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Loneliness after Divorce: A Cohort Comparison among Dutch Young-Old Adults

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Abstract

Divorce increases the risk of loneliness. With divorce increasingly becoming a normal life event, societal changes are now challenging this idea as regards to current cohorts. We hypothesize that the relative strong feelings of loneliness among divorcees, compared with married people, has diminished over time. Using 1992, 2002, and 2012 data sets of 54–65-year-old people, we examine the impact of divorce on loneliness over 20 years. We compare those who are divorced or remarried to people married for the first time, and differentiate the supportiveness of the partnership. The results show that for both emotional and social loneliness, divorcees were lonelier than respondents in their first marriage; remarried divorcees were socially lonelier than respondents in their first marriage. Respondents with a supportive partnership were less emotionally and socially lonely than respondents without a partnership or with a less supportive partnership. The main finding is that, compared with 1992, the divorcees are less socially lonely in 2002, with a smaller and non-significant further decrease in loneliness in 2012. This suggests that the social position of divorcees has been improved over the past two decades.

Introduction

Past research has shown that divorce tends to result in a loss of personal relationships, which may cause divorcees to be more apt to suffer from loneliness (Amato, 2000). Particularly older adults who are divorced may be more vulnerable to loneliness because they generally have fewer opportunities to restore the personal network due to health restrictions (Dykstra, 1995). Being married, and more particularly, having positive marital relationships, is known to offer the greatest protection against loneliness (Fokkema, De Jong Gierveld and Dykstra, 2012; Pinquart, 2003).

Although the impact of divorce on loneliness has been examined in previous decades, it is not known

whether this impact has changed over time. Changes have taken place in the structure and function of marriage, such as the reduced exclusivity of marriage as an integrating, protective, and social institution and the improved social position of divorcees. This may have resulted in increased opportunities for relationships for divorcees. Therefore, it can be expected that the relative strong feelings of loneliness among divorcees, compared with married people, has diminished over time.

Studies examining differences between married and non-married over time with respect to loneliness are rare. Victor *et al.* (2002) reported that loneliness among older people living alone in Britain decreased from 1945 to 1999, but results were based on surveys with different

designs and without differentiation in marital status. A number of studies focusing on related phenomena, such as well-being, happiness, suicide, and psychological distress may provide some support for our expectations. On the basis of a meta-analysis of 58 studies conducted up to 1979, [Haring-Hidore et al. \(1985\)](#) observe weaker connections between being married and subjective well-being in later studies than in earlier ones. Based on data from the U.S. General Social Survey with observations in 1972–1986, [Glenn and Weaver \(1988\)](#) note a relative increase in the happiness of men who have never been married compared with married males. Over the same period, they also observe a decrease in the happiness of married people, especially females. This suggests fewer differences between the married and the non-married. Other researchers noted that empirical evidence backing the thesis of a weakening association between marriage and well-being over time is limited. [Mastekaasa \(1993\)](#) analyses Norwegian data on suicide and self-reported distress from 1961 to 1991. His analyses reveal increasing or unchanging differences between marital status categories, similar to observations by [Veenhoven \(1983\)](#) in a Dutch study. [Adams \(1999\)](#) conducted a follow-up of Glenn and Weaver's study (1988) and extended the period by 10 years to 1972–1996. Unable to confirm the trend observed by [Glenn and Weaver \(1988\)](#), she concludes that the happiness of the never-married may have increased in recent years, but marriage is still an important institution. The married continued to exhibit significantly higher levels of happiness than the non-married.

This study compares the effects of marital status on loneliness across three birth cohorts of married and divorced young-old people in the Netherlands. Observations were taken 10 years apart, and they have the same age range. Like most other modern industrialized societies, the Netherlands has witnessed a strong increase in divorce and remarriage ([Latten, 2004](#)), albeit lower than e.g. in the United States ([Brown and Lin, 2012](#)). We extend previous research by including detailed information on various forms of partnerships. Also, we are able to examine whether receiving support within a partnership other than a marriage might provide protection at the same level as having a spouse.

Theoretical Background and Hypotheses on Divorce and Loneliness

Loneliness is defined as 'the unpleasant experience that occurs when a person's network of social relations is deficient in some important way, either quantitatively or qualitatively' ([Perlman and Peplau, 1981](#), p. 38).

Loneliness measures both the actual degree of integration and people's own preferences and standards regarding their integration. We develop three hypotheses (1a, 2a, 3a), where the first two hypotheses predict that divorce increases loneliness. The third hypothesis argues that there is more loneliness when there is no supportive partnership. Lastly, we also assess whether these hypotheses have different implications over time between three cohorts (*H1b*, *H2b*, *H3b*).

Hypotheses 1a and 2a are based on the social integration thesis, which focuses on the social status associated with marriage. According to [Gibbs \(1969\)](#), different patterned and socially sanctioned demands and expectations are placed on people who are married than on those who are not. The loss of a spouse due to divorce means a lowering of social status. Unmarried people deviate from the norm and are thus less well integrated socially, which in turn harms their well-being. *H1a* is that divorced young-old adults will be lonelier than married young-old adults.

Divorce is often the final stage of a marital crisis. Separation can alleviate the crisis and result in improved well-being. However, the detrimental effects of divorce on social status and well-being continue, even after time passes and the person has a new partner or spouse ([Williams, 2003](#)). [Peters and Liefbroer \(1997\)](#) mention the emotional experience and the financial, health-related, and social consequences of a divorce that continue to influence well-being even after there is a new spouse. The strain caused by divorce undermines well-being, and the negative consequences can last a long time. *H2a* is that remarried divorcees will be lonelier than married young-old adults.

The third hypothesis is based on the protection thesis ([Coombs, 1991](#)) that focuses on the resources provided within an intimate relationship such as marriage ([Williams, Frech and Carlson, 2009](#)). The protection thesis stems from more fundamental theories such as social exchange, attachment, and crisis theory ([Karney and Bradbury, 1995](#)). An intimate relationship such as marriage provides a personal gain because the spouse fulfils basic and universal human needs and diminishes exposure to the strains encountered in life. People who live alone are vulnerable because they have no intimate relationship. When people experience a stressful event, a confidant such as the spouse provides resources such as companionship, instrumental help, and emotional support, thus enhancing the ability to cope with the strain. The protection thesis assumes that a confidant serves as a buffer against loneliness and focuses on the psychological rather than the social function of marriage ([Smith and Christakis, 2008](#)). It is the quality of the

partnership and not the status of being married in itself that links it to well-being (Gove, Hughes and Style, 1983). A poor quality marriage is detrimental to well-being and increases loneliness (De Jong Gierveld *et al.*, 2009; De Jong Gierveld and Van Tilburg, 1987). Therefore, *H3a* is that a high level of support exchanged within a partnership will result in less loneliness than a low level of support or not having a partner.

Changing Position of Divorcees

We assume that, compared with married people, divorcees from later cohorts are at less of a disadvantage and have greater opportunities for relationships that suit their individual preferences and social positions than divorcees from earlier cohorts. This suggests that divorcees are currently able to have a satisfying set of relationships and are less likely to be lonely. Various authors (e.g. Bengtson, 2001; Wolfinger, 2003) have pointed to the changed numbers in divorce. They observed a *growing normalization* of divorce, which is related to the increased divorce rate (Brown and Lin, 2012) and the increasing likelihood that divorcees are befriended with other divorcees (McDermott *et al.*, 2013).

There is also a major change in the structure and function of marriage that suggest an improvement of the situation of divorcees. A couple's social relationships used to be more structured and constrained by norms and prescribed behaviours, and marriage once implied access to protection within the spousal relationship. Marriage seems to have lost its exclusive right to serve an integrating, protective, and social function. Other arrangements such as living together without being married have become alternatives for marriage (Musick and Bumpass, 2012) and have also gained social approval, suggesting that the stigma associated with divorce might have been largely abandoned (Glenn and Weaver, 1988). In the process of modernization, personal relationships have become more and more disembedded (Giddens, 1990) from the context of marriage. This suggests that a partnership similar to a marriage might provide comparable protection. This can be a non-marital partnership involving either cohabitation or living apart together. Adams (1999) also argues that improvements in income and education of unmarried people in the mid to late 80s may have contributed to the redundancy of resources provided within marriage. This does not downplay the value of a confidant or the role of intimacy, and it is not discussing the supportive role of romantic partnerships, but it does stress that these characteristics increasingly are not necessarily linked to a spouse.

Hypotheses 1b, 2b, and 3b are thus that marriage has become less important in recent decades, and that the detrimental effects of divorce in terms of loneliness intensity have decreased. There will be a decrease in the differences between divorced and married young-old adults (*H1b*), and remarried and married young-old adults (*H2b*) and married young-old adults over time (moderating *H1a* and *H2a*, respectively), and the supportive partnership will be more important in the more recent cohort (*H3b*) (moderating *H3a*).

The Current Study

We study differences in emotional and social loneliness. According to Weiss (1973), emotional loneliness refers to feelings associated with emptiness and the lack of a confidant, and social loneliness to a lack of social embeddedness, i.e. meaningful relationships with close or extended kin and non-kin. Because the hypotheses pertain to intimate partnerships as well as the growing social acceptance of them, we do not have explicit expectations regarding the two forms of loneliness.

To minimize the possibility of a sample composition difference affecting our results in 1992, 2002, and 2012, we control for age and gender. Men and women have different structural opportunities for developing friendships related to their social roles at various points in the life cycle, so gender is included (Fischer and Oliker, 1983).

Furthermore, we include five respondent characteristics that are related to loneliness and might be different between the three cohorts. These mediating effects will be considered when we test the hypotheses.

Respondents who experienced a divorce a longer time ago have had more time and opportunity to recover from the event, and to repair eventual losses in their relationship network (Terhell, Broese van Groenou and Van Tilburg, 2004). Among married respondents, the duration of the marriage may affect their loneliness feelings. Around marriage, the marital quality is generally high, and it declines after the first few years of marriage, the so-called honeymoon period (Proulx, Helms, and Buehler, 2007). Even when problems occur early in the marriage, it takes time to affect one's feelings. However, in surviving marriages, we can expect to find a relatively good marital quality because the marriages of poor quality are no longer intact by later life (Umberson *et al.*, 2005).

Divorce has strong immediate and long-term consequences for the composition and functioning of the personal network (Terhell, Broese van Groenou and Van Tilburg, 2004). The loneliness definition refers to an evaluation of the quality of one's personal relationships,

including interactions and exchanges. Personal network size and support exchanged within network relationships with various types of kin and non-kin are cited as relevant to an absence of loneliness in previous research (Stevens and Westerhof, 2006).

Educational level can influence the decision to divorce, and also indicate the extent to which people have the economic resources and social skills to cope with the effects of divorce (De Graaf and Kalmijn, 2006). Church membership is known to provide an integration framework for social interaction (Hayward and Krause, 2013), but is also known for its relation to the social disapproval of divorce (Arland, 1985).

Design of the Study

Respondents

Data are obtained from three surveys of the ageing population in the Netherlands. In the context of the 'Living Arrangements and Social Networks of Older Adults' (LSN) research program (Knipscheer *et al.*, 1995), data on 1,137 respondents born in 1928–1937 are collected in 1992. The sample is stratified according to gender and birth year and is drawn from the population registers of 11 Dutch municipalities that differ as to the degree of urbanization and religion. The response rate is 63 per cent. In 2002, the 'Longitudinal Aging Study Amsterdam' (Huisman *et al.*, 2011) sampled 1,002 respondents born in 1938–1947, adopting the same sampling frame as LSN; the response rate is 62 per cent. Similarly, in 2012, LASA sampled 1,023 respondents born in 1948–1957; the response rate is 63 per cent.

From the total sample of $N = 3,162$, we exclude 242 respondents who never got married, 232 widows and widowers, and 36 who remarried after widowhood. We also exclude 17 respondents who are married but separated, 11 respondents who are in a registered, homosexual relationship, 21 respondents who have an unknown marital history, six institutionalized respondents, and 15 respondents of whom no data on loneliness are available, in most cases because of their frailty. The analyses pertain to 2,133 respondents who are married for the first time, 176 respondents who remarried after a divorce, and 273 respondents who are currently divorced. The 1,276 men and 1,306 women range in age from 54 to 65 years and have a mean age of 59.8 ($SD = 2.9$).

Measurements

Loneliness

Emotional loneliness is assessed by a scale of six items (item wordings and response categories are in the

Supplemental Material); scale values range from 0 to 6 (De Jong Gierveld and Van Tilburg, 1999). The scale of social loneliness includes five items; scale values range from 0 to 5. Loevinger's coefficient for scale homogeneity H is 0.46 and 0.43, and reliability ρ is 0.82 and 0.72 for emotional and social loneliness, respectively. The Spearman's ρ correlation between the two scales is 0.42 ($P < 0.001$).

Partnership status

Partnership and marital status are assessed on the basis of various interview questions from the surveys and register data from the municipalities. Marriage also included 33 respondents with a registered partnership, which has been an alternative to marriage since 2000. Partnership included 96 non-marital partnerships among divorcees. Some respondents lived apart together with their partner (12 among married respondents; five among remarried divorcees; and 49 among divorcees). We also assess the duration of the marriage and divorce on the basis of the date of the wedding and divorce, respectively, and of the interview.

Personal network

Network members are identified by name using the domain-contact method (Van Tilburg, 1998). Seven domains are distinguished: household members, children and their partners, other relatives, neighbours, colleagues at work or school, fellow members of organizations, and others (e.g. friends and acquaintances). The following question was asked: 'We would like to know who you have regular contact with and who is important to you'. Network size is the number of persons identified.

Support received

For the spouse or partner and nine other network members (or fewer if fewer are named) with whom the respondent has the most frequent contact with, emotional and instrumental support exchanges are assessed. For emotional support, we ask, 'How often did it happen in the past year that you told... about your personal experiences and feelings?' For instrumental support, we ask, 'How often did it happen in the past year that... helped you with daily chores in and around the house, such as preparing meals, cleaning the house, transportation, small repairs, filling in forms?' The answer categories are *never*, *seldom*, *sometimes*, and *often*.

Education and religion

The educational level is measured in years and ranges from 5 to 18. Respondents are asked what their religious

affiliation is. The categories Protestant (mainly Calvinist denominations), Roman Catholic, and non-Christian religions are taken together and are compared with the category of reference, no affiliation.

Procedure

As the two loneliness scales are count variables and are skewed to the left, we used ordered logistic regression (PLUM procedure in SPSS 21) with the negative log-log link function to estimate multivariate predictive equations. Values of ≥ 3 are summed together because there are only a few scores >3 (6 per cent for emotional and 5 per cent for social loneliness).

We examine various models. All include gender and age as stratification criteria for the samples. The model we present includes all main and interaction effects and covariates, and tests the hypotheses. Results from intermediate models in which we stepwise introduced variables into the equations are presented in the [Supplementary Material](#). Models include dummy variables for divorcees and for being remarried after a divorce, with married for the first time as the category of reference. A partnership is considered supportive if emotional and instrumental support are both often received (coded as 1; a non-supportive partnership or absence of a partnership is coded as 0). The main effect of the survey year is included by two dummy variables, with 1992 as category of reference. Interaction terms concern dummy variables for survey year and for being divorced, being remarried, and supportiveness of the partnership. Covariates are years in the current marital status, the quality of other relationships, i.e. the availability of a supportive relationship alongside the partner, and network size, educational level, and church membership. Variables involved in interaction terms are centred around the grand mean. Tolerance testing indicates that all the independent variables qualify for the regression analysis assumption concerning the absence of multicollinearity. To better understand the meaning of the actual size of the estimated coefficients, we calculated the scale value probabilities, that is, the likelihood of respondents to be in the various loneliness categories, for various values of the exogenous variables of interest. We compute these marginal effects at every observation and present the sample average of the individual marginal effects.

Results

[Table 1](#) presents the descriptive results. The mean age in the various categories slightly increased over the three samples due to a longer period of data collection. In

2002, a relatively high proportion of divorcees had a supportive partnership. Divorcees had experienced the divorce about 16 years earlier, remarried divorcees were remarried for about 17 years, and respondents in the first marriage married about 35 years ago; the duration of the current marital status of the respondents married for the first time is slightly longer in 2012 than in 1992. In each marital status category, the network size is larger in 2012 than in 1992 and 2002. Analysis of variance of network size controlling for gender and age reveals that the average gain of about six network members is not significantly different across the three categories of marital status (results not shown). The educational level attained increases with about 2 years across the three survey years, indicating differences between the birth cohorts. The proportion of respondents affiliated to a church decreased.

The distribution of the loneliness scores included in the regression analyses is highly skewed: most of the respondents (69 per cent for emotional and 60 per cent for social loneliness, $N=2,582$) had a score of 0; 15 per cent and 20 per cent, respectively, had a score of 1; 6 per cent and 9 per cent, respectively, a score of 2, and 11 per cent and 11 per cent, respectively, a score of ≥ 3 . [Supplementary Table S1](#) in the [Supplementary Material](#) shows predicted probabilities on basis of the intercept-only regression model, which indicate lower loneliness.

We examined 11 regression models. An overview of estimates in intermediate models tested for emotional and social loneliness is presented in the [Supplementary Material](#), [Supplementary Table S2](#). The estimates for the model including all predictors and interaction terms relevant for the hypotheses on emotional loneliness, and covariates, are presented in the left hand columns of [Table 2](#). Only *H3a* concerning partner's supportiveness finds support in the analyses. Respondents with a supportive partnership were predicted to have a likelihood of 0.78 to have a score of 0, 0.10 to have score 1, 0.04 to have score 2, and 0.08 to have a score of ≥ 3 . Probabilities for respondents without a supportive partnership show higher loneliness scores and were 0.66, 0.18, 0.07, and 0.13, respectively. In the unconditional model ([Supplementary Table S2](#)), emotional loneliness was lower in the sample observed in 2012 than in previous years.

There are no differences in emotional loneliness according to gender and age. Those longer in the respective marital status were less lonely. Respondents in the highest quartile of the distribution of network size (24 network members or more) were predicted to have a likelihood of 0.81 to have a score of 0, 0.09 to have score 1, 0.04 to have score 2, and 0.06 to have a score

Table 1. Respondent characteristics by marital status and survey year

Marital status categories and Respondent characteristics	1992		2002		2012	
	M	SD	M	SD	M	SD
Divorced (Total N = 273)	N = 65		N = 107		N = 101	
Female (versus Male)	0.57	0.50	0.60	0.49	0.51	0.50
Age (54–65 years)	59.41	2.99	60.08	2.90	60.27	2.95
Partnership (versus No partner)	0.31	0.47	0.37	0.49	0.36	0.48
Supportive partnership (versus No supportive or no partner)	0.12	0.33	0.25	0.44	0.14	0.35*
Years in current marital status (.1–46.0 years)	14.25	8.56	16.03	8.95	16.70	9.57
Other supportive relationship (versus No supportive or no other relationship)	0.25	0.43	0.22	0.42	0.23	0.42
Network size (1–80)	11.19	8.92	12.29	6.57	18.02	11.07***
Educational level (5–18 years)	9.66	3.65	10.57	3.72	11.54	3.37**
Religious affiliation (versus No affiliation)	0.35	0.48	0.28	0.45	0.29	0.45
Remarried (Total N = 176)	N = 39		N = 68		N = 69	
Female (versus Male)	0.46	0.51	0.47	0.50	0.48	0.50
Age (54–65 years)	59.40	2.75	59.62	3.02	61.01	2.74**
Partnership (versus No partner)	1.00		1.00		1.00	
Supportive partnership (versus No supportive or no partner)	0.56	0.50	0.72	0.45	0.81	0.39*
Years in current marital status (.1–46.0 years)	16.31	9.81	16.67	10.13	17.65	10.57
Other supportive relationship (versus No supportive or no other relationship)	0.18	0.39	0.12	0.32	0.17	0.38
Network size (1–80)	13.13	7.56	15.94	8.55	20.28	12.40**
Educational level (5–18 years)	9.87	3.38	10.88	3.74	11.93	3.36*
Religious affiliation (versus No affiliation)	0.28	0.46	0.37	0.49	0.30	0.46
First Marriage (Total N = 2.133)	N = 795		N = 675		N = 663	
Female (versus Male)	0.50	0.50	0.51	0.50	0.50	0.50
Age (54–65 years)	59.27	2.88	59.82	2.94	60.35	2.93***
Partnership (versus No partner)	1.00		1.00		1.00	
Supportive partnership (versus No supportive or no partner)	0.59	0.49	0.64	0.48	0.62	0.49
Years in current marital status (.1–46.0 years)	33.46	5.25	35.42	5.03	35.90	6.76***
Other supportive relationship (versus No supportive or no other relationship)	0.14	0.35	0.17	0.38	0.14	0.34
Network size (1–80)	16.91	10.50	16.13	9.74	23.08	12.76***
Educational level (5–18 years)	9.37	3.14	10.17	3.21	11.35	3.31***
Religious affiliation (versus No affiliation)	0.62	0.49	0.58	0.49	0.51	0.50***

Note: Test of significance concerns differences between the survey years within categories of marital status.

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

of ≥ 3 . Probabilities for respondents in the lowest quartile (nine network members or less) were 0.66, 0.14, 0.07, and 0.13, respectively. Finally, the higher the educational level attained, the lower the loneliness. Respondents in the highest quartile (12–18 years of education) were predicted to have a likelihood of 0.77 to have a score of 0, 0.10 to have score 1, 0.05 to have score 2, and 0.08 to have a score of ≥ 3 . Probabilities for respondents in the lowest quartile (5 or 6 years) were 0.68, 0.13, 0.06, and 0.12, respectively.

For social loneliness, in intermediate models (Supplementary Table S2), we observed that divorcees and remarried respondents were lonelier than respondents in their first marriage, supporting *H1a* and *H2a*. However, when adding the variable on supportiveness

of the partner to the model, the estimate for divorce became smaller, but remained its significance, but with the addition of covariates both estimates became smaller and lost significance. *H3a* regarding the supportiveness of the partner found support in the intermediate and final models. Respondents with a supportive partnership have an estimated likelihood of 0.71 to have score 0, 0.14 to have score 1, 0.07 to have score 2, and 0.08 to have score ≥ 3 . Probabilities for respondents without a supportive partnership were 0.61, 0.17, 0.09, and 0.13, respectively.

As for emotional loneliness, before covariates were included in the models (Supplementary Table S2), social loneliness was lower in the sample observed in 2012 than in previous years. Now we find support for *H1b*

Table 2. Ordinal logistic regression of emotional and social loneliness ($N=2,582$)

Intercepts and Exogenous variables	Emotional Loneliness		Social Loneliness	
	B	SE B	B	SE B
Cut point 1	1.125	0.751	−0.005	0.667
Cut point 2	1.862*	0.752	0.855	0.667
Cut point 3	2.367**	0.753	1.539*	0.668
Female (versus Male)	−0.013	0.075	−0.302***	0.067
Age	0.021	0.013	0.005	0.012
Divorced	0.255	0.153	0.093	0.140
Remarried	−0.129	0.182	0.154	0.151
Supportive partnership	−0.388***	0.078	−0.353***	0.069
2002 Observation	0.121	0.088	−0.108	0.077
2012 Observation	0.042	0.099	−0.048	0.084
Divorced * 2002 Observation	−0.136	0.252	−0.544*	0.238
Divorced * 2012 Observation	0.414	0.255	−0.230	0.239
Remarried * 2002 Observation	0.012	0.360	−0.156	0.295
Remarried * 2012 Observation	0.013	0.377	−0.144	0.300
Supportive partnership * 2002 Observation	0.117	0.175	−0.055	0.155
Supportive partnership * 2012 Observation	0.220	0.190	0.014	0.163
Years in current marital status	−0.012*	0.006	−0.002	0.005
Other supportive relationship	0.047	0.101	−0.289**	0.099
Network size	−0.024***	0.004	−0.038***	0.004
Educational level	−0.035**	0.011	0.003	0.010
Religious affiliation	−0.011	0.074	−0.250***	0.066

Notes: Link function is negative log-log. For emotional loneliness, -2 log likelihood for the intercept-only model is 4882.1 and for the full model 4725.4. Likelihood-ratio test $\chi^2_{(18)} = 156.6^{***}$. For social loneliness, -2 log likelihood for the intercept-only model is 5594.3 and for the full model 5322.4. Likelihood-ratio test $\chi^2_{(18)} = 271.9^{***}$.

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

(Table 2): the interaction effect of being divorced and the dummy variable for 2002 was significant, but there is no support for *H2b* and *H3b*. The probabilities connected to *H1b* are shown in Figure 1, indicating that the difference in social loneliness between divorcees and respondents in their first marriage differs for the three survey years. Among respondents in their first marriage, a small decline in the likelihood of being lonely is shown for 2012, compared with 2002 and 1992. The probabilities to have a scale score >0 are 0.34, 0.33, and 0.30 for 1992, 2002, and 2012, respectively. Among divorcees, from 1992 to 2002, there is a decline in the likelihood of having a scale score indicating social loneliness. From 2002 to 2012, there is an increase. The probabilities to have a scale score >0 are 0.51, 0.36, and 0.40 for 1992, 2002, and 2012, respectively.

We did not observe a gender difference in emotional loneliness. Men are more socially lonely than women. We also tested whether there are gender differences in the prediction of loneliness. The results of the stratified regression analyses are shown in the [Supplementary Material, Supplementary Tables S4 and S5](#). Tests of

Figure 1. Estimated probabilities for social loneliness scale values

coefficient equality across gender indicated that for women the impact of divorce versus being married on social loneliness becomes weaker in 2002 (*H1b*). For men, this reduction in strength was not significant.

Various exogenous variables included as mediating variables prove to be significant in the regression of social loneliness. Respondents with a supportive relationship other than the partner have an estimated likelihood of 0.74 to have a score of 0, 0.13 to have score 1, 0.06 to have score 2, and 0.07 to have a score of ≥ 3 . Probabilities for respondents without such a relationship were 0.65, 0.16, 0.08, and 0.11, respectively. Having a large network is highly protective against social loneliness. Respondents in the highest quartile of the distribution of network size were estimated to have a likelihood of 0.79 to have a score of 0, 0.11 to have score 1, 0.05 to have score 2, and 0.05 to have a score of ≥ 3 . Probabilities for respondents in the lowest quartile were 0.55, 0.19, 0.11, and 0.15, respectively. Finally, having a religious affiliation is relevant to social loneliness, with estimated probabilities of 0.71, 0.14, 0.07, and 0.08 for social loneliness values 0, 1, 2, and 3, or higher, respectively, among church members and 0.62, 0.17, 0.08, and 0.12 for non-members.

Discussion

The aim of this study was to examine the impact of divorce on loneliness over time using three birth cohorts of married, remarried, and divorced young-old people in the Netherlands. *Hypotheses 1a and 2a* were based on the social integration thesis. Our results show that divorced young-old adults were more emotionally and socially lonely (*H1a*) than young-old adults who are married for the first time. Remarried young-old adults were more socially lonely (*H2a*) than young-old adults who are married for the first time. This is in line with the notion that marriage has a protective effect on well-being. One could argue that remarriage partly alleviates prior stress and loneliness caused by divorce because there is some form of spousal influence.

Reviewing the protection thesis, we focus on the meaning of a supportive partnership as protection from loneliness. The results show a lower probability of emotional and social loneliness for the respondents with a supportive partnership compared with people without a supportive partnership (*H3a*). However, we did not find evidence that effects of marital status became non-significant when we introduced partner's supportiveness in the regression. When the covariates were included in the model, among others the availability of a supportive relationship alongside the partner, and the personal network size, the significance of the support exchanged within the partnership was confirmed, while marital status was not significant anymore. This suggests that protection is not only offered within the single partnership

but also within the wider network of personal relationships.

We find partial support for the idea of diminishing importance of the social integration thesis, which focuses on the social status associated with marriage (*H1b*). The detrimental effects of divorce in terms of social loneliness have diminished over time between cohorts. Compared with 1992, divorcees, in particular female divorcees, are less socially lonely in 2002, with a smaller and non-significant decrease in loneliness in 2012. The estimated probabilities for the various scale values show that the difference in social loneliness between the divorcees and the respondents married for the first time diminishes from 1992 to 2012. We see this as evidence to support the hypothesis that marital status has declined in universality and the impact of divorce on loneliness intensity has declined. These results suggest a normalization of divorce, giving divorcees in recent birth cohorts greater opportunities for satisfying relationships than divorcees in earlier cohorts. This process is related to a change in the structure and function of marriage.

Previous studies on the changing differences between various categories of marital status have mainly focused on suicide, happiness, and well-being. The current study focuses on loneliness, i.e. the perceived discrepancy between actual relationships and the relationships people would like to have, and a situation of distress relevant to married and divorced people in late adulthood (Pinquart and Sörensen, 2001). We observe differences in emotional and social loneliness according to partnership supportiveness and other social network characteristics such as alternative supportive relationships and personal network size. The cohort differences are specific to the emotional and social types of loneliness, which extends the results of an earlier study by Dykstra and Fokkema (2007).

A likely cause of the diminished social loneliness among young-old divorcees may be the growing acceptance of their situation and responsiveness to it. We have not studied opinions and evaluations of the event of divorce, but other studies provide some evidence. For example, a British study (Glaser *et al.*, 2008) contradicts previous findings that partnership termination has a detrimental effect on late-life support. These findings have also been linked to ageing Baby Boomers, where complex family structures have become prevalent, including former partners, cohabitating partners, and peripheral relatives such as former in-laws or stepchildren. It is uncertain whether one can count on support being provided under these complex circumstances. Gubernskaya (2010) reports that people in six countries, including the Netherlands, moved away from traditional norms of

universal marriage. It is concluded that the changes in attitudes reflect predominately cohort replacement, and not the change of attitudes of individuals over time. Fingerman *et al.* (2012) report diminishing family values and obligations to provide support on the part of Baby Boomers on the one hand and an increasing adaptation to new realities in many families on the other. People with material, personal, and social resources are more equipped to cope with the uncertainty that comes with more complex family structures. Compared with previous cohorts, many young-old adults now have ample opportunities and capacities to navigate complex situations.

Some limitations of the study need to be mentioned. First, the samples of divorced and remarried people in each cohort year were small, in comparison with the married sample. The estimates for persons in their first marriage are therefore more precise than estimates for divorced and remarried respondents. Our finding that the impact of divorce on social loneliness became smaller in 2002, and raised a little in 2012 (but not to the 1992 level), nuances the conclusion that there is a weaker impact of divorce. This non-linear trend might be related to non-captured societal or individual change but also to small sample sizes and consequent imprecise estimations of effects. Second, we should note that because the marital status of most of our respondents has not changed recently, the observation of a difference between the three cohorts may also reflect changes occurring before the measurement. Because we find differences in marital status categories for the respondent characteristics in 1992, 2002, and 2012, we cannot rule out the possibility that changes have been influenced by the altered composition of the marital status groups.

Our main conclusion is that the impact of divorce on social loneliness, but not emotional loneliness, has declined in two recent decades, and that having a supportive partnership has retained its significance. This shows that it is relevant to distinguish between social and emotional loneliness. As emotional loneliness refers to intimacy in relationships, often fulfilled in the partnership, the social meaning of the marital status is less relevant to emotional loneliness.

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Supplementary Data

Supplementary data are available at ESR online.

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COHORT DIFFERENCES IN LONELINESS AFTER DIVORCE
Supplemental Material 1

Supplementary Material for:

Loneliness after Divorce: A Cohort Comparison among Dutch Young-Old Adults

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Loneliness Scale and distribution of loneliness scores

Items of the loneliness scale

1. There is always someone I can talk to about my day-to-day problems
2. I miss having a really close friend
3. I experience a general sense of emptiness
4. There are plenty of people I can lean on when I have problems
5. I miss the pleasure of the company of others
6. I find my circle of friends and acquaintances too limited
7. There are many people I can trust completely
8. There are enough people I feel close to
9. I miss having people around me
10. I often feel rejected
11. I can call on my friends whenever I need them

The response categories are “no,” “more or less”, and “yes.” Items 2, 3, 5, 6, 9, and 10 indicate emotional loneliness. Neutral (“more or less”) and positive answers (“yes”) are counted. Items 1, 4, 7, 8, and 11 indicate social loneliness. The answers “more or less” and “no” are counted.

Table S1. Distribution of Loneliness Scores (percentages; N = 2,582)

	Emotional Loneliness		Social Loneliness	
	Frequency	Predicted probability	Frequency	Predicted probability
Score 0	68.8	72.8	60.4	66.5
Score 1	14.5	11.8	19.7	15.4
Score 2	6.1	5.4	9.1	7.9
Score ≥ 3	10.5	10.0	10.8	10.3

Note. Predicted probabilities are from intercept only models of ordered logistic regression (PLUM procedure in SPSS 21) with the negative log-log link function to estimate multivariate predictive equations

Stepwise regression analysis

The final regression model as presented in Table 2 in the article was built in eleven steps.

Model 1 ($df = 2$): includes the constant (threshold in ordinal logistic regression), and the sample stratification criteria age and gender.

Model 2 ($df = 3$): contrasts the divorcees with the respondents married (Hypothesis 1a).

Model 3 ($df = 4$): adds a dummy variable for being remarried after a divorce (Hypothesis 2a); in this model married for the first time is the category of reference.

Model 4 ($df = 3$): the variables pertaining to marital status are replaced by the supportiveness of the partner relationship (Hypothesis 3a).

Model 5 ($df = 5$): includes both the marital status dummy variables and supportiveness of the partnership.

Model 6 ($df = 7$): the main effect of the survey year is included by two dummy variables.

Models 7 through 9 ($df = 9$): include additionally interaction terms of the dummy variables for survey year and for being divorced, being remarried, and supportiveness of the partnership, respectively (Hypotheses 1b, 2b, and 3b).

Model 10 ($df = 13$): includes age and gender, and all main and interaction effects.

Model 11 ($df = 18$): includes also covariates.

On the basis of Model 11 we computed scale value probabilities, that is the likelihood of respondents to be in the various loneliness categories, for various values of the exogenous variables of interest. We computed these marginal effects at every observation and present the sample average of the individual marginal effects (Average Marginal Effects; AME). In contrast to the method keeping the mean of other exogenous variables (Marginal Effect at Mean; MEM), probabilities computed with this method derived from Model 11 (with covariates) are similar to those computed on basis of Model 10 (without covariates).

Table S2 presents estimates for variables included in hypotheses for Models 2 through 11. Estimates for the constant, age and gender, and (for Model 11) covariates are not shown.

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Table S2. Estimates for Variables Included in Hypotheses in the Various Models

Predictor	Model	Emotional Loneliness		Social Loneliness	
		B	SE B	B	SE B
Divorced (Hypothesis 1a)	2	0.69***	0.09	0.38***	0.09
	3	0.70***	0.10	0.40***	0.09
	5	0.52***	0.10	0.21*	0.10
	6	0.52***	0.10	0.23*	0.10
	7	0.53***	0.10	0.26**	0.10
	8	0.52***	0.10	0.23*	0.10
	9	0.52***	0.10	0.24*	0.10
	10	0.53***	0.10	0.26**	0.10
	11	0.26	0.15	0.09	0.14
	3	0.07	0.14	0.24*	0.12
	5	0.13	0.14	0.28*	0.12
Remarried (Hypothesis 2a)	6	0.14	0.14	0.30*	0.12
	7	0.13	0.14	0.30*	0.12
	8	0.14	0.15	0.31**	0.12
	9	0.13	0.14	0.30*	0.12
	10	0.13	0.15	0.31*	0.12
	11	-0.13	0.18	0.15	0.15
Supportive partnership (Hypothesis 3a)	4	-0.56***	0.07	-0.52***	0.06
	5	-0.48***	0.07	-0.49***	0.07
	6	-0.48***	0.08	-0.49***	0.07
	7	-0.48***	0.08	-0.49***	0.07
	8	-0.48***	0.08	-0.49***	0.07
	9	-0.48***	0.08	-0.49***	0.07
	10	-0.47***	0.08	-0.49***	0.07
	11	-0.39***	0.08	-0.35***	0.07
2002 Observation	6	0.05	0.08	-0.08	0.08
	7	0.06	0.08	-0.07	0.08
	8	0.05	0.08	-0.08	0.08
	9	0.07	0.09	-0.07	0.08
	10	0.08	0.09	-0.07	0.08
	11	0.12	0.09	-0.11	0.08
2012 Observation	6	-0.18*	0.09	-0.20*	0.08
	7	-0.21*	0.09	-0.20**	0.08
	8	-0.18*	0.09	-0.20*	0.08
	9	-0.17	0.09	-0.20*	0.08
	10	-0.19*	0.09	-0.21**	0.08
	11	0.04	0.10	-0.05	0.08

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Table S2. Estimates for Variables Included in Hypotheses in the Various Models (continued)

Predictor	Model	Emotional Loneliness		Social Loneliness	
		B	SE B	B	SE B
Divorced * 2002 Observation (Hypothesis 1b)	7	-0.21	0.24	-0.50*	0.23
	10	-0.17	0.25	-0.53*	0.24
	11	-0.14	0.25	-0.54*	0.24
Divorced * 2012 Observation (Hypothesis 1b)	7	0.27	0.24	-0.24	0.23
	10	0.36	0.25	-0.24	0.24
	11	0.41	0.25	-0.23	0.24
Remarried * 2002 Observation (Hypothesis 2b)	8	-0.01	0.36	-0.14	0.30
	10	-0.05	0.36	-0.20	0.30
	11	0.01	0.36	-0.16	0.29
Remarried * 2012 Observation (Hypothesis 2b)	8	0.00	0.37	-0.07	0.30
	10	0.03	0.38	-0.10	0.30
	11	0.01	0.38	-0.14	0.30
Supportive partnership * 2002 Observation (Hypothesis 3b)	9	0.14	0.17	0.03	0.15
	10	0.11	0.17	-0.04	0.16
	11	0.12	0.17	-0.06	0.16
Supportive partnership * 2012 Observation (Hypothesis 3b)	9	0.12	0.18	0.04	0.16
	10	0.20	0.19	0.01	0.16
	11	0.22	0.19	0.01	0.16

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Gender differences

We test whether there are gender differences in the prediction of loneliness, despite the low numbers of divorced and remarried respondents (Table S3). The regression results are shown in Tables S4 and S5. We tested coefficient equality for men and women by calculating the z statistic (Clogg, Petkova and Haritou, 1995). The z statistic is significant for one parameter only.

Table S3. Sample Size by Gender and Survey Year

	Males			Females		
	1992	2002	2012	1992	2002	2012
Divorced	28	43	49	37	64	52
Remarried	21	36	36	18	32	33
First Marriage	397	333	333	398	342	330

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Table S4. Ordinal Logistic Regression of Emotional Loneliness, Stratified by Gender

	Males		Females		z
	B	SE B	B	SE B	
Cut point 1	1.672	1.070	0.486	1.053	0.8
Cut point 2	2.496*	1.071	1.150	1.054	0.9
Cut point 3	3.047**	1.073	1.619	1.055	0.9
Age	0.026	0.018	0.015	0.018	0.4
Divorced	0.372	0.219	0.154	0.219	0.7
Remarried	0.021	0.240	-0.333	0.285	0.9
Supportive partnership	-0.352**	0.111	-0.408***	0.113	0.4
2002 Observation	0.094	0.127	0.111	0.127	-0.1
2012 Observation	0.154	0.132	-0.091	0.153	1.2
Divorced * 2002 Observation	-0.064	0.384	-0.272	0.335	0.4
Divorced * 2012 Observation	0.174	0.370	0.603	0.356	-0.8
Remarried * 2002 Observation	0.042	0.498	-0.078	0.523	0.2
Remarried * 2012 Observation	0.236	0.489	-0.474	0.619	0.9
Supportive partnership * 2002 Observation	0.393	0.261	-0.135	0.244	1.5
Supportive partnership * 2012 Observation	0.275	0.263	0.117	0.284	0.4
Years in current marital status	-0.010	0.008	-0.015	0.008	0.4
Other supportive relationship	-0.022	0.157	0.096	0.134	-0.6
Network size	-0.021***	0.006	-0.026***	0.006	0.5
Educational level	-0.022	0.015	-0.053**	0.018	1.3
Religious affiliation	0.092	0.106	-0.113	0.103	1.4

Notes: Link function is negative log-log. For men, -2 log likelihood for the intercept-only model is 2384.2 and for the full model 2317.7. Likelihood-ratio test $X^2_{(17)} = 66.5$ ***. For women, -2 log likelihood for the intercept-only model is 2491.0 and for the full model 2387.5. Likelihood-ratio test $X^2_{(17)} = 103.5$ ***.

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

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Table S5. Ordinal Logistic Regression of Social Loneliness, Stratified by Gender

	Males		Females		z
	B	SE B	B	SE B	
Cut point 1	0.139	0.892	0.228	1.001	-0.1
Cut point 2	0.962	0.893	1.140	1.002	-0.1
Cut point 3	1.658	0.894	1.810	1.004	-0.1
Age	0.009	0.015	0.002	0.018	0.3
Divorced	0.029	0.192	0.182	0.209	-0.5
Remarried	0.142	0.194	0.165	0.244	-0.1
Supportive partnership	-0.338***	0.092	-0.351***	0.104	0.1
2002 Observation	-0.090	0.105	-0.166	0.120	0.5
2012 Observation	0.017	0.109	-0.143	0.138	0.9
Divorced * 2002 Observation	-0.007	0.350	-1.006**	0.326	2.1*
Divorced * 2012 Observation	-0.095	0.344	-0.287	0.338	0.4
Remarried * 2002 Observation	-0.058	0.384	-0.277	0.462	0.4
Remarried * 2012 Observation	-0.085	0.387	-0.225	0.481	0.2
Supportive partnership * 2002 Observation	0.129	0.217	-0.316	0.234	1.4
Supportive partnership * 2012 Observation	-0.035	0.218	0.030	0.255	-0.2
Years in current marital status	-0.002	0.007	-0.002	0.008	0.0
Other supportive relationship	-0.348*	0.142	-0.253	0.139	-0.5
Network size	-0.040***	0.005	-0.036***	0.006	-0.6
Educational level	0.002	0.012	0.002	0.017	0.0
Religious affiliation	-0.345***	0.090	-0.142	0.097	-1.5

Notes: Link function is negative log-log. For men, -2 log likelihood for the intercept-only model is 2946.9 and for the full model 2796.5. Likelihood-ratio test $X^2_{(17)} = 150.4$ ***. For women, -2 log likelihood for the intercept-only model is 2620.4 and for the full model 2513.2. Likelihood-ratio test $X^2_{(17)} = 107.2$ ***.

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

References

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