1.627	0.957
	(0.624)	(0.791)	(0.513)	(0.412)	(0.780)	(0.273)
secondary education	0.481**	0.797	0.895	1.660	0.562	0.638**
	(0.115)	(0.319)	(0.177)	(0.461)	(0.217)	(0.0938)
tertiary education	0.672	0.938	0.636	3.062***	0.765	0.675*
	(0.177)	(0.399)	(0.159)	(0.899)	(0.310)	(0.121)

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

Table 4: Depressive symptoms regressed on marital status and early and later life circumstances

	men				
	model 1	model 2	model 3	model 4	model 5
age	0.0264	0.0210	0.00526	0.0211	0.0178
	(0.0250)	(0.0250)	(0.0257)	(0.0282)	(0.0259)
childhood health	1.494*	1.535*	1.434*	1.584*	
(=poor)	(0.610)	(0.609)	(0.605)	(0.686)	
childhood residence	-0.293	-0.392	-0.479	-0.324	
(=rural)	(0.345)	(0.346)	(0.345)	(0.397)	
father occupation	-0.155	-0.653	-0.672	-0.449	
(=manual)	(0.501)	(0.525)	(0.522)	(0.580)	
father occupation	0.0454	-0.107	-0.140	0.257	
(=non-manual)	(0.646)	(0.646)	(0.641)	(0.717)	
father occupation	0.409	-0.129	-0.148	0.0590	
(=farmer)	(0.570)	(0.595)	(0.592)	(0.673)	
childhood family	0.497	0.311	0.277	0.882	
(=average)	(0.499)	(0.501)	(0.497)	(0.562)	
childhood family	1.170*	0.847	0.807	0.939	
(=poor financially)	(0.571)	(0.585)	(0.580)	(0.644)	
parental substance abuse	1.957**	2.001**	1.848**	0.967	
	(0.663)	(0.661)	(0.656)	(0.754)	
secondary education		-0.349	-0.231	0.0475	-0.308
		(0.370)	(0.369)	(0.400)	(0.364)

tertiary education		-1.311**	-1.189**	-0.606	-1.111**
		(0.427)	(0.424)	(0.472)	(0.408)
never married			1.373**	0.895	1.173*
			(0.499)	(0.547)	(0.484)
sep/divorced			2.739**	2.062*	2.407**
			(0.838)	(0.983)	(0.862)
widow			1.553***	1.950***	1.470**
			(0.445)	(0.500)	(0.463)
current poor health				3.670***	3.553***
				(0.464)	(0.426)
other city than Dublin				-0.650	-1.044*
				(0.454)	(0.423)
rural				-0.610	-1.099**
				(0.460)	(0.390)
log(income)				-0.0639	-0.0273
				(0.138)	(0.133)
own house				-0.121	-0.0337
				(0.692)	(0.617)
social support				-1.161	-1.553
				(1.276)	(1.157)
constant	1.911	3.408	4.145*	3.921	5.318
	(1.910)	(1.995)	(2.024)	(3.121)	(2.755)
N	1330	1330	1330	1055	1258

Standard errors in parentheses

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

Table 5: Depressive symptoms regressed on marital status and early and later life circumstances

	women				
	model 1	model 2	model 3	model 4	model 5
age	0.0772**	0.0661*	0.0304	0.0355	-0.0265
	(0.0270)	(0.0275)	(0.0296)	(0.0348)	(0.0320)
childhood health	3.838***	3.781***	3.678***	1.889*	
(=poor)	(0.663)	(0.662)	(0.659)	(0.798)	
childhood residence	-0.476	-0.448	-0.524	-0.627	
(=rural)	(0.407)	(0.406)	(0.405)	(0.515)	
father occupation	0.446	0.130	0.140	-0.809	
(=manual)	(0.562)	(0.581)	(0.579)	(0.724)	
father occupation	0.689	0.677	0.714	-0.608	
(=non-manual)	(0.769)	(0.773)	(0.769)	(0.950)	
father occupation	-0.340	-0.611	-0.582	-1.272	
(=farmer)	(0.627)	(0.640)	(0.638)	(0.790)	
childhood family	0.242	0.0227	0.145	0.386	
(=average)	(0.535)	(0.545)	(0.543)	(0.668)	
childhood family	1.681*	1.207	1.321	1.130	
(=poor financially)	(0.668)	(0.693)	(0.690)	(0.823)	
parental substance					
abuse	0.901	0.882	0.833	1.337	
	(0.763)	(0.762)	(0.758)	(0.920)	
secondary education		-1.234**	-1.059*	0.0780	-0.191
		(0.415)	(0.416)	(0.485)	(0.443)

tertiary education		-1.002*	-0.856	-0.0222	-0.388
		(0.491)	(0.493)	(0.592)	(0.542)
never married			0.415	-0.281	0.300
			(0.650)	(0.772)	(0.735)
sep/divorced			2.452**	1.506	1.907
			(0.945)	(1.099)	(1.039)
widow			1.567***	1.538**	1.883***
			(0.405)	(0.469)	(0.445)
current poor health				4.932***	5.209***
				(0.569)	(0.522)
other city than Dublin				-1.055	-1.541**
				(0.578)	(0.538)
rural				-1.253*	- 1.799***
				(0.574)	(0.490)
log(income)				-0.468*	-0.538**
				(0.184)	(0.172)
own house				0.884	-0.0397
				(0.819)	(0.723)
social support				-0.911	-1.415
				(1.878)	(1.568)
constant	-0.236	1.739	3.510	8.306*	14.82***
	(2.069)	(2.223)	(2.320)	(3.839)	(3.291)
N	1452	1450	1450	1010	1251

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

Table 6: Combined model for depressive symptoms regressed on marital status and early life socio-economic status and late life circumstances

age	0.0280
female	1.462***
Poor childhood health	1.764***
childrural	-0.456
Father:manual	-0.560
Father:non-manual	-0.0502
Father: farmer	-0.616
childhood family average	0.600
childhood family poor	0.937
secondary education	-0.0127
tertiary education	-0.416
never married	1.057
sep/divorced	2.162*
widow	1.918***
never married x female	-1.168
sep/divorced x female	-0.358
Widow xf emale	-0.314
poor health	4.249***
other city than Dublin	-0.824*
rural	-0.870*
loginc	-0.248*
ownhouse	0.374
closeTies	-1.085
_cons	5.238*

N	2065

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