Social timing of retirement and depressive symptoms after six years: is age just a number?

Submitted:
Abstract

Objectives: It was examined whether (not) adhering to individual and societal expectations regarding retirement age (social timing) related to depressive symptoms after up to six years in Germany. In particular, we focused on reasons for retirement (i.e. health-related retirement and involuntary retirement) and on how these affect the association of social timing with depressive symptoms.

Methods: Retired (n=175; 43-64 years) and employed (n=406; 48-64 years) participants of the 2002 and 2008 waves of the nationally representative German Ageing Survey were examined. Linear regression analysis was applied. Interaction terms of retirement age with retirement status, health-related retirement, and retirement voluntariness (i.e. job loss and retirement planning) were tested.

Results: Among retiring respondents, most (38%) retired on-time (59-61 years). Retirement age and retirement status did not interact, so social timing of retirement was not associated with depressive symptoms. Only retirement age and job loss interacted. Respondents who retired late (62-64 years) due to job loss had significantly more depressive symptoms compared to employed age peers. An association was observed between health-related retirement and more depressive symptoms compared to employed age peers in all age groups. This association disappeared after adjusting for health.

Conclusion: Individual and societal expectations regarding retirement age did not affect depressive symptoms. Workers who retired due to job loss at a relatively older age had more depressive symptoms compared to continuously employed age peers, possibly because they most likely retired involuntarily and found it difficult to become reemployed.
Introduction

Western countries have performed various policy reforms to postpone the legal retirement age and reduce the possibility of early retirement. It is still unknown whether and under which circumstances health is affected by the timing of retirement of older workers. Depressive symptoms have been shown to be a common health problem in this age group (Sonnenberg et al 2000) and negatively impact quality of life (Beekman et al 2002) and health care use (Koopmans et al 2005; Beekman et al 2002). An improved comprehension of the effect of retirement age on depressive symptoms may aid the design of retirement age policies. If for instance early retirement has a detrimental effect on depressive symptoms, this would speak against early retirement.

Retirement signifies a new stage in life in which individuals no longer have an income or daily structure from employment, irrespective of retirement timing. Such changes may promote psychological stress and have therefore been argued to increase depressive symptoms (e.g. Bossé et al 1987). Indeed, stress from major life events such as retirement may result in poor mental health (Kessler 1997). In contrast to these potentially harmful changes, retirement may also release individuals from stressful work demands (Oksanen et al 2011). Moreover, leisure time increases, enabling retirees to pursue their own interests (Mojon-Azzi et al 2007) and adhere to medical advice (Ekerdt et al 1983). Therefore, retirement may not necessarily be a stressful event and could result in less or more depressive symptoms.

The effect of social timing of retirement on health

Whether retirement results in less or more depressive symptoms may depend on the social timing of retirement. Social timing is the timing of significant life events according to the connected expectations (Elder 1994; Marshall 2009). In general, if a life transition occurs in accordance with timing expectations, the life transition is perceived to be ‘on-time’. If not, i.e. the transition occurs earlier or later, the life transition is perceived to have taken place ‘off-time’ (Neugarten et al 1965; Marshall 2009; Calvo et al 2013; Quick & Moen 1998). The on- and off-time hypothesis can be applied to retirement as well. Individual and societal expectations exist for when, and specifically at which age, life transitions like retirement should occur (Neugarten et al 1965; Elder 1994). These expectations are on the one hand shaped by institutional incentives and constraints of retirement (Radl 2013) because the age at which retirement takes place is inevitably partly determined by such incentives and constraints (Settersten & Mayer 1997; Radl 2013; Borsch-Supan et
al 2009). On the other hand, people may develop a moral responsibility (i.e. norms about what they feel is the most appropriate behaviour) regarding retirement age, which in turn is based on the retirement age that is made possible by incentives and constraints. Therefore, expectations about the age-appropriateness of retirement go beyond a self-interested expectation (Kohli 1987; Radl 2013). As both norms and policies are emphasized, this approach has been defined as a ‘cultural-institutional’ approach (e.g. Calvo et al 2013; Radl 2013).

Legal sanctions, such as pension cuts, or normative sanctions may occur if life transitions such as retirement occur earlier or later than individual and societal expectations (Marshall 2009; Neugarten et al 1965). Retiring too early or too late may have normative sanctions in that society and individuals condemn the retirement timing. Also, these norms are used by individuals to assess their own transition. Off-time retirement may create feelings of being different from the norm (Mortimer et al 2005) and unfavourable social comparisons with age peers who continued employment (Van Solinge & Henkens 2007) or have already retired when retirement was late. On-time retirement may provide peer support and less stress (Van Solinge & Henkens 2007). Therefore, deviating from the normative age at retirement might result in psychological stress and, consequently, affect depressive symptoms.

Recent studies suggest that social timing of retirement, i.e. individual and societal expectations regarding the retirement age, may be a relevant determinant of the health effect of retirement (Rijs et al 2012; Calvo et al 2013). Regarding depressive symptoms specifically, Calvo and colleagues (2013) showed that retirement before the on-time retirement age (i.e. early retirement) was associated with an increase in depressive symptoms. Retirement at or after the on-time retirement age (i.e. late retirement) had no significant effect (Calvo et al 2013). In a previous study (Rijs et al 2012), poorer self-perceived health was observed after early and late off-time retirement and better self-perceived health after on-time retirement compared to age peers who continued working.

Social timing of retirement in Germany
In the current study, we examine whether retirement timing affects depressive symptoms in the German context. The age at which Germans retire has increased during the last decade (from well below 60 to on average 62 years). However, the retirement age remains heterogeneous, so that one can distinguish between early, on-time, and late retirement. It is especially important to examine whether and under which circumstances retirement timing in Germany affects depressive symptoms, because there is a paradigmatic shift in the German policies on employment of older people and on transition into retirement. While early
retirement was accepted up to the 1990s, policy reforms aim to prolong working lives of older workers (Bäcker et al. 2010, BMAS 2010) and thereby possibly change the social timing of retirement in Germany.

The age at which retirement is viewed as most appropriate varies between individuals, countries, and over time (e.g. Kappelle & Deeg 2010; Radl 2013). The ideal retirement age reported by two thirds of interviewed Western Europeans aged 50 and 77 years in 2006 ranged between the age of 60 and 65 years for men and somewhat lower for women, suggesting a normative retirement age exists (Radl 2013). Settersten and Hagestad (1996) showed that on average, the age deadline for retirement was reported to be 61.3 years by Americans aged 18 years and older. Results of both studies suggest that individuals do have expectations at which age a retirement transition should occur. Although variation exists regarding the appropriate retirement timing, according to the cultural-institutional approach, retiring around the age at which most peers retire may most likely be viewed as the consensus on-time retirement age and deviating from this age as the consensus off-time retirement age (Calvo et al 2013). In the current study, German data from 2002 through 2008 were examined. Between 2004 and 2009, the average retirement age was 61.8 years for men and 60.5 years for woman in Germany (OECD 2011). Therefore, retirement around the age of 61 was considered to most likely be the on-time retirement age.

We based our hypothesis on the theory of social timing: adhering to individual and societal expectations regarding retirement age will not result in more depressive symptoms and not adhering to those expectations will result in more depressive symptoms compared to those who continue employment.

Health-related retirement and involuntary retirement

When investigating the relationship of social timing of retirement with depressive symptoms, two factors need to be considered. First, poor physical or mental health may be a reason for retirement (e.g. Van de Berg et al 2010). Therefore, poor pre-retirement health may account for a possible effect of retirement on depressive symptoms. Indeed, studies show that mental health was poor after retirement that was caused by poor mental (Oksanen et al 2011) or general (i.e. mental as well as physical) health (Jokela et al 2010). Second, if an effect of social timing on depressive symptoms after retirement exists, it may be affected by retirement voluntariness. Involuntary retirement most likely takes place earlier than expected. It may disrupt (financial) retirement plans and is, therefore, potentially psychologically harmful. Mental health was indeed observed to deteriorate after involuntary retirement, job loss (e.g. Gallo et al 2000; Mandal & Roe 2008) or when retirement was earlier than expected (Falba et al 2009).
Aim and hypotheses
Our aim is to provide a better understanding of the consequences of age at retirement on depressive symptoms. We hypothesize that social timing of retirement (i.e. individual and societal expectations regarding retirement timing) will affect depressive symptoms after retirement; adhering to those expectations regarding retirement age (i.e. on-time retirement) will not increase depressive symptoms and not adhering to those expectations (i.e. off-time retirement) will increase depressive symptoms (hypothesis 1). In addition, we hypothesize that more depressive symptoms will be observed after health-related retirement and involuntary retirement, independent of retirement age (hypothesis 2). Finally, if social timing is at play, we hypothesize that the effect of on- and off-time retirement on depressive symptoms will be affected by health-related retirement and involuntary retirement (hypothesis 3).

Methods

Study sample
The German Ageing Survey (Deutscher Alterssurvey; DEAS) is an ongoing population-based study (Engstler & Schmiade 2013). The first DEAS survey wave took place in 1996, the second, third, and fourth wave followed in 2002, and 2008. Respondents were questioned in detail on their living situation, occupational or retirement status, social participation, leisure activities, economic and housing situation, social contacts, health, well-being, and life-goals. The baseline sample (age 40 to 85 years) was drawn by means of a national probability sampling technique with stratified sampling by age, gender, and place of residence (Eastern or Western Germany). About 50% of the individuals contacted agreed to an interview (n=4,838) and 83.4% of them additionally completed a questionnaire (n=4,034).

Data from 2002 and 2008 was regarded as baseline and follow-up data in the current study. As shown in Figure 1, continuously employed respondents were those who worked ≥8 hours weekly in 2002 and 2008. Individuals going into retirement were those who worked ≥8 hours weekly in 2002 and answered ‘yes’ when asked ‘Are you currently receiving an old-age pension or any retirement benefits from your previous job?’ in 2008. Those that reported not to be retired or those that were <60 years, were asked whether they were employed or not and, if not, for which reason. Individuals not working for various reasons (i.e. unemployed, in an early retirement scheme with or without disability pension, homemaker, or ‘other’) were also included as individuals who retired. In total, n=175 retired and n=406 continuously employed respondents were examined.
Dependent variable

Depressive symptoms (CES-D) – The German translation of a 15-item version self-report scale of the Center for Epidemiologic Studies Depression Scale (CES-D; Radloff 1977; Hautzinger & Bailer, 1993) was used to measure depressive symptoms. A sum score was calculated. A high score entailed more depressive symptoms.
Independent variables

Age at retirement / employment - Age in 2008 was examined as the age at employment for employed individuals (48-64 years). Age at retirement (43-64 years) was calculated by using age in 2008 and year of retirement. Between 2004 and 2009, the average retirement age was 61.8 years for men and 60.5 years for woman in Germany (OECD 2011). Therefore, age at retirement in the current study was categorised as 43-58 (early), 59-61 (on-time), and 62-64 (late). Respondents were asked about both the date at which they stopped working (i.e. at the occupation which they have performed the larger part of their life) and started to receive retirement benefits. These dates coincided for n=55. If they did not (n=115), we only considered the date at which they started to receive retirement benefits as the retirement date when respondents reported to be employed immediately prior to benefits receipt (i.e. after 2002; n=18). A retirement age was imputed of 0,5*(date at which they started to receive retirement benefits-2002) if the date at which they stopped work was missing and they reported to be unemployed prior to benefits receipt (n=5).

Health-related retirement and retirement voluntariness - Retired respondents were asked the question ‘Why did you stop working in your primary career job?’ One possible answer category was ‘For health reasons’ which was used to determine whether retirement was health-related. Two additional answer possibilities were ‘For internal company reasons’ and ‘I lost my job’. These were used to construct the variable ‘job loss’, which is examined as a proxy for involuntary retirement. The difference between planned (as reported in 2002) and actual retirement age was examined as another proxy for voluntariness to determine whether retirement matched retirement plans or was later or earlier than expected.

Covariates - The following covariates were identified in research that may influence the relationship between retirement and mental health, although few studies examined a wide range of these covariates (Wang 2007): gender (e.g. Reitzes & Mutran 2004), partner status (e.g. Van Solinge & Henkens 2007), level of education (Reitzes & Mutran 2004), hours of work (Van Solinge & Henkens 2005), physical functioning and diseases (Van de Berg et al 2010), mastery (e.g. Hobfoll 2002), and distress from life events (Van Solinge 2007).

Gender was coded as men (0) or women (1), partner status as no (0) versus yes (1), and level of education as low/intermediate (0=no vocational education or basic vocational education), higher intermediate (1=higher vocational education), and high (2=university of applied sciences, university, technical university, or higher). Weekly hours of work including overtime was measured by self-report.
Physical functioning in 2002 was examined by asking respondents to indicate the degree of impairment (Yes, limited a lot, Yes, limited a little, No, not limited at all) considering ten activities (e.g. climbing stairs, bending, bathing) (SF-36-Subskala; Bullinger & Kirchberger 1998). A sum score was computed (range: low (0) - good (100)). To measure number of physical diseases in 2002, respondents reported whether they had one of eleven diseases (e.g. cardiovascular diseases, joint diseases, diabetes).

As a proxy for mastery, we examined agency (range 0-11). Agency was measured with questions on successful outcomes (‘agency’ facet; e.g. ‘I energetically pursue my goals’) from the Dispositional Hope Scale (8 items; Snyder et al 1991). A sum score for distress from life events (Tennant & Andrews 1976) that occurred between 2002 and 2008 (i.e. widowhood (distress score= +83), marriage (+5), divorced (+54), death of a child (+80), sibling (+57), mother (+57) or father (+57), and loss in hearing (+8) or vision (+8)) was computed (range: 0-148)).

**Statistical analyses**

Since residuals of depressive symptoms were skewed, depressive symptoms were transformed (ln(depressive symptoms+1)). Linear regression analysis was applied. To test our first hypothesis, a modifying effect of retirement age (i.e. early, on-time, late) on the association of retired versus employed with depressive symptoms after six years was examined by including an interaction term of retirement age with retirement status (i.e. 0=employed; 1=retired). Our second hypothesis was tested by examining health-related retirement (i.e. 0=employed; 1=not health-related retirement; 2=health-related retirement), job loss (i.e. 0=employed; 1=not due to job loss; 2=due to job-loss) and retirement planning (i.e. 0=employed; 1=later than expected; 2=earlier than expected; 3=matched retirement plan) as independent variables, adjusted for baseline depressive symptoms and age at retirement. Reasons for retirement were examined in retirees only. We tested our third hypothesis by including an interaction term of retirement age with health-related retirement and retirement voluntariness. Thus, we compared each group with a specific reason for retirement to the continued employed and examined whether age modified the relationship. The interaction terms were added to models which were adjusted for baseline depressive symptoms and retirement age, as well as relevant covariates. If covariates were associated (criterion: p<0.20) with the outcome (i.e. depressive symptoms) and the determinant (i.e. retirement status, health-related retirement, retirement voluntariness) and, after including the covariate, the regression coefficient of the determinant changed at least 10%, the covariate was considered to be relevant. We only showed stratified results if
a significant (criterion: p<0.10) interaction term was found. All other associations were considered significant if p<0.05.

Missing data of categorical variables, i.e. health-related retirement (n=11), job loss (n=11), retirement planning (n=22), physical demands (n=1), marital status (n=1), death of a sibling (n=9) or a child (n=7), were imputed by examining crosstabs including level of education, gender, and the categorical variable of those with data. Missing data of continuous variables, i.e. only physical functioning (n=4), were imputed by applying linear regression analysis, including physical functioning as dependent and gender and level of education as independent variables. Missing data of multi-item variables, i.e. depressive symptoms (n=26) and agency (n=11), were imputed by the mean score on available items, if respondents had missing data on ≤2 items.

Results

Table 1 shows descriptive information of retired compared to employed respondents. Retirees were significantly older at baseline and most often retired between 59-61 years (i.e. at the on-time age), while employed respondents were most often between the age of 43-58 years. Compared to employed respondents, retirees worked significantly fewer hours per week at baseline, had lower (i.e. poorer) baseline physical functioning, and more physical diseases at baseline. No additional differences in descriptive information were observed.

The interaction term of retirement age with retirement status did not show significance. Thus, no evidence for hypothesis 1 was found. Additionally, as Table 2 shows, no association was observed between retirement status and depressive symptoms, adjusted for retirement age and baseline depressive symptoms.

Table 2 also shows that after health-related retirement, significantly more depressive symptoms after up to six years were observed compared to individuals who continued employment. However, this association disappeared after additionally adjusting for baseline physical functioning and diseases. No association was observed between retirement voluntariness (i.e. job loss and retirement planning) and depressive symptoms, independent of baseline depressive symptoms and age at retirement. Therefore, hypothesis 2 was partly confirmed.

The interaction terms of retirement age with health-related retirement and retirement planning were not significant. A significant interaction was found between retirement age and job loss. Respondents who retired due to the loss of their job, only had significantly more depressive symptoms after up to six years.
compared to employed age peers if they retired late. No association was observed with depressive symptoms in any of the age groups for those that retired for other reasons than job loss. Therefore, no evidence was found for hypothesis 3.

Discussion

The current study shows that age at retirement (i.e. early, on-time or late retirement) in Germany was not associated with depressive symptoms as retirement did not interact with retirement age. Also, this association was not affected by health-related retirement or retirement voluntariness. An effect was observed for health-related retirement and retirement because of job loss, but the latter was only found in late retirees. As the effect on depressive symptoms in late retirees was only
Table 2. The effect of retirement status, health-related retirement, voluntariness of retirement, and age at retirement on depressive symptoms after six years.

<table>
<thead>
<tr>
<th>Retirement age</th>
<th>Retirement status</th>
<th>Depressive symptoms 2008</th>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>43-63</td>
<td>Retired (n=175) vs Employed (n=406)</td>
<td>0.07&lt;sup&gt;1&lt;/sup&gt;</td>
<td>-06 to 21</td>
<td>283</td>
<td>0.05&lt;sup&gt;2&lt;/sup&gt;</td>
<td>-08 to .19</td>
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<td></td>
<td>Not retired for health reasons (n=138) vs employed (n=406)</td>
<td>0.01&lt;sup&gt;3&lt;/sup&gt;</td>
<td>-14 to 15</td>
<td>.925</td>
<td>-0.01&lt;sup&gt;3&lt;/sup&gt;</td>
<td>-14 to .15</td>
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<td></td>
<td>Health-related retirement (n=37) vs employed (n=406)</td>
<td>0.29&lt;sup&gt;4&lt;/sup&gt;</td>
<td>.06 to 53</td>
<td>.014</td>
<td>0.19&lt;sup&gt;5&lt;/sup&gt;</td>
<td>-06 to .43</td>
</tr>
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<td></td>
<td>Did not retire due to job loss (n=126) vs employed (n=406)</td>
<td>0.06&lt;sup&gt;6&lt;/sup&gt;</td>
<td>-09 to 22</td>
<td>404</td>
<td>0.004&lt;sup&gt;7&lt;/sup&gt;</td>
<td>-15 to .15</td>
</tr>
<tr>
<td></td>
<td>Lost job (n=49) vs employed (n=406)</td>
<td>0.09&lt;sup&gt;8&lt;/sup&gt;</td>
<td>-11 to 30</td>
<td>.371</td>
<td>0.10&lt;sup&gt;9&lt;/sup&gt;</td>
<td>-11 to .30</td>
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<td></td>
<td>Early</td>
<td></td>
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<td></td>
<td>0.08&lt;sup&gt;10&lt;/sup&gt;</td>
<td>-18 to .34</td>
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<td></td>
<td>Lost job (n=23) vs employed (n=321)</td>
<td></td>
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<td></td>
<td>0.06&lt;sup&gt;11&lt;/sup&gt;</td>
<td>-22 to .33</td>
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<td></td>
<td>On-time</td>
<td></td>
<td></td>
<td></td>
<td>0.02&lt;sup&gt;12&lt;/sup&gt;</td>
<td>-28 to .23</td>
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<td></td>
<td>Lost job (n=14) vs employed (n=58)</td>
<td></td>
<td></td>
<td></td>
<td>0.04&lt;sup&gt;13&lt;/sup&gt;</td>
<td>-58 to .20</td>
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<td></td>
<td>Late</td>
<td></td>
<td></td>
<td></td>
<td>0.19&lt;sup&gt;14&lt;/sup&gt;</td>
<td>-58 to .20</td>
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<tr>
<td></td>
<td>Lost job (n=29) vs employed (n=321)</td>
<td></td>
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<td></td>
<td>0.04&lt;sup&gt;15&lt;/sup&gt;</td>
<td>-23 to .41</td>
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<td></td>
<td>Lost job (n=45) vs employed (n=27)</td>
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<td></td>
<td>0.06&lt;sup&gt;16&lt;/sup&gt;</td>
<td>-23 to .41</td>
</tr>
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<td></td>
<td>Retirement was later than expected (n=32) vs employed (n=406)</td>
<td>0.21</td>
<td>-06 to .48</td>
<td>.122</td>
<td>0.20&lt;sup&gt;17&lt;/sup&gt;</td>
<td>-07 to .46</td>
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<td></td>
<td>Retirement was earlier than expected (n=105) vs employed (n=406)</td>
<td>0.09</td>
<td>-06 to .24</td>
<td>.252</td>
<td>0.04&lt;sup&gt;18&lt;/sup&gt;</td>
<td>-11 to .19</td>
</tr>
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<td></td>
<td>Retirement matched plan (n=38) vs employed (n=406)</td>
<td>-0.07</td>
<td>-31 to .17</td>
<td>.552</td>
<td>-0.07&lt;sup&gt;19&lt;/sup&gt;</td>
<td>-31 to .17</td>
</tr>
</tbody>
</table>

<sup>1</sup>Adjusted for baseline depressive symptoms and age at retirement.  
<sup>2</sup>Adjusted for baseline depressive symptoms, age at retirement, and baseline physical function.  
<sup>3</sup>Adjusted for baseline depressive symptoms, age at retirement, health-related retirement, and physical diseases.  
<sup>4</sup>Adjusted for baseline depressive symptoms, age at retirement, the life event distress score, baseline physical functioning, hours of work, and physical diseases.  
<sup>5</sup>Adjusted for baseline depressive symptoms, the life event distress score, baseline physical functioning, hours of work, and physical diseases.  
<sup>6</sup>Adjusted for baseline depressive symptoms, age at retirement, baseline physical functioning, hours of work, and the life event distress score.
observed in those who retired due to job loss, not in those who retired for other reasons than job loss, this is unlikely to be related to social timing. Therefore, we conclude that there was no evidence for hypothesis 1 or 3.

In contrast to our findings, evidence for the relevance of social timing of retirement for health has been found in the Netherlands (Rijs et al 2012) and America (Calvo et al 2013). Possibly, differences in retirement policies explain why evidence for social timing was found in the Netherlands and America, but not in Germany. However, clear cross-national comparisons cannot be made because of the complexity and differences in retirement policies. In addition, although Calvo and colleagues (2013) have made good efforts to exclude respondents who were retired for health reasons (by only including individuals who retired using an early retirement scheme offered by employers or retired at full Social Security’s retirement age), they cannot be sure that retirement was not caused by poor health which may have biased their results. Moreover, note that Rijs and colleagues (2012) examined self-perceived health as opposed to depressive symptoms; social timing might simply affect self-perceived health but not depressive symptoms.

Our results show that health-related retirement increased the likelihood of depressive symptoms, independent of retirement timing, in line with part of our second hypothesis. The observed association disappeared when baseline physical health (i.e. physical functioning and diseases) of employed and health-related retirees was controlled for. Therefore, the association may reflect selection as opposed to causation (Jokela et al 2010; Oksanen et al 2011); more depressive symptoms are only observed after health-related retirement because of poor health before the retirement transition (i.e. selection), not because of a detrimental effect of health-related retirement (i.e. causation).

Involuntary retirement may cause poorer retirement adjustment (Van Solinge and Henkens 2005), disrupted financial retirement plans (Blau 2009), and, arguably, feelings of being disregarded or incompetent. Consequently, psychological stress and therefore poorer mental health may arise. Previous studies show that especially above age 50, unemployment is indeed associated with worse mental (Paul & Moser 2009) and subjective physical health (Romeo Gordo 2006). We add to these previous studies by showing that job loss among older workers, examined as a proxy for involuntariness, may particularly be detrimental at the age of 62 to 64. An explanation could be that it is especially difficult to become reemployed for individuals nearing statutory retirement age (Gallo et al 2000), indicating that efforts need to be focused on keeping these individuals employed.

Although previous research showed that retirement planning, i.e. retiring earlier than expected, is associated with more depressive symptoms (Falba et al
2009), no association of this event with depressive symptoms was observed in our study. One may expect that, particularly at the age of 62 to 64, those who retired earlier than expected also have difficulty to become reemployed. Although we can only speculate, those retired earlier than expected may include individuals who, despite the unexpected factor, were free to accept or decline the early retirement offer and wanted and were able to retire. It is unlikely that those who reported to have retired due to job loss had a choice in the matter. Also, Van Solinge & Henkens (2007) showed that perceptions of involuntary retirement were only present when retirement was more than 2 years earlier than planned, suggesting we may have found no association because we did not examine how many years between planned and actual retirement age existed. As only health-related retirement and not involuntary retirement was associated with depressive symptoms at all ages (i.e. aged 43-64), we confirmed part of hypothesis 2.

To our knowledge, this is the first study that examined social timing of retirement in Germany in combination with various reasons for retirement, which are essential in determining the association of the retirement transition with any health measure. We examined a wide range of covariates which potentially affect the examined relationships and we were able to determine the exact retirement age. Moreover, we were able to examine the effect of retirement age, instead of the trajectory of depressive symptoms resulting from ageing, by including a control group of employed age peers. Another strength of our study is that we performed several sensitivity analyses (results not tabulated). We determined that, in all examined relationships, retirement duration, imputing missing data for depressive symptoms, and including respondents younger than 55 years did not alter our results. We determined this by excluding respondents who retired ≤2 years ago, who had imputed data for depressive symptoms, and who retired at ages <55 years in separate analyses. Also, additionally adjusting for age at baseline in the model where age at retirement had a modifying effect did not show to affect the relationship. Therefore, although employed respondents were younger compared to retired, age did not show to affect the relationship. Finally, additionally adjusting for work demands (i.e. physical demands, job pressure, new job responsibilities) also did not affect our results.

Some limitations of the current study need to be discussed. First, small study samples were examined limiting statistical power. Second, it is difficult to determine causal relationships, as with all observational studies. Although adjustments were made for baseline depressive symptoms, information on whether an increase of depressive symptoms preceded or followed retirement during the examined 6-year follow-up is lacking. Third, we investigated retirement
voluntariness by examining retirement because of job loss and internal company reasons, but more certainty about the voluntariness may be provided by explicitly asking respondents whether their retirement was involuntary, as for instance done by Paul and Moser (2009). Fourth, we were able to examine whether baseline poor physical health and baseline depressive symptoms affected our results, but we were unable to distinguish between retirement for mental or physical health reasons, which potentially shapes the relationship with mental health (Oksanen et al 2011).

More research is needed on social timing of retirement in Germany. Other outcomes such as self-perceived health or psychological stress may be investigated. Also, other age categories may be explored as off-time retirement has been defined using different cut-offs, for instance as retirement before the official early retirement age (Van Solinge & Henkens 2007). In our study, retirement age was categorized based on the average German retirement age. As a 6 year follow-up was examined, it is possible that the on-time age has shifted over time due to retirement policies, also underlining the need to explore other age categories.

In conclusion, our results indicate that it is not so much social timing but health-related retirement and job loss that shape the effect on mental health. This may be good news for policy makers as individuals who retire off-time are, at the least, not necessarily worse off regarding their mental health, provided they do not retire involuntarily or for health-reasons. Another conclusion is that continued employment was not harmful for mental health. If anything, working longer may be beneficial for mental health in those who want to continue employment. Regarding the association between age at retirement and depressive symptoms, it seems that age is more than just a number, but only when retirement takes place because of job loss.

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CHAPTER 6

References


