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Marital breakup in later adulthood and self-rated health: a cross-sectional survey in Switzerland

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Abstract

Objectives This research examines the impact of relationship status on self-rated health (SRH) by taking into account intrapersonal and social resources.

Methods Data stem from a Swiss-based survey of 1355 participants aged 40–65 years. Three groups are compared: continuously married ($n = 399$), single divorcees ($n = 532$) and repartnered divorcees ($n = 424$). Linear regression models are used to examine the predictive role of relationship status on SRH and to investigate the moderating role of intrapersonal and social resources on SRH.

Results Single divorcees show the lowest SRH scores, whereas their repartnered counterparts reported scores comparable to the continuously married—even after controlling for socio-demographic and economic variables. Although single divorcees reported higher levels of loneliness and agreeableness in addition to lower levels of resilience when compared with the other groups, none of these variables had a significant moderation effect on SRH.

Conclusions Our results underscore the positive effect of relationship status on SRH, and contribute new insights on the impact of later-life divorce. Given the growing number of divorcees, related public health challenges are likely to increase.

Keywords Self-rated health · Relationship status · Marital breakup · Later adulthood · Resources

Introduction

Empirical research has emphasized the strong link between marital status and health. In general, separated, divorced or widowed persons have poorer physical functioning, lower self-rated health and a higher mortality risk than their married counterparts (Hughes and Waite 2009; Staehelin et al. 2012). Marital breakup is also generally associated with increased depressive symptoms, higher psychological stress and lower life satisfaction (Lucas 2005). More recent studies, however, suggest that relationship status (i.e. having a partner or not), and not marital status per se, has an impact on health outcomes. For example, taking both marital status and relationship status into account renders no significant differences with regard to self-rated health (Artazcoz et al. 2011). In addition, studies adopting a life course perspective, with an emphasis on changes in the social context, reveal that the consequences of marital dissolution may be more important than marital status per se in considering health outcomes (Williams and Umberson 2004; Liu 2012). Marital dissolution through either divorce or widowhood represents a biographical transition which may lead to substantial changes in life, whose impact on health depends on personal resources but also on the life course position (mostly indexed by age).

A limitation in research to date is that most studies have focused on the impact of marital disruption on health outcomes in younger adults (Brown and Lin 2012).

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Considering the significant increase of divorce rates among older adults, this represents a major research gap. In the USA and most European countries divorce rates in ages 50 and above have risen from 15 % in 1970 to 28 % in 2010 (Brown and Lin 2012; Eurostat 2014; Swiss Federal Office of Statistics 2011). In fact, empirical studies on the effect of marital breakup on health considering age and life phase variation are rare and findings are inconsistent (Perrig-Chiello et al. 2015). Whereas there is some evidence that the negative effect of marital breakup is strongest in younger age groups (Schoenborn 2004), other research found the opposite (Bookwala et al. 2014; Liu and Waite 2014). The latter findings suggest that recovering from divorce is more difficult in later years, since growing older increases the importance of having an intimate relationship in times of decreasing physical and social resources. This research also suggests, that the link between marital distress and health is more pronounced among women than among men. However, although gender has been a central focus of research on the benefits of marriage for health, empirical findings to date are quite mixed (Liu and Waite 2014).

Strongly related to the issue of age is the duration of the ex-marriage. Marital breakup after a long-term marriage typically necessitates a departure from accustomed roles, which can be destabilizing. The few studies that included this factor suggest that the length of a marriage proves predictive for stress symptoms (Wang and Amato 2000). Another potentially relevant factor for adaptation is the quality of the ex-marriage. However, the effects are not clear. While some studies suggest that persons from low-distress marriages have more difficulties in adapting than those from high-distress ones (Amato and Hohmann-Marriott 2007), other studies could not replicate these findings (Waite et al. 2009).

After considering demographic variables such as marital status, age, duration of marriage, and gender for exploring the effects of marital breakup on health, a substantial degree of inter-individual variability remains, which is still not well understood (Perrig-Chiello et al. 2015). There have been several theoretical attempts to explain these differences. A prominent approach is the divorce-stress-adaptation model (Amato 2000), which suggests that the strains of marital dissolution undermine the health of the divorced, separated or widowed, which leads to marital status differences in health. Through this lens, the stress associated with the transition out of marriage rather than marriage per se is responsible for the health gap between the married and the unmarried (Liu and Umberson 2008). It has been claimed that that severity and duration of negative outcomes result from divorce-induced stressors and depend on the presence of a variety of moderating or protective factors such as

intrapersonal and social resources. However, the current body of empirical research is still rather controversial (Amato 2010).

Among the intrapersonal resources, personality traits seem to play a major role for adaptation to marital transitions in terms of health and well-being. Individuals with low scores in neuroticism and high scores in openness and extraversion seem to adapt better to marital breakup (Pudrovska and Carr 2008). The same holds for resilience, which refers to the ability of adults to maintain relatively stable, healthy levels of psychological and physical function despite a highly disruptive event (Bonanno 2004). There is some empirical evidence suggesting that high scores in resilience can predict accelerated recovery from stressful events (Ong et al. 2006).

Social resources such as support from relatives or friends are well-known protective factors for coping with life-event stress (Wu and Hart 2002). A new relationship has been found to particularly contribute to positive health (Kulik and Heine-Cohen 2011). In turn, the absence of a new partner has been found to be associated with emotional as well as social loneliness among divorced individuals (Dykstra and Fokkema 2007).

In this context, we attempt to close some research gaps by focusing on the impact of relationship status and self-rated health in later adulthood (age 40–65 years). In addition, we explore to what extent intrapersonal and social resources can moderate the effect of relationship status on self-rated health in a sample of individuals who divorced or separated after a long-term relationship (mean: 19.25 years; $SD = 9$). We chose self-rated health (SRH) as outcome variable, since it has been found to be a most valid indicator of functional status or general well-being and life satisfaction (Angner et al. 2009).

Research aims and hypotheses

This study aims at:

1. Exploring the differences between three groups of individuals with different relationship statuses: marital breakup and repartnered (repartnered divorcees), marital breakup and single (single divorcees) and continuously married, with regard to SRH as well as intrapersonal and social resources. We expect that individuals living in a relationship—independent of their marital status—will show better SRH than their single counterparts. The latter are expected to have less interpersonal and social resources than the partnered groups, i.e. lower scores in agreeableness, openness, extraversion, conscientiousness and resilience, and higher scores in neuroticism and emotional as well as social loneliness.

2. Examining the predictive power of relationship status with regard to SRH when controlling for age, gender and other potentially confounding variables such as duration and satisfaction with ex-relationship, national origin, education and financial resources. Considering the mixed findings in literature, we expect that relationship status remains significantly related to SRH even after controlling for these variables.

3. Exploring the moderating role of intrapersonal resources (i.e. personality traits and resilience) and social resources (i.e. reported social and emotional loneliness) in the relationship status and SRH association. Based on the divorce-stress-adaptation model (Amato 2000), we hypothesize that the better the intrapersonal resources (higher scores in resilience, extraversion and openness, lower scores in neuroticism) and social resources (less social and emotional loneliness), the better the SRH among individuals with a marital breakup. Furthermore, we expect the moderation effects to be strongest for single divorcees.

Methods

Study procedure and sample characteristics

The data come from a questionnaire survey 'Vulnerability and growth. Developmental dynamics and differential effects of the loss of an intimate partner in the second half of life', conducted in 2012. The study aimed at gaining insights about adaptation to marital breakup or loss in individuals aged 40–90 years, and has been approved by the ethical committee of the University of Bern.

To generate the sampling frame, the Federal Office of Statistics supplied us with a random sample stratified by age group, gender and marital status, at the national level. The individuals were contacted by an invitation letter and up to two reminders were sent for non-response. In this paper, we focus on married and divorced or separated individuals (response rate 43 %). The total sample includes 1355 individuals (mean age: 51.9 years; $SD = 7.3$; range 40–65), 424 (31 %) repartnered divorcees, 532 (39 %) single divorcees, and 399 (30 %) continuously married.

Measures

Dependent variable: *Self-rated health* respondents were asked to rate their actual health status on a Likert scale (1 = very bad to 5 = very good). SRH is a widely used measure, and is an umbrella indicator capturing the main components of health (physical, mental, and functional) (Perruccio et al. 2012).

Independent variables: *Marital breakup* was assessed with the question: "Have you ever experienced a breakup be it due to separation or divorce" (yes, no). *Time since breakup* was also asked (dichotomized 3 years and less versus more than 3 years), as well as the *current relationship status* (yes, no).

Intrapersonal resources: *Personality traits* measured with the BFI-10 (Rammstedt and John 2007), consisting of two items for each of the personality dimensions: extraversion, neuroticism, openness, agreeableness, and conscientiousness. *Resilience* was assessed with the Resilience Scale (RS-11), a one-dimensional scale with 11 items (Schumacher et al. 2005) (Cronbach's alpha 0.87).

Social resources: *Social and emotional loneliness* was measured with the De Jong Gierveld Loneliness Scale (De Jong and Van Tilburg 2006). Each scale consists of three items (answers on a five-point scale) (social loneliness Cronbach's alpha 0.81; emotional loneliness Cronbach's alpha 0.71).

Control variables as potential confounders we included: age (continuous), gender (male–female), educational level (compulsory school; professional formation/secondary school; higher professional education; university), satisfaction with financial situation (Having more than enough money to meet one's needs (reference category), Having enough money to meet one's needs, Not having enough money to meet one's needs), origin (Swiss, not Swiss), number of years in couple (among single divorcees, the value "0" was assigned). Furthermore, among separated or divorced respondents, we included duration (years) of ex-relationship and satisfaction with ex-relationship by assessing the reported possibilities of development and support in ex-relationship with two self-developed items ("Were you able to develop yourself in your relationship the way you wanted?"; "Did you feel supported by your ex-partner in your development regarding your desires and goals?"; 1 = not at all, 5 = yes).

Analytical strategy

To address the first research aim, a variable relationship status with three categories (married, repartnered divorcees, single divorcees) was built to analyse group differences regarding SRH and resources with Pearson Chi-square tests and one-way ANOVA.

Second, we explored the association between relationship status and SRH by considering possible confounders, namely age, gender, number of years in couple, education, financial situation, origin, duration (years) of ex-partnership and reported possibilities of development and support in ex-relationship. We described differences in unadjusted (analyses with each predictor separately) and adjusted (all

predictors together) mean SRH, using linear regression models.

Third, we examined whether intrapersonal and social resources moderate the association between relationship status and SRH. We first examined the association of each social and intrapersonal resource separately with SRH, using linear regression models and adjusting for age, gender, education, self-assessment of financial resources and origin. Then, we tested separately the interaction of each resource moderator with the three-categories variable of relationship status.

The dependent variable, SRH, was treated as continuous. As the magnitude of SRH response options is not evenly distributed like an interval variable, we unevenly recoded responses 1, 2, 3.7, 4.5, 5 (Perneger et al. 2013) to better capture the underlying health construct. To check the robustness of the results and determine if findings would change, analyses were re-conducted with SRH continuous but evenly coded (1, 2, 3, 4, 5) and SRH dichotomized (1, 2, 3 versus 4, 5). Results (data not shown) revealed that directions of effect and effect sizes of SRH continuous evenly coded and of SRH dichotomized were consistent with SRH unevenly recoded and resulted in similar findings. Statistical tests were two-sided and p values considered significant at alpha 5 % for main effects. For the exploration of the moderation effects, the alpha cut-off was corrected for the number of tests using the false discovery rate (FDR) method (Benjamini and Hochberg 1995). Analyses were conducted with SPSS 22 and R (v 3.1.0).

Results

A description of the sample stratified in three groups: married, repartnered and single divorcees is given in Table 1. The proportion of women was higher among the married and single divorcees; mean age of repartnered divorcees was significantly lower (mean: 51.1 years) compared to the married (mean: 52.3 years) and single (mean: 52.3 years). The proportion of compulsory educational level was significantly higher among the married compared to respondents with a marital breakup (repartnered or single), and the proportion of respondents reporting not having enough money to support themselves was higher among single divorcees. A majority of repartnered divorcees reported that the breakup occurred more than 3 years before, while the single divorcees were more likely to have a more recent breakup (3 years or fewer). In both breakup groups, the separation occurred after a long-term relationship; however, the duration of the former

relationship was significantly longer among single divorcees (21.1 versus 17.4 years). There was no difference regarding the reported possibilities of development and mutual support in ex-partnership between the single and the repartnered divorcees.

Relationship status, resources and SRH: group comparisons

Overall, most respondents rated their general health status as either "good" or "very good" (mean recoded SRH 4.37, SD 0.68). Single divorcees rated their health status significantly lower compared to the married and repartnered divorcees (mean recoded SRH: single divorcees: 4.23, SD 0.79; married: 4.46, SD 0.54; repartnered: 4.46, SD 0.63; p value <0.001). With regard to resources, differences between the three groups were observed, except for extraversion and conscientiousness (Table 2). Compared to the other groups, single divorcees reported higher levels of emotional (single 0.34, married 0.11, repartnered 0.16, p value <0.001) and social loneliness (single 0.39, married 0.26, repartnered 0.28, p value <0.001), a higher level of agreeableness (single 3.68, married 3.57, repartnered 3.49, p value = 0.006) and lower level of resilience (single 5.47, married 5.52, repartnered 5.67, p value = 0.001). Repartnered divorcees reported higher levels of openness (single 3.76, married 3.48, repartnered 3.80, p value <0.001) and lower levels of neuroticism (single 2.71, married 2.71, repartnered 2.48, p value <0.001) compared to the married group.

Relationship status, socio-demographic and socio-economic variables as predictors of SRH

As Table 3 shows, SRH was lowest among single divorcees, whereas repartnered divorcees did not differ from the married in this respect. In univariate analysis, SRH was positively associated with: number of years in couple, being male, having a higher education, satisfaction with the financial situation and self-reported possibilities of development in ex-relationship. However, in the multivariate analysis, only satisfaction with financial resources remained strongly associated with SRH in the expected direction; being in an uncomfortable financial situation was associated with poor SRH. Age, number of years in couple, gender, education and origin were not associated with SRH (Table 3, columns "Adjusted"). Among respondents with marital breakup (third column), duration of ex-relationship and self-reported development possibilities and support in ex-relationship were not associated with SRH (Table 3, columns "Adjusted", in the subgroup of respondent with marital breakup).

Table 1 Socio-demographic and socio-economic characteristics of the relationship groups, Switzerland 2012

Characteristics	Continuously married (n = 399) Mean (SD)[b]	Repartnered divorcees (n = 424) Mean (SD)[b]	Single divorcees (n = 532) Mean (SD)[b]	Differences p value[a]
Age	52.3 (7.9)	51.1 (7.2)	52.3 (6.8)	0.031
Number of years in couple (N = 1349)	27.8 (9.7)	6.9 (7.4)	–	<0.001
Characteristics	**N (%)**	**N (%)**	**N (%)**	**p value[a]**
Gender				<0.001
Men	173 (43.4)	219 (51.7)	147 (27.6)	
Women	226 (56.6)	205 (48.3)	385 (72.4)	
Education (N = 1333)				0.002
Compulsory school	44 (11.4)	18 (4.3)	36 (6.8)	
Professional formation and secondary	195 (50.4)	194 (46.4)	248 (47.0)	
Technical college	99 (25.6)	134 (32.1)	156 (31.4)	
University	49 (12.7)	72 (17.2)	78 (14.8)	
Satisfaction with financial situation (N = 1340)				<0.001
More than enough money	74 (18.8)	72 (17.1)	42 (8.0)	
Enough money	286 (72.8)	305 (72.4)	390 (74.1)	
Not enough money	33 (8.4)	44 (10.5)	94 (17.9)	
Origin (N = 1350)				0.996
Swiss	334 (83.7)	355 (83.9)	443 (83.9)	
Not Swiss	65 (16.3)	68 (16.1)	85 (16.1)	
Time since the last marital breakup (N = 945)				<0.001
More than 3 years	–	324 (77.3)	239 (45.4)	
3 years and less	–	95 (22.7)	287 (54.6)	
Characteristics of ex-relationship	**Mean (SD)[b]**	**Mean (SD)[b]**	**Mean (SD)[b]**	**p value[a]**
Duration, in years (N = 946)	–	17.4 (9.2)	21.1 (8.9)	<0.001
Reported possibilities of development and support in ex-relationship (N = 947)	–	2.6 (1.2)	2.6 (1.2)	0.919

[a] Pearson Chi-square test for categorical variables, Chi-square test of trend for ordinal variables and one-way ANOVA for continuous variables (alternatively, Kruskal–Wallis test when distributional assumptions were not fulfilled)

[b] SD standard deviation

Moderating effects of resources between relationship status and self-rated health

Multivariate analysis examined each resource separately by adjusting for age, gender, education and satisfaction with financial situation (Table 4). Results revealed that high levels of social and emotional loneliness were associated with poor SRH. Among the intrapersonal resources, higher scores in extraversion and resilience predicted better SRH, whereas higher scores in neuroticism were associated with worse SRH. Stratifying the analyses by gender did not modify the results (data not shown), except on agreeableness which was significantly associated with better SRH among men ($b = 0.061$, 95 % CI 0.004, 0.0118) and not among women ($b = -0.018$, 95 % CI -0.073, 0.036); however, interaction term

Table 2 Self-rated health, intrapersonal and social resources of the relationship status groups, Switzerland 2012

	Continuously married (n = 399)	Repartnered divorcees (n = 424)	Single divorcees (n = 532)	Differences
Self-rated health (SRH)				<0.001
Very bad	1 (0.3)	4 (0.9)	7 (1.3)	
Bad	6 (1.5)	6 (1.4)	25 (4.8)	
So-so	63 (15.8)	69 (16.4)	147 (27.9)	
Good	225 (56.5)	205 (48.6)	227 (43.2)	
Very good	103 (25.9)	138 (32.7)	120 (22.8)	
Intrapersonal resources	Mean (SD)[b]	Mean (SD)[b]	Mean (SD)[b]	p value[a]
Personality traits (10 items) (min 1, max 5)				
Extraversion	3.32 (1.02)	3.48 (1.06)	3.36 (1.10)	0.061
Agreeableness	3.57 (0.88)	3.49 (0.94)	3.68 (0.89)	0.006
Conscientiousness	4.29 (0.68)	4.21 (0.75)	4.28 (0.72)	0.183
Neuroticism	2.71 (0.94)	2.48 (0.97)	2.71 (1.01)	<0.001
Openness	3.48 (1.04)	3.80 (0.99)	3.76 (1.03)	<0.001
Resilience (11 items) (min 1, max 7)	5.52 (0.77)	5.67 (0.80)	5.47 (0.89)	0.001
Social resources	Mean (SD)[b]	Mean (SD)[b]	Mean (SD)[b]	p value[a]
Level of emotional loneliness (3 items) (min 0, max 1)	0.11 (0.23)	0.16 (0.28)	0.34 (0.38)	<0.001
Level of social loneliness (3 items) (min 0, max 1)	0.26 (0.37)	0.28 (0.38)	0.39 (0.42)	<0.001

[a] Pearson Chi-square test for categorical variables, Chi-square test of trend for ordinal variables and one-way ANOVA for continuous variables (alternatively, Kruskal–Wallis test when distributional assumptions were not fulfilled)

[b] SD standard deviation

between agreeableness and gender was not significant ($p = 0.063$).

Moderation effects of resources in the association between relationship status and SRH were examined for each resource variable separately (Table 5). The first two columns report the slopes of the resource variables on SRH in the married group, with their associated p values, and the other columns report the moderation effects (differences in slopes) for the other relationship statuses and their associated p values.

In terms of intrapersonal resources, weak moderation effects were observed among single divorcees for extraversion, conscientiousness, openness and resilience. However, using the false discovery rate FDR threshold for significance (0.003125), p values became non-significant. For extraversion (and openness), the direction of the association differed between the married individuals and single divorcees: high extraversion (or openness) was negatively associated with SRH among the married persons, while high extraversion (or openness) was associated

with good SRH among single divorcees (in analyses stratifying by gender, the association of high openness with good SRH was stronger among men compared to women: men $b = 0.131$, p value 0.048, women $b = 0.096$, p value 0.089; three-way interaction p value 0.015). High conscientiousness was positively associated with SRH among the married persons, while high conscientiousness was associated with poor SRH among single divorcees. Among the married high resilience was associated with good SRH and this effect was stronger among single divorcees. These significant moderation effects were weak, and after using the FDR method, all p values became non-significant. In terms of social resources, social and emotional loneliness had moderation effects in the expected direction: high levels of social and emotional loneliness were associated with poor SRH among the married individuals and this effect was stronger among single divorcees. Moderation effect was significant for emotional loneliness ($p = 0.045$). This too, however, became non-significant when using FDR method.

Table 3 Predictors (relationship status, socio-demographic and socio-economic variables) of self-rated health[a], unadjusted and adjusted (linear regression model), Switzerland 2012

	Unadjusted			Adjusted ($N = 1302$)			Adjusted, in the subgroup of respondent with marital breakup ($N = 911$)		
	B	95 % CI	p	B	95 % CI	p	B	95 % CI	p
Marital breakup (ref.: no)									
Repartnered	0.008	−0.084, 0.100	0.870	−0.028	−0.179, 0.123	0.712	–	–	–
Single	−0.231	−0.319, −0.144	<0.001	−0.214	−0.402, −0.026	0.026	−0.193	−0.309, −0.077	0.001
Number of years in couple	0.004	0.002, 0.007	0.001	−0.001	−0.007, 0.005	0.700	−0.003	−0.013, 0.007	0.515
Age	−0.003	−0.008, 0.002	0.181	−0.004	−0.009, 0.002	0.179	0.000	−0.008, 0.008	0.979
Sex (0 = male, 1 = female)	−0.105	−0.179, −0.031	0.005	−0.050	−0.125, 0.026	0.197	−0.050	−0.152, 0.051	0.333
Education (ref.: compulsory school)									
Professional formation and secondary	0.085	−0.060, 0.230	0.251	0.069	−0.097, 0.234	0.415	0.101	−0.104, 0.307	0.333
Technical college	0.219	0.068, 0.370	0.004	0.104	−0.046, 0.254	0.175	0.200	−0.012, 0.412	0.064
University	0.198	0.034, 0.363	0.018	0.026	−0.116, 0.169	0.718	0.162	−0.065, 0.389	0.162
Satisfaction with financial situation (ref.: more than enough money)									
Enough money	−0.231	−0.333, −0.129	<0.001	−0.184	−0.292, −0.077	0.001	−0.127	−0.275, 0.021	0.093
Not enough money	−0.677	−0.813, −0.540	<0.001	−0.583	−0.729, −0.437	<0.001	−0.567	−0.757, −0.377	<0.001
Origin (not Swiss)	−0.055	−0.154, 0.044	0.278	−0.054	−0.153, 0.045	0.285	−0.049	−0.176, 0.078	0.448
Duration (years) of ex-relationship	−0.004	−0.009, 0.002	0.168	–	–	–	−0.004	−0.010, 0.002	0.217
Reported possibilities of development and support in ex-relationship	0.042	0.002, 0.081	0.038	–	–	–	0.026	−0.014, 0.065	0.201

[a] Responses options of SRH were recoded (1 very bad, 2 bad, 3.7 so-so, 4.5 good, 5 very good) to better reflect the uneven magnitude between health ratings (Perneger et al. 2013)

Discussion

Although the relationship between marital status and health has been a prominent research topic, various shortcomings still remain. Building upon these gaps, this article makes three main contributions: first, it takes relationship status instead of marital status into account. Second, it focuses on marital breakup in later adulthood, which has been largely neglected in research. Finally, our study expands prior research by taking into account intrapersonal and social resources as moderators of the impact of marital status on SRH.

Our findings confirm that marital breakup is associated with lower self-rated health, but only when relationship status is considered. Single divorcees had the lowest self-rated health scores, whereas their repartnered counterparts reported comparable scores as the continuously married. These results support findings by Hughes and Waite (2009), who found better health outcomes in remarried individuals than those who remained single. Single divorcees showed also the highest amount of emotional and social loneliness, which is in line with our expectations and with other research (e.g. Dykstra and Fokkema 2007). In fact, marital breakup does not only mean the loss of an intimate companion, but also of a shared social network.

In contrast to their single counterparts, repartnered divorcees reported significantly higher scores in openness, agreeableness and extraversion and lower scores in neuroticism. These results substantiate other findings showing that specific personality traits can facilitate the process of adaptation to divorce (Pudrovska and Carr 2008). Individuals high in extraversion have a higher probability to find a new intimate partner, for example, because they tend to evoke and enjoy social contact (Caspi et al. 2005). The same holds for resilience, a personality trait that is known to facilitate coping with critical life events (Bonanno 2004). Another significant difference between single and repartnered is that the former separated more recently, which underscores the well-established finding that time is an important factor for psychological adaptation to critical life events.

Table 4 Intrapersonal and social resources as predictors of self-rated health, adjusted (linear regression model), Switzerland 2012

	B	95 % CI	p
Social resources			
Emotional loneliness	−0.665	−0.772, −0.557	<0.001
Social loneliness	−0.340	−0.430, −0.250	<0.001
Intrapersonal resources			
Personality traits			
Extraversion	0.046	0.013, 0.080	0.006
Agreeableness	0.017	−0.023, 0.056	0.411
Conscientiousness	0.043	−0.007, 0.093	0.089
Neuroticism	−0.170	−0.205, −0.134	<0.001
Openness	0.011	−0.025, 0.046	0.553
Resilience	0.227	0.184, 0.270	<0.001

Responses options of SRH were recoded (1 very bad, 2 bad, 3.7 so-so, 4.5 good, 5 very good) to better reflect the uneven magnitude between health ratings (Perneger et al. 2013)

All models are adjusted with age, gender, education, satisfaction with financial situation and origin

Table 5 Moderation effects of resources between relationship status of divorcees and self-rated health, adjusted (linear regression model), Switzerland 2012

	Slopes for continuously married		Differences in slopes for repartnered divorcees		Differences in slopes for single divorce	
	B	p	B	p	B	p
Social resources						
Emotional loneliness	−0.426	0.002	−0.095	0.591	−0.315	0.045
Social loneliness	−0.193	0.031	−0.092	0.448	−0.202	0.070
Intrapersonal resources						
Personality traits						
Extraversion	−0.023	0.484	0.081	0.066	0.099	0.017
Agreeableness	0.025	0.519	0.041	0.431	−0.044	0.380
Conscientiousness	0.110	0.026	−0.044	0.501	−0.132	0.038
Neuroticism	−0.126	<0.001	−0.048	0.311	−0.069	0.119
Openness	−0.020	0.531	−0.031	0.503	0.099	0.020
Resilience	0.156	<0.001	0.035	0.538	0.126	0.016

Responses options of self-rated health were recoded (1 very bad, 2 bad, 3.7 so-so, 4.5 good, 5 very good) to better reflect the uneven magnitude between health ratings (Perneger et al. 2013)

All models are adjusted with age, gender, education, satisfaction with financial situation and origin

Our results further suggest that the negative effect on SRH of being a single divorcee persists even after controlling for ex-relationship characteristics (duration and satisfaction), socio-demographic and socio-economic variables. The only significant predictor for SRH was satisfaction with the financial situation, a result supported by existing literature (Kondo et al. 2009) suggesting that single divorcees complain more frequently about financial difficulties than their repartnered counterparts. This bolsters existing evidence that post-divorce financial concerns are among the highest stressors (Knox and Corte 2007). Our results differ from the study by Arber et al. (2014), which highlights that the poorer health of the divorced or separated individuals—compared to their married counterparts—was entirely mediated by differences in financial well-being. One explanation may be that we used a more sensitive measure of marital status, which combines the impact of past marital breakup with the current relationship status at the time of the survey (repartnered or not).

The fact that we found no correlation between age and SRH deserves a closer examination. Most previous studies focused either on samples with younger divorcees or did not take age into account when examining the effects of divorce (Pudrovska and Carr 2008). This study investigates persons in later adulthood, who are mostly confronted with different age-specific losses (Perrig-Chiello et al. 2015) and therefore with a potential age-associated decline in SRH. Our results suggest that independent of the life stage and its specific stressors (e.g. being responsible for underage children in younger midlife or being confronted with familial expectations of help and care for elderly parents in older midlife), relationship status has an impact on SRH. Furthermore, our results showed no gender differences in SRH once relationship status, socio-economics and further socio-demographic variables were considered. These findings demonstrate that regardless of gender, being a single divorced individual enhance the vulnerability for a lower SRH.

A further aim of this study was the examination of moderating effects of intrapersonal and social resources as a link between marital breakup (repartnered or single) and SRH. However, we found no significant effects. There are two explanations for this null result: first, a lack of power in statistical analyses may impede our ability to detect moderation effects which are usually small in magnitude; second, the FDR method is probably too strict since the assumption of independent factors (Perneger 1998) is violated in the context of our study (we tested interactions with dimensions of the same concept). However, the effect sizes indicate that personality traits might well play a role as moderators: among single divorcees, higher levels of extraversion and openness had a positive effect on SRH, whereas higher scores on conscientiousness were negatively related to SRH. Resilience positively influenced respondents' SRH

independent of their relationship status, but this influence was strongest among single divorcees. In terms of interpersonal resources, the effect sizes of emotional and social loneliness were, as expected, negatively associated with SRH in all groups. Moderation effects suggested that the experience of loneliness had a stronger negative impact on SRH of single divorcees compared to married individuals. In other words, our results suggest that both intrapersonal and social resources could moderate the association of marital breakup with SRH, but additional research is needed. Among single divorcees, extraversion and openness act as protective factors against poor SRH, contrary to conscientiousness, which represents a risk factor. If resilience influences positively respondents' SRH whatever their marital breakup history and current relationship status, its influence is stronger among single divorcees. These results could inform health promoting programmes targeting single divorcees.

A limitation of this study is the cross-sectional nature of the data, which does not supply a conclusive answer to the question of causality between marital breakup and SRH. It is possible that lower SRH among married individuals affects the quality of a marriage negatively and therefore increases the probability of divorce, as postulated by the social selection theory (Avison 1999) and previously empirically observed (Umberson et al. 2006). However, most studies do not confirm that the effects of permanent selection explain lower well-being after a divorce and attribute only a limited role to selection theory (Amato 2010; Cullati et al. 2014). To fully address this question, a longitudinal design should be used in future studies.

Our results emphasize the positive effect of relationship status on SRH, and add new insights on the impact of later-life divorce. Given the increasing cohabitation rate and growing number of divorcees in Switzerland and in Europe, the strain on public health resources is likely to increase. The identification of single divorcees as a vulnerable group regarding SRH and interpersonal as well as intrapersonal resources could greatly improve future health promotion interventions.

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