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Mental health dynamics around marital dissolution. Moderating effects of parenthood and children's age

Abstract
Our study is the first that aims at estimating the intra-individual effect of marital dissolution on mental health, conditional on parenthood status and age of the youngest biological child. We rely on the set point model that predicts a nonlinear, homeostatic self-regulation process with an anticipatory effect and a subsequent recovery phase. Assuming heterogeneous effects, we expect both parenthood status and age of the youngest biological child grouped into five distinct categories to moderate the strength of the dissolution-health nexus. We use GSOEP data and restrict our sample to women and men who were at risk for first marital dissolution within the observational period 2002 to 2016. The dependent variable is the mental health component of the SF-12 survey instrument. We estimate distributed fixed-effects (dummy impact functions), covering the time span from three (or more) years before marital dissolution up to six (or more) years afterwards. Compared to the baseline, childless women exhibit a considerable impairment in mental health after dissolution, experiencing a slower recovery than childless men. Our most unambiguous result is the negative anticipation and a subsequent downward trajectory of mental health among mothers of infants and toddlers, whereas in the respective group of fathers we do not observe any change over time. In all other parent groups, mental health reacts mostly in a short-term manner to dissolution, except for fathers of pre- and primary school children whose mental health remains unchanged. Our study provides new evidence on mental health dynamics around marital dissolution and raises the awareness of mental distress, loneliness and potential social exclusion faced by childless and parents, in particular by lone mothers of young children.

Key words: mental health dynamics; marital dissolution; parenthood; distributed fixed-effects, GSOEP

Introduction

During the year 2016, almost one million couples divorced in Europe, and over 160 thousand of them in Germany (Eurostat 2018). From all German divorces, 83% occurred just after the obligatory "separation year", 16% on average three years after separation, and the remaining 1% terminated exceptionally before the expiration of the separation year (Federal Statistical Office 2018). 51% of all divorce applications were filed by women, 41% by men and 8% by both spouses. About half of divorcing German couples had minor children (Federal Statistical Office 2018).

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Separations and divorces have a multitude of effects for those involved. In this paper, we study temporal dynamics of mental health around marital dissolution. We are particularly interested to learn more about gender specific differences of these dynamics and the moderating role of (non)parenthood. Whether a couple has a child or not, may strongly influence the decision to separate and divorce. Couples having children are less likely to divorce, especially when they have several children (with 2-3 children minimizing the risk of divorce, Andersson 1997) and/or young children (Waite/Lillard 1991; Steele et al. 2005). Part of the effect may be causal, meaning that children increase partners' commitment to the (marital) union, but it may also reflect selection, as partners less committed to a union are less likely to have children together (Coppola/Di Cesare 2008; Lyngstad/Jalovaara 2010).

Presence of a child may also affect partners' experience of divorce. Although research from past decades accumulated vast evidence that divorce is detrimental to mental health (Amato/Keith 1991; Hank/Wagner 2013), the question of moderating effects of parenthood has been addressed by only a handful of papers (Blekesaune/Barrett 2005; Williams/ Dunne-Bryant 2006; Leopold/Kalmijn 2016). Unfortunately, most previous studies use less than ideal research designs, making it difficult to draw firm conclusions. First of all, viewing marital dissolution as a dynamic process rather than an enduring state requires analyses of panel data and an adequate longitudinal modelling approach that considers anticipatory effects and subsequent adaptation (Amato 2000). Second, past research rarely accounts for the ages of children and typically pools together childless people in one category with parents of adult children. Our analysis overcomes these methodological limitations. First, we use fixed-effects regression for panel data to control for time-invariant intra-individual unobserved heterogeneity around marital dissolution. Second, we account for baseline age-related dynamics of mental health. And third, we distinguish five categories of (non)parenthood, from childless, through parents of infants and toddlers to those having pre- and primary school children, to those having adolescent or adult children.

Mental health—the outcome variable studied by us—is defined by the WHO as "a state of well-being in which every individual realizes his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to her or his community" (WHO 2018). The question whether presence of children aggravates the consequences of marital dissolution for mental health is important from a substantive point of view: divorces affecting both parents and children are common and have long-reaching consequences. The experience of marital dissolution and conflict affects partners' well-being for several years afterwards (Lucas 2005), influences their children's well-being (Amato/Loomis/Booth 1995), and shapes family ties and behaviour among children and grandchildren of divorcees (Amato/Cheadle 2005). Moreover, we consider mental rather than physical health because mental health is more sensitive to life events in a short- and mid-term perspective.

Our study aims at the existing research gap on the role of diverse stages of parenthood in explaining mental health of parents around marital dissolution. Examining the complex role played by children at different developmental stages improves our understanding of negative consequences of marital dissolution as well as of benefits derived from marriage. Negative consequences of marital dissolution for mental health are typically interpreted in terms of being deprived of a protective effect of marriage itself. However, such reasoning

must be questioned, should the negative effects of marital dissolution be contingent on having children. More generally, studying the moderator effect of parenthood enriches our knowledge on the heterogeneity of mental health consequences around first marital dissolution, a topic that has been called for as an important direction of future research (Amato 2010).

Theoretical background

In order to theorize consequences of marital dissolution, several approaches have proved to be fruitful (Amato 2000). First, although marital dissolution is generally conceived of as a negative critical life event producing grief and suffering, it has been argued that for some individuals (e.g., a wife with an abusive husband) it might be potentially beneficial (Amato 2000). This implies that studies on health consequences around marital dissolution need to consider effect heterogeneity across individuals by identifying and modelling key moderator variables. Complementing previous studies which have focused, for instance, on cross-country differences in divorce effects (i.e., macro-level moderators, e.g., Kalmijn 2010) or moderation of divorce effects by union type (Kalmijn 2017), our study examines moderating effects of presence and age of biological children.

Second, even if the effects of dissolution are detrimental to mental health, these adverse effects may be short-lived (as posited by the so-called crisis model) rather than sustained long-term health declines (chronic strain model) (Amato 2000). The notion of short-term health declines after a dissolution with subsequent adaptation, i.e. recovery to a baseline level, is in line with the set point theory from happiness research (Lucas et al. 2003; Lucas 2016). Therefore, a thorough study of dissolution effects has to account for health shifts over time, and should employ a model sufficiently flexible to allow for distinguishing between short-lived and long-term effects.

This leads to the third point, the issue of causality. Arguably, marital dissolution is a process rather than an isolated event (Booth et al. 1983), which, first, implies that individuals may experience emotional distress at different stages in this process (Emery 1994) and, second, that for some individuals it may be rather pre-separation conflicts or marital abuse than the act of dissolution itself that generates mental health problems. Unfortunately, these rather subtle epiphenomena are harder to measure than objective transitions, especially in large scale studies. However, the processual nature of dissolution suggests that modelling several time points before and after it may be a better suited approach than considering dissolution as a dichotomy.

Fourth, while divorce is generally theorized to affect health, pre-divorce health may also affect the risk of dissolution (Wade/Pevalin 2004). Previous studies suggest that health problems are positively associated with the risk of marital dissolution (Rapp 2012). Unfortunately, it is not easy to rule out selection on health when studying causal effects of dissolution on health. Nonetheless, a fixed-effects analytical framework is a promising way of controlling for systematic (time-invariant) pre-divorce health differences among individuals (Brüderl/Ludwig 2015).

The moderating effect of children

The effect of marital dissolution on mental health may be more negative in marriages with children than among the childless. According to the economic model of the family, children are an example of union-specific capital, which means that having children might be more beneficial for partners living together than for those living separately (Lyngstad/Jalovaara 2010). This suggests that divorcing parents lose "more" during a marital breakup than divorcing childless do. However, one should be careful about involuntary childlessness, because it may trigger a dissolution among the childless (Lyngstad/Jalovaara 2010). Further, marital dissolution itself has been argued to impinge upon parent-child interactions (Grau/Bierhoff 2003; Tein/Sandler/Zautra 2000) increasing behavioural problems of the child. This may be aggravated by sharing the custody, as it forces parents to stay in regular contact with each other. All this suggests that parenthood could make a dissolution more painful and prolong the process of adjustment.

However, the benefits and burdens of having a child plausibly change with the age of the child, and the moderating effect of parenthood likely reflects that. Moreover, family is a gendered institution and experiences of mothers and fathers can be qualitatively different (Cooke 2004). Therefore, we systematically theorise on how mental health consequences of marital dissolution differs with child's age and parent's gender.

Age of the child

Having a young (defined as infant and toddler) child may exacerbate the effect of marital dissolution because child's fear, anxiety, and behavioural problems triggered by dissolution (Strohschein 2005) are an additional stressor for separating parents (Amato 2000). Moreover, because of the monetary costs of childrearing and institutional childcare, young children may increase the risk of economic hardship, especially for lone mothers (Casper/McLanahan/Garfinkel 1994). As noted before, the presence of children affects the risk of parental dissolution, with the strongest stabilizing effect of young children. This is a potential source of bias in causal estimates: If couples generally tend to avoid splitting up while having young children, marital dissolution that can occur in further period may take place in extremely troubled (e.g. abusive) marriages. This implies that mental health consequences of dissolutions involving young children may be particularly negative also due to self-selection. In principle, having a young child might also have a protective effect ("buffering effect", see Cohen/Wills 1985) during dissolution. The period shortly after birth stands out with an increased parental life satisfaction (Myrskylä/Margolis 2014; Pollmann-Schult 2014; Mikucka 2016), suggesting that especially young children may provide joy and a sense of meaning to their parents. However, this increase tends to wear off within a few years, which makes the overall protective effect implausible.

To our knowledge, past studies only rarely theorise the effects of school-aged or teenage children on parental mental health. The well-being gains from parenthood at these ages are generally smaller than with young children (Nomaguchi 2012), suggesting weaker protective effects and lower levels of parental satisfaction with the quality of parent-child-relationship. It is likely that behavioural problems associated with marital conflict combined

with children's increasing autonomy exacerbate the negative effects of divorce, especially during the adolescent stage (Masche 2008). However, the stabilizing effect of parenthood plausibly becomes weaker as children grow up, reducing the negative selection into divorce.

The effect of adult children is more often addressed theoretically. Economic models of parenthood postulate that adult children are a potential source of practical and emotional support for their parents (Ikkink/van Tilburg/Knipscheer 1999). Such support during a marital dissolution might in principle reduce the negative consequences of divorce. However, in Western European countries parents support their children into adulthood (Brandt/Deindl 2013), and the roles tend to reverse at older ages. Thus, whereas the protective effect of children in middle-age divorcing couples may be rather weak, it should be stronger for grey divorces of long-term marriages in old age (Kalmijn 2007). However, even after a late divorce, mothers have still more contact with children and receive more support from them than fathers (Kalmijn 2007).

Summing up, past conceptualizations suggest a negative moderating effect of young children during parental dissolution: not only children's behavioural problems may constitute additional stressors, but also (due to the stabilizing effect of small children) the dissolutions of marriages with small children may be particularly painful. These effects plausibly become weaker as children grow older.

Gender of the parent

In Germany, mothers are typically the main caregivers, and they shoulder most of child-related work, although formally in the year 2016, as many as 97% of divorcing couples shared custody (Federal Statistical Office 2018). After marital dissolution, mothers—especially of young children—may suffer from role strain, being caught between childcare responsibilities and breadwinner demands (Fokkema 2002). This may be aggravated by the worsening of their economic situation (Andreß et al. 2006), for example when alimonies fail to cover the costs of childrearing (Holden/Smock 1991).

All this may suggest that mothers take on the more difficult role after marital dissolution. However, fathers may suffer from the lack of everyday contact with a child (Juby et al. 2007) and associated relational problems (Amato/Booth 1996). Additionally, the obligation to pay alimonies (which in Germany increase with the age of the child according to the so-called "Düsseldorfer Tabelle") combined with higher (than the pre-divorce) costs of independent residence are likely to undermine their financial situation (Andreß et al. 2006).

In sum, the challenges of marital dissolution among mothers seem particularly high at child's younger ages and may reduce when increasing child's independence makes it easier to combine breadwinning and childcare. This pattern may be different for fathers, for whom the financial costs and the risk of conflict or lack of contact with children may become increasingly problematic as children grow older.

Previous research

A large body of research has documented that marital dissolution has a detrimental effect on many outcomes including health and well-being (Amato 2000; 2010). However, a

closer inspection of previous research shows that a major part of the evidence is based on cross-sectional studies, and most longitudinal studies include few time points (Turner 2006; Arránz Becker/Loter/Becker 2017). Moreover, relatively few studies have systematically scrutinized moderating effects of children by comparing effects of marital dissolution among parents to those among childless individuals.

Cross-sectional studies have shown that divorced mothers have higher odds of poor self-rated health (Lahelma et al. 2002), depression (Afifi/Cox/Enns 2006), and a variety of mental disorders (Afifi/Cox/Enns 2006; Cairney et al. 2006) and illnesses (Benzeval 1998). Interestingly, in these studies the divorce event itself (rather than the lack of marriage) appears to be crucial because, for instance, never married mothers did not exhibit a particularly high risk of psychiatric disorders (Afifi/Cox/Enns 2006; Cairney et al. 2006; Turner 2006). Moreover, this health-related disadvantage of divorced mothers seems to persist into older age (Berkman et al. 2015). As mentioned above, conclusions from cross-sectional studies regarding potential causal effects are ineligible because cross-sectional research cannot disentangle selection and causality and cannot contribute to our knowledge of the temporal shape of marital dissolution effects either. Thus, in the following, we focus on insights from the few existing longitudinal studies.

The probably most comprehensive study, so far, by Kalmijn and Leopold (2016) on the moderating effect of parenthood after divorce found stronger decreases in subjective well-being among parents of children at age 0-4 compared to childless individuals and parents of children at age 5-18, emphasizing the important role of parenthood as moderator. To our best knowledge, this is the only study using German panel data, focusing primarily on well-being and its dynamics after divorce. In line with these results, Williams and Dunne-Bryant (2006) found a positive effect of dissolution on depressive symptoms that was largely limited to parents with children at age 0-5. Similarly, a study by Blekesaune and Barrett (2005) using Norwegian registry data found negative but short-lived health consequences of marital dissolution, which were stronger among parents than among the childless. Finally, there are two studies by Lorenz et al. using a dataset on women in rural Iowa (Lorenz et al. 1997; 2006). The first one showed an elevated level of depression among divorced compared to married mothers which tended to become smaller over time but did not vanish before a period of three years (Lorenz et al. 1997). The second one showed that whereas divorce had an adverse short-term effect on mental health, declines in physical health only became visible a decade later (Lorenz et al. 2006).

Yet, findings from these studies should be interpreted with caution. First, some studies used a random-effects approach; thus unobserved heterogeneity may have introduced bias into the reported effect estimates. Second, some studies did not include a comparison group of constantly married. In doing so, health trends and other time-varying information of the married cannot be taken into account at baseline leading, not only to biased estimates of confounders but also biased estimates of the causal effect. Third, some studies pooled childless individuals together with parents having adult children and/or parents having non-coresident children ignoring an important substantial distinction. Fourth, some studies did not include pre-divorce observations and lastly, fifth, some used lagged dependent variable (LDV) regression with two time points, although LDV regression may yield biased estimates (Vaisey/Miles 2017).

In sum, previous studies on divorce effects on parental health outcomes suffer from considerable gaps and shortcomings. There are many cross-sectional studies which do not always distinguish between never married and divorced individuals. The few existing panel studies are often based on few waves of data (Turner 2006), so their capacity to determine the causal ordering (i.e., to control for selection effects when studying causal effects) is limited. Moreover, unobserved heterogeneity largely remains an unresolved issue, because pre-divorce health differences between people who separate and who stay married are not controlled for, which lead to an overestimation of causal divorce effects. And finally, the temporal shape of divorce effects has seldom been investigated, thus neglecting an important aspect for both scholarly research and for planning interventions.

Aims of the current paper

Against this background, our study provides a description of intra-individual trajectories of mental health among childless men and women, and mothers and fathers across a nine-year period surrounding dissolutions of first marriages. We analyse mental health as the outcome because we expect it to be of reactive nature in the relatively short run covered by this study, whereas shifts in physical health associated with dissolution may be rather slow and require data spanning decades rather than years (Lorenz et al. 2006). In line with research on the impact of divorce on well-being (Lucas et al. 2003; Lucas 2016), we expect that mental health declines already before union dissolution, and this decline is followed by a subsequent phase of (complete or partial) adaptation, i.e. recovery of mental health. Our first (general) hypothesis is that the effect of marital dissolution should be more evident among parents, both mothers and fathers, than among childless individuals. Further, we compare mental health trajectories of subgroups defined by the age of the youngest biological child at the time of marital dissolution, to test our second hypothesis that the negative moderating effect of children around dissolution should be more visible among parents of younger children than among parents of older children. We assume that this pattern is most clear-cut among mothers who suffer from role strain while combining breadwinning and caring for young children and who can abruptly be thrusted into a low-income group of single mothers. For fathers, changes in mental health related to growing up of children may be less pronounced.

Method

Data and sample

We use longitudinal data from the German Socio-Economic Panel (SOEP 2017), a panel survey that was initiated in West Germany in 1984 and in East Germany in 1990, with subsequent waves conducted annually.

Because our outcome of interest was first collected in the year 2002 and its last available measure is from the year 2016, the observational period is left-truncated and ranges from 2002 to 2016. Further, the data are prone to right-censoring—we cannot identify in-

dividuals who left the panel before marital dissolution occurred as well as individuals who are still in the panel but who will separate after 2016.

We restrict our estimation sample to men and women who were at risk for first marital dissolution within the observational period. Thus, it includes both individuals who experienced a transition to first marital dissolution between 2002 and 2016 (N=541 transitions for men and N=692 for women) and individuals who were potentially at risk for a transition into first marital dissolution but stayed married until the last wave they were observed, up to 2016 (N=9,883 men and N=10,070 women). The last mentioned served as comparison group. Basically, including a comparison group to the estimation sample does not affect the effect of marital dissolution, because this group does not contribute to the fixed-effects estimation. However, omitting the comparison group would lead to biased estimates of the confounders. For instance, the age effect estimated only for those who experienced marital dissolution might be underestimated or overestimated as compared to the full estimation sample, and this would in consequence bias the effect of marital dissolution as well (Brüderl 2010). Finally, all "treated" respondents who were not observed both before and during marital dissolution were excluded from the sample. This includes: (1) separated, divorced, widowed, and second married when first observed, (2) those whose spouse died during the observational period and (3) all person-years after widowhood of those who experienced a transition to separation first (married – separated – widowed). Yet, individuals who remarried after marital dissolution (married – separated – remarried) were not immediately censored and stayed in the estimation sample for up to four years after remarriage. This is because the initial years in a second marriage could serve as the continuation of a recovery process after marital dissolution.

Individuals younger than 16 (marriageable age in Germany), refugees, individuals who experienced child's death during the observational period, as well as marriages lasting shorter than 24 months (overlapping transitions to first marriage and first separation) were excluded from the analysis. Further, we dropped the first and the second marriage year for all individuals accounting for potential inflated levels of mental health due to honeymoon effects.

Finally, because our outcome of interest was measured only in even numbered years, we had to drop observations from odd years losing for this reason several transitions (N = 243 for men and N = 322 for women). The final sample consists of 10,181 men and 10,440 women, out of which 298 men and 370 women got separated between 2002 and 2016 and who were observed at least three years prior to marital dissolution. For less than 10% of men and women who experienced a transition, the year of marital separation was missing and replaced by the year of divorce for further analyses.

Dependent variable

Our dependent variable is mental health-related quality of life—one of two subdimensions within the framework of the SF-12 health survey instrument, available in GSOEP biennially since 2002 (Nübling/Andersen/Mühlbacher 2006). When referring to perceived mental health-related quality of life, for the sake of brevity we will use the shorter term "mental health". Originally, the SF-12 physical and mental health composite scores were extracted via principal component analysis (PCA) with varimax rotation based on twelve health-

related items pertaining to eight subscales (see Appendix in Nübling/Andersen/ Mühlbacher 2006). The mental health component consists conceptually of the following four subscales: vitality (one item: energy level), social functioning (one item: limitation of social activities due to health), role emotional (two items: accomplished less due to emotional problems, less careful due to emotional problems) and mental health (two items: blue and downhearted, calm and peaceful). The scores used in this study were also extracted via PCA; however, we applied oblimin rotation, allowing the components to be non-orthogonal (the component correlation was 0.53). Our analysis yielded the expected two-component solution for the total estimation sample (criterion: eigenvalues greater than 1) with standardized PCA loadings for mental health ranging from 0.71 to 0.90 (except for the loading on vitality which was 0.57). Finally, we rescaled the PCA scores to the range 0 to 100. Higher values correspond to better mental health, lower values to poorer mental health.

Grouping variable: child's age

Because our focus is on maternal and paternal trajectories of mental health, we created five distinct groups of separated individuals defined by the age of the youngest biological child in the year of marital dissolution. Our age categories reflect the theoretical arguments presented in the background section and correspond both to institutional care arrangements in Germany (nurseries and kindergartens, pre-elementary and elementary schooling, secondary schooling) and to four stages of life course development derived from the literature (Kuh et al. 2003): early childhood, middle childhood, adolescence and adulthood.

For individuals who experienced a transition to marital dissolution, the age of the youngest child in the year of dissolution was the criterion to categorize the respondents into distinct groups. For individuals belonging to the comparison group without a transition until 2016 but who were still at risk of a dissolution, we used the year of the last observation in the panel and computed the age of the youngest child based on the next year (i.e. last observation + 1). For instance, if the last panel observation for a (first married) respondent was 2014 and the youngest child was born 2012, this respondent was placed in the group of parents with children at age 0-4 (the youngest child was three years old in 2015). The main reason for using the last panel observation instead of, for example, the first one is the closest temporal proximity to a potential dissolution that might have occurred after the last available observation (e.g., after 2014 as in the example above). Our grouping scheme can be summarised as follows:

(1) childless individuals (771 women including 54 transitions; 1,617 men including 60 transitions)
(2) parents of infants and toddlers aged 0 to 4 (860 mothers including 49 transitions; 754 fathers including 32 transitions)
(3) parents of pre- and primary school children aged 5 to 10 (1,892 mothers including 86 transitions; 1,705 fathers including 67 transitions)
(4) parents of adolescent children aged 11 to 17 (1,476 mothers including 98 transitions; 1,350 fathers including 67 transitions)
(5) parents of adult children aged 18 and older (5,441 mothers including 83 transitions; 4,755 fathers including 72 transitions).

Event time dummies

To model health dynamics around marital dissolution, we constructed an "event-centered" time scale that ranges from -14 years before to +11 years after dissolution. Again, because our observational period starts 2002 and ends 2016, we can observe each individual for 14 years at the most. As we are interested not only in adaption after marital dissolution but also in anticipation prior to dissolution, we set the reference category (our baseline) to "-3 years before marital dissolution and earlier" (up to max. -14 years before). Thus, one extremum would be: start of observation at "-14" and end of observation at "0" which refers to the year of marital dissolution, and the other extremum would be: start of observation at "-3" (because we observe all individuals at least three years prior to marital dissolution) and end of observation at "+11". The baseline category "-3 years before dissolution and earlier" comprises (1) all person-years between the 14th and the 3rd year before marital dissolution of individuals who experienced a transition and (2) all person-years of individuals without a transition, i.e. the comparison group of constantly married. After specifying the baseline, we created five time dummies for those with transition to marital dissolution, generating a progressive time axis starting after -3. According to this, the first time dummy captures mental health shifts prior to marital dissolution (i.e., anticipation) and covers the period two to one year before marital dissolution ("-2 to -1"). The biennial coding of the dummies (either the second or first year before dissolution) results from the biennial collection of data on mental health in the GSOEP data.[1] Therefore, the second time dummy captures the immediate and short-term effect of the event "year of first marital dissolution to +1" and covers a period between the dissolution and one year after (carefully differentiating between those who were still married and those who have been already separated at the time of interview in the year of marital dissolution), whereas the last three dummies capture mental health shifts following the event (i.e., adaptation): "+2 to +3" years after dissolution, "+4 to +5" years afterwards and "+6 and later" (up to max. +11 years after marital dissolution).

Time-varying confounders

To reduce potential risk of overcontrol bias (Elwert/Winship 2014), we carefully chose only five substantively important confounders. We include (1) linear and quadratic individual's age terms that capture general health decline, (2) a dummy for co-residence with current partner (1=yes, 0=no), (3) a dummy for co-residence with at least one child, without differentiating whether it is a biological one or not (1=yes, 0=no), (4) a dummy capturing pregnancy and birth coded '1' for the period of one year before a birth of a child, up to one year after it, and '0' otherwise, and (5) a dummy for remarriage (1=yes, 0=no).

1 Respondents for whom the year of dissolution was an odd year can thus contribute to the time axis only at years -13, -11, -9, -7, -5, -3, -1, +1, +3, +5, +7, +9, +11. Respondents for whom the year of dissolution was an even year can contribute to the time axis only at years -12, -10, -8, -6, -4, -2, 0, +2, +4, +6, +8, +10. Hence, to avoid potential selection and to ascertain that we observe all individuals at each particular time point (and not only at every second wave), we combined one odd and one even time point creating each time dummy.

Method of analysis

We estimate distributed fixed-effects (FE) regression models (Dougherty 2006) for mental health, separately for men and women by childrens' age group. Instead of contrasting the global average before and after the transition, we assume the effect of marital dissolution on mental health to be "distributed" across time. In other words: The within estimator compares the average mental health from the baseline "-3 years before marital dissolution and earlier" with the average mental health in each particular time dummy. The model equation for our analysis on mental health (abbreviation: MH) is presented below (see also Clark/Georgellis 2013):

$$MH_{it} = \alpha_i + \beta_{-2/-1}D_{-2/-1,it} + \beta_{0/+1}D_{0/+1,it} + \beta_{+2/+3}D_{+2/+3,it} + \beta_{+4/+5}D_{+4/+5,it} + \beta_{+6+}D_{+6+,it} + \beta' X_{it} + \varepsilon_{it}$$

where $D_{-2/-1,it}$ to $D_{+6+,it}$ are time dummies, X_{it} is a vector of time-varying confounders and $D_{-3,it}$ (not shown in the equation) is the omitted reference category (baseline).

This kind of modelling enables us, first, to carefully examine patterns of temporal mental health dynamics prior to the event (anticipation), in the year of the event or shortly afterwards (immediate and short-term effect) as well as following the event (adaptation). Second, comparing the same individuals before and after the event (within-subject design) brings us an advantage over previous studies by eliminating person-related time-invariant unobserved heterogeneity from the analysis. Third, this approach also accounts for potential selection of married individuals with poorer health into marital dissolution.

All FE regression models were estimated with the xtreg-command in Stata (Version 15.1) applying panel-robust standard errors.

Results

Descriptives

Tables 1 and 2 present sample composition by the age of the youngest biological child for women (Table 1) and men (Table 2): without transition to marital dissolution (comparison group) as well as with transition to marital dissolution—at baseline and at the first available observation as separated.

For the two comparison groups, the descriptives show the highest levels of mental health for mothers and fathers of children at age 0-4 and 5-10 (69.95 and 69.50 as well as 73.08 and 72.07, respectively). In contrast, childless women and men, and mothers and fathers of adult children report the lowest levels of mental health (67.63 and 66.44 as well as 67.48 and 69.87, respectively). All subgroups of individuals who experienced a transition to marital dissolution, except for childless men, showed lower levels of mental health already three years before marital dissolution compared to the respective comparison group. The average mental health decreases after marital dissolution by about 3 to 4 scale points for women and by 3 to 8 scale points for men. Lowest levels of mental health after marital dissolution are reported by women with adult children (58.62) and childless men (60.53), whereas separated fathers of children at age 5-10 and also fathers of adult children report the highest levels of mental health (66.27 and 65.01, respectively).

Table 1: Sample composition by age of the youngest biological child before and after marital separation for women

	WOMEN IN THE COMPARISON GROUP (last available observation as married)				
	Childless (*N* = 717)	Child at age 0-4 (*N* = 811)	Child at age 5-10 (*N* = 1,806)	Child at age 11-17 (*N* = 1,378)	Child at age 18+ (*N* = 5,358)
Mental health-related quality of life, *M* (*SD*)	67.63 (17.06)	69.95 (13.80)	69.50 (14.16)	68.87 (15.17)	67.48 (16.26)
Confounders					
Age, *M* (*SD*)	52.27 (15.88)	33.89 (5.04)	39.03 (5.25)	44.48 (5.16)	62.05 (10.82)
Co-residence: current partner, (%)	99%	99%	99%	99%	99%
Co-residence: child, (%)	2%	98%	99%	99%	6%
1 year before and after birth, (%)	0%	42%	0%	---	---
Remarriage, (%)	---	---	---	---	---
Additional information					
Marital duration, *M (SD)*	23.61 (16.17)	8.37 (4.39)	12.56 (4.87)	18.87 (5.23)	38.74 (11.55)
Two and more children, (%)	---	77%	83%	84%	76%
	WOMEN WITH TRANSITION TO MARITAL SEPARATION (at baseline: -3 and before)				
	Childless (*N* = 54)	Child at age 0-4 (*N* = 49)	Child at age 5-10 (*N* = 86)	Child at age 11-17 (*N* = 98)	Child at age 18+ (*N* = 83)
Mental health-related quality of life, *M* (*SD*)	64.78 (15.05)	66.43 (17.05)	66.75 (15.23)	67.49 (14.06)	61.12 (18.11)
Confounders					
Age, *M* (*SD*)	36.59 (10.22)	30.82 (5.67)	35.77 (5.08)	41.36 (5.10)	53.51 (9.86)
Co-residence: current partner, (%)	100%	100%	100%	98%	99%
Co-residence: child, (%)	0%	96%	100%	100%	31%
1 year before and after birth, (%)	0%	63%	1%	---	---
Remarriage, (%)	---	---	---	---	---
Additional information					
Marital duration, *M (SD)*	7.78 (7.26)	6.04 (3.95)	10.05 (4.83)	15.83 (5.49)	29.25 (11.37)
Two and more children, (%)	---	67%	65%	75%	74%
	WOMEN WITH TRANSITION TO MARITAL SEPARATION (first available observation as separated)				
	Childless (*N* = 54)	Child at age 0-4 (*N* = 49)	Child at age 5-10 (N =86)	Child at age 11-17 (*N* = 98)	Child at age 18+ (*N* = 83)
Mental health-related quality of life, *M* (*SD*)	61.96 (16.70)	62.31 (19.21)	63.42 (19.33)	63.03 (17.56)	58.62 (19.28)
Confounders					
Age, *M* (*SD*)	40.18 (10.47)	34.37 (5.74)	39.46 (5.08)	45.23 (5.09)	57.22 (9.85)
Co-residence: current partner, (%)	17%	25%	24%	55%	41%
Co-residence: child, (%)	0%	94%	95%	67%	1%
1 year before and after birth, (%)	4%	12%	5%	---	---
Remarriage, (%)	0%	0%	1%	0%	0%
Additional information					
Marital duration *M (SD)*	10.24 (7.22)	8.43 (3.96)	12.55 (4.74)	18.47 (5.41)	31.89 (11.38)
Two and more children, (%)	0%	75%	65%	75%	74%

Note: Symbol "---" in place of percentage indicates no valid observations for a given variable at a given time point or at any time point

Table 2: Sample composition by age of the youngest biological child before and after marital separation for men

	MEN IN THE COMPARISON GROUP (last available observation as married)				
	Childless (*N* = 1,557)	Child at age 0-4 (*N* = 722)	Child at age 5-10 (*N* = 1,638)	Child at age 11-17 (*N* = 1,283)	Child at age 18+ (*N* = 4,683)
Mental health-related quality of life, *M* (*SD*)	66.44 (18.23)	73.08 (13.12)	72.07 (13.29)	70.52 (15.12)	69.87 (15.98)
Confounders					
Age, *M* (*SD*)	64.53 (15.18)	36.64 (5.63)	41.81 (5.92)	47.00 (5.79)	64.08 (10.93)
Co-residence: current partner, (%)	99%	99%	99%	99%	99%
Co-residence: child, (%)	2%	98%	99%	99%	6%
1 year before and after birth, (%)	0%	43%	1%	---	---
Remarriage, (%)	---	---	---	---	---
Additional information					
Marital duration, *M (SD)*	36.36 (17.57)	8.24 (4.38)	12.42 (4.89)	18.83 (5.26)	38.06 (11.49)
Two and more children, (%)	---	76%	82%	84%	71%
	MEN WITH TRANSITION TO MARITAL SEPARATION (at baseline: -3 and before)				
	Childless (*N* = 60)	Child at age 0-4 (*N* = 32)	Child at age 5-10 (*N* = 67)	Child at age 11-17 (*N* = 67)	Child at age 18+ (*N* = 72)
Mental health-related quality of life, *M* (*SD*)	68.88 (15.62)	67.40 (14.56)	69.82 (14.32)	65.91 (15.48)	69.38 (14.36)
Confounders					
Age, *M* (*SD*)	45.72 (16.07)	34.53 (6.73)	37.96 (5.23)	43.49 (5.64)	54.61 (11.18)
Co-residence: current partner, (%)	100%	100%	100%	99%	100%
Co-residence: child, (%)	17%	91%	100%	100%	29%
1 year before and after birth, (%)	0%	75%	0%	---	---
Remarriage, (%)	---	---	---	---	---
Additional information					
Marital duration, *M (SD)*	14.20 (17.28)	6.84 (6.95)	9.69 (4.54)	16.19 (4.97)	28.35 (11.79)
Two and more children, (%)	---	59%	73%	75%	64%
	MEN WITH TRANSITION TO MARITAL SEPARATION (first available observation as separated)				
	Childless (*N* = 60)	Child at age 0-4 (N = 32)	Child at age 5-10 (*N* = 67)	Child at age 11-17 (*N* = 67)	Child at age 18+ (*N* = 72)
Mental health-related quality of life, *M* (*SD*)	60.53 (19.94)	61.49 (16.36)	66.27 (15.81)	62.22 (18.22)	65.01 (17.75)
Confounders					
Age, *M* (*SD*)	49.02 (16.00)	38.09 (6.65)	41.63 (5.13)	47.16 (5.49)	58.12 (11.13)
Co-residence: current partner, (%)	28%	19%	22%	45%	39%
Co-residence: child, (%)	3%	12%	33%	36%	0%
1 year before and after birth, (%)	0%	6%	4%	---	---
Remarriage, (%)	0%	3%	0%	1%	0%
Additional information					
Marital duration *M (SD)*	16.90 (17.42)	9.25 (6.92)	12.16 (4.50)	18.76 (4.88)	30.89 (11.80)
Two and more children, (%)	0%	69%	73%	75%	64%

Note: Symbol "---" in place of percentage indicates no valid observations for a given variable at a given time point or at any time point

With regard to age, comparison subgroups matched individuals with transitions well. Parents who experienced marital dissolution are of similar age as continuously married parents in the respective child's age group. The only exception are childless individuals with transition who are on average 12 to 15 years younger immediately after the event than those in the comparison group. Similar patterns were observed for marital duration: the groups of parents differ little, whereas the duration of marriage of childless individuals in intact marriages is on average longer than that of the childless who experienced dissolution.

The pre-dissolution rate of co-residence with spouse is similar across all groups: 98%-100% of married individuals live with a partner, no matter whether they will separate or not. After dissolution, the percentage of those living with some partner (new partner or ex-spouse) shrinks to 17% for childless women, to 19% for fathers of children at age 0-4 and to 22% for fathers of children at age 5-10. In contrast, 55% of mothers and 45% of fathers of adolescent children remain co-resident with their ex-spouse or live together with a new partner.

In Germany, children of separated parents are much more likely to stay in the maternal household than in the paternal one: About 88% of fathers live apart from their children after marital dissolution (Federal Statistical Office 2018). In the comparison group, over 98% of parents live with a child in the household, except for parents of adult children (only 6%). Pre-dissolution percentages are similar: More than 94% of mothers with children at age 10 years or younger live with children before and after marital dissolution. For fathers with children in the same age group, the percentage decreases from 91% to 12% in the age group 0-4 and from 100% to 33% in the age group 5-10. Adolescent children stay in about 67% with mothers and in about 36% with fathers after marital dissolution. These percentages mirror the well-known gendered co-residence patterns in postdivorce families in Germany (Arránz Becker/Lois/Salzburger 2015). Co-residence with adult children is more common before marital dissolution (about 30%) and rare after marital dissolution (1% or less) which indicates that in this age group marital dissolution often goes along with moving out of the youngest child (empty nest syndrome). The respective percentage is 6% in the comparison group.

The great majority of parents in our sample has two or more children (also before marital dissolution). The share of parents having two or more children is higher among continuously married parents (71% to 84%) than among parents who experienced marital dissolution (59% to 75%).

Overall, the descriptive statistics show that individuals in the comparison group are similarly distributed to individuals who experienced a transition, in particular with regard to age and marital duration (especially among parents) as well as co-residence with a partner. However, individuals who separate have poorer mental health than the comparison group already before marital dissolution, have fewer children, and depict a distinctive pattern of co-residence after dissolution.

Distributed Fixed-Effects (FE) models

Table 3 and Figure 1 illustrate the results from distributed fixed-effects (FE) models, separately for women and men depending on their parental status and the age of the youngest

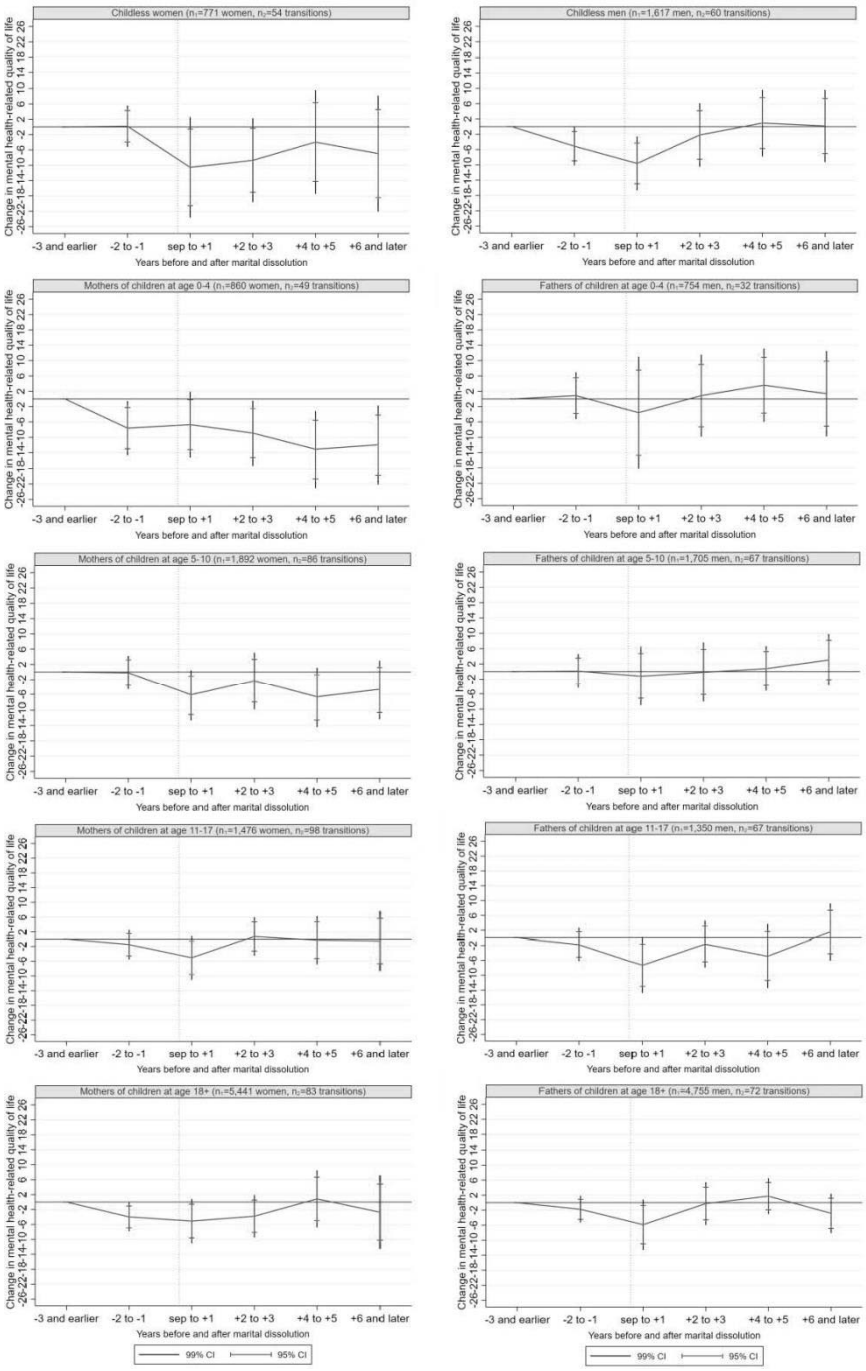
child. The regression coefficients for all ten models can be found in Table 3. Because we did not record any valid observations for the dummy capturing the time around pregnancy and birth for parents of adolescent and adult children, we excluded this variable from analysis in these two groups.

Table 3: Distributed fixed-effects by age of the youngest child for men and women

			WOMEN		
	Model 1 Childless	**Model 2** Child at age 0-4	**Model 3** Child at age 5-10	**Model 4** Child at age 11-17	**Model 5** Child at age 18+
	$\hat{b}$ $(\widehat{SE})$	$\hat{b}$ $(\widehat{SE})$	$\hat{b}$ $(\widehat{SE})$	$\hat{b}$ $(\widehat{SE})$	$\hat{b}$ $(\widehat{SE})$
D1: -2 to -1	0.18 (2.09)	-7.62 (2.73)**	-0.21 (1.72)	-1.50 (1.57)	-3.98 (1.49)**
D2: sep to +1	-10.55 (5.09)*	-6.70 (3.32)*	-6.13 (2.55)*	-5.07 (2.30)*	-5.10 (2.30)*
D3: +2 to +3	-8.72 (4.24)*	-8.90 (3.27)**	-2.33 (2.88)	0.73 (2.03)	-3.80 (2.21)
D4: +4 to +5	-3.95 (5.24)	-13.11 (3.86)***	-6.67 (3.01)*	-0.27 (2.56)	0.84 (2.97)
D5: +6 and later	-6.96 (5.85)	-11.96 (3.95)**	-4.69 (2.98)	-0.52 (3.16)	-2.70 (3.83)
Age (linear)	0.26 (0.36)	-0.35 (1.40)	-0.98 (0.63)	0.18 (0.42)	0.81 (0.15)***
Age (quadratic)	-0.00 (0.00)	0.01 (0.02)	0.01 (0.01)	-0.00 (0.00)	-0.01 (0.00)***
Co-residence: current partner	-5.29 (4.27)	-3.16 (2.33)	-3.21 (1.96)	-1.72 (1.75)	-1.21 (2.01)
Co-residence: child	1.80 (5.53)	2.86 (1.58)	-3.90 (1.66)*	1.65 (1.66)	0.73 (0.37)*
1 year before and after birth	-1.23 (4.30)	0.51 (0.77)	0.20 (0.70)	---	---
Remarriage	8.28 (6.72)	9.62 (11.6)	3.21 (5.25)	-1.43 (3.00)	-16.13 (7.45)*
Number of cases					
Number of person-years	N = 2,901	N = 1,767	N = 4,581	N = 5,141	N = 24,080
Number of individuals	N = 771	N = 860	N = 1,892	N = 1,476	N = 5,441
			MEN		
	Model 6 Childless	**Model 7** Child at age 0-4	**Model 8** Child at age 5-10	**Model 9** Child at age 11-17	**Model 10** Child at age 18+
	$\hat{b}$ $(\widehat{SE})$	$\hat{b}$ $(\widehat{SE})$	$\hat{b}$ $(\widehat{SE})$	$\hat{b}$ $(\widehat{SE})$	$\hat{b}$ $(\widehat{SE})$
D1: -2 to -1	-5.12 (1.95)**	0.86 (2.36)	0.12 (1.74)	-1.79 (1.72)	-1.77 (1.37)
D2: sep to +1	-9.63 (2.71)***	-3.59 (5.66)	-1.21 (3.01)	-7.33 (2.90)**	-5.85 (2.61)*
D3: +2 to +3	-2.19 (3.23)	0.86 (4.14)	-0.19 (3.04)	-1.63 (2.43)	-0.24 (2.21)
D4: +4 to +5	0.93 (3.39)	3.60 (3.71)	0.77 (2.29)	-4.89 (3.33)	1.73 (1.85)
D5: +6 and later	0.16 (3.68)	1.37 (4.31)	3.03 (2.63)	1.58 (2.97)	-2.83 (2.04)
Age (linear)	1.51 (0.26)***	-0.26 (0.92)	-0.87 (0.62)	-0.10 (0.40)	1.10 (0.17)***
Age (quadratic)	-0.01 (0.00)***	0.00 (0.01)	0.01 (0.01)	-0.00 (0.01)	-0.01 (0.00)***
Co-residence: current partner	4.12 (3.18)	3.63 (2.61)	3.89 (1.95)*	-1.17 (2.26)	1.30 (1.77)
Co-residence: child	-2.57 (2.01)	-0.08 (1.14)	-0.26 (1.29)	-1.83 (1.77)	0.73 (0.39)
1 year before and after birth	-8.78 (6.92)	-0.45 (0.67)	-0.03 (0.66)	---	---
Remarriage	1.75 (6.24)	-1.27 (3.62)	8.77 (3.36)**	-3.02 (4.24)	11.10 (5.17)*
Number of cases					
Number of person-years	N = 7,054	N = 1,535	N = 4,132	N = 4,736	N = 20,785
Number of individuals	N = 1,617	N = 754	N = 1,705	N = 1,350	N = 4,755

Notes: *p < .05. **p < .01. ***p < .001.

Figure 1: Distributed fixed-effects by age of the youngest biological child for women and men



The coefficients of time dummies in Table 3 (*D1*: "-2 to -1" to *D5*: "+6 and later") correspond to the intra-individual time path of mental health around marital dissolution and are illustrated via coefficient plots (addon coefplot, Jann 2014) in Figure 1. To begin with, mental health trajectories of childless men and women around marital dissolution (Model 1 and 6 in Table 3) are not only similar with regard to the overall pattern of decline and recovery but also with regard to the size of shifts (the maximal negative change in mental health is as large as 10 scale points for each group). Yet, whereas childless women's health starts to deteriorate immediately after dissolution and the recovery is rather slow and only partial (their mental health remains below the baseline for as long as 6 years after dissolution), childless men begin to suffer mentally already two to one year before dissolution and recover fully four years after it at the latest (Figure 1: coefficient plots in the first row).

Trajectories for mothers of infants and toddlers at age 0-4 and pre- and primary school children at age 5-10 differ fundamentally from the respective results for fathers. The group of mothers with infants and toddlers deserves particular attention, because this is the only group with a pronounced negative anticipation effect (the decline in mental health two to one year before marital dissolution is larger than 7 scale points and significant) being exacerbated continuously up to six years after dissolution, with -13 as the greatest decline at time point "+4 to +5" (Model 2). Interestingly, this decline does not seem to be triggered either by birth-related events or co-residence issues. Also, mental health of mothers of pre- and primary school children at age 5-10 years remains basically below the baseline (with one short-term, slight increase two to three years after dissolution), though the decline does not exceed 7 scale points (Model 3). In contrast, fathers of infants and toddlers (Model 7) and fathers of pre- and primary school children (Model 8) do not show any significant change in mental health at any time before and after marital dissolution compared to the baseline (Figure 1: coefficient plots in the second and third row).

Both parents of adolescent children (Model 4 and 9) and fathers of adult children (Model 10) experience negative mental health consequences immediately after dissolution but recover to the baseline within two to three years (Figure 1: coefficient plots in the fourth row). In contrast, mothers of adult children (Model 5) suffer mentally already prior to dissolution (the decline is not larger than 4 scale points though), and recover fully (but slower over time than men) within four to five years afterwards. (Figure 1: coefficient plots in the fifth row).

In our estimation sample, mental health systematically changes with (increasing) age for childless men and parents of adult children, indicating a reversed U-shape pattern. The effect of co-residence with current partner is negative for women and predominantly positive for men, with a significant positive effect for fathers of pre- and primary school children. The effect of co-residence with child(ren) is negative for mothers of pre- and primary school children and positive for mothers of adult children (5% level of significance). Further, although non-significant, the effect of co-residence with child(ren) on mental health is positive in all other women's groups and negative in all men's groups, except for fathers with adult children. Furthermore, we do not observe any significant effects related to the period surrounding pregnancy and birth. Finally, the effect of remarriage on mental health is strongly negative for mothers of adult children but positive for fathers of children at age 5-10 and fathers of adult children. Therefore, older fathers seem to benefit from remarriage whereas older mothers do not.

Discussion

This paper examines trajectories of mental health around marital dissolution among childless and parents of children of various ages. We overcome several methodological limitations of past research by employing a within-subject design, by reducing estimation bias from confounders and by including a comparison group to the estimation sample (e.g., to adjust correctly the age-related dynamics of mental health of those who experienced a transition). Moreover, and unlike most previous studies, we consider the age of the youngest child at the time point of marital dissolution and differentiate between parents of adult children and childless individuals. We also systematically distinguish between men and women as we expect that they experience different effects of dissolution on mental health.

The results indicate that childless women exhibit a considerable long-term impairment in mental health after marital dissolution, experiencing a markedly slower recovery afterwards than childless men. In contrast, childless men begin to suffer mentally before marital dissolution, and, thus, earlier than childless women but recover faster and completely. One supposable reason for the significant negative anticipation for childless men might be that they are more sensitive to negative spousal dynamics (e.g., marital conflicts or sexual abstinence) than childless women (Keizer/Ivanova 2017). According to our findings, childless individuals, especially childless women, turn out to be one of the most vulnerable groups struggling mentally with dissolution, just alongside mothers with infants and toddlers. This is a new insight emphasizing the necessity of differentiating between real childlessness and parenting of adult children, even if they have already moved out of the parental household (empty nest). Hence, our results do not support the first hypothesis that the (negative) effect of marital dissolution should be more evident among parents than among childless individuals. At this point we can only speculate about the reasons for this finding. On the one hand, if a childless marriage is not working, it should be easier for the spouses (legally, financially and even emotionally) to split up because there is no child motivating them to stay together (Lyngstad/Jalovaara 2010). On the other hand, childless might struggle with loneliness after marital dissolution that afflicts childless women less than men, however men are more likely to remarry faster (Zhang/Hayward 2001). There are two other important aspects we may only speculate about, namely, involuntary childlessness and postponing the decision about parenthood. As has been shown in Table 1, childless women who experienced a transition to marital dissolution were on average about 40 years old. This age corresponds for several women to the beginning of a menopause transition and thus to the end of the reproductive phase with little chances to get pregnant. There should be a difference in coping with marital dissolution in case of a – deliberately or involuntarily – childless marriage (Lyngstad/Jalovaara 2010). First, unsuccessful attempts to get pregnant may force spouses to use alternative methods like adoption, surrogates or in vitro fertilization which can lead to mental distress, marital conflicts and in consequence to marital dissolution. Second, if only one spouse wants to have children and the other does not, the age of 40 would be the very last chance to get pregnant. Hence, the decline in mental health after marital dissolution may signal, in particular among childless women, stress and fear of not only staying lonely after a broken up marriage but also staying involuntarily childless permanently.

Our next clear-cut result is the downward trajectory of mental health among mothers of infants and toddlers at age 0-4. For this group, the decline in mental health starts before dissolution and enlarges continuously up to the next six years afterwards. For mothers of pre- and primary school children at age 5-10, we also observe continuous drops of mental health after dissolution compared to the baseline, but not as markedly as for mothers with younger children. Contrary to the findings for mothers of children at age 0-10, we cannot observe any significant effect of marital dissolution on mental health of fathers of children belonging to the same age group. In general, for parents with adolescent and adult children, the negative effect of marital dissolution on mental health is rather short-term and limited to the first observation after dissolution (which suggests fast adaptation and the typical V-shaped temporary "shock"), except for mothers of adult children who begin to suffer mentally before dissolution and experience relatively slow recovery afterwards.

As for mothers, these findings fully support our second hypothesis that the negative moderating effect of parenthood around dissolution should be more visible among parents of younger children than among parents of older ones. Interestingly, for fathers, we cannot find any support for this hypothesis. According to our results, mothers of infants and toddlers are the most vulnerable and disadvantaged group during the process of marital dissolution. Based on our estimation sample, the majority of these mothers was married for eight years on average and has more than one child. We can only speculate about the reason for the negative anticipation prior to marital dissolution in this group. It might be that these marriages were of bad quality and a dissolution was the only way out of it, despite having an infant or toddler. In such case, marital quality might have been responsible for the initial downward slope before dissolution. Unfortunately, we cannot disentangle these effects, because GSOEP does not contain questions on partnership quality. It might also be that some couples tried to salvage their marriage by having another child and this attempt failed contributing to a decrease of mental health prior to marital dissolution. Yet, we can exclude prenatal and postnatal depression as a possible explanation because the effect of time around another pregnancy and birth was not significant in any group. The downward trajectory after marital dissolution might be produced by difficulties of combining childcare responsibilities with breadwinning, by time constraints, stress, overfatigue and anxiety about the future as a lone mother (Fokkema 2002). Aside from that, one possible factor responsible for the prolonged negative consequences of dissolution for mental health in this group may be difficulties in re-partnering faced by these mothers (de Graaf/Kalmijn 2003; de Jong Gierveld/Merz 2013). Arguably, time pressures may prevent them from searching for a new partner, and potential partners may find them less attractive than childless women or mothers of older children. Moreover, the reason why mothers of children at age 5-10 are less vulnerable than mothers with younger children may be the fact that children at this age are more autonomous and can express empathy which may help these mothers to cope better mentally after marital dissolution.

Interestingly, parents with younger children at age 0-10 are the only two groups for which we observe strong gender-specific differences in the temporal shape of mental health around dissolution. Mothers of these children suffer mentally, fathers do not. This is perhaps not surprising, considering that, first, early parenthood remains probably the most gendered life course stage in contemporary societies, with sharp differences with regard to women's and men's time use patterns, division of household labour, different em-

ployment perspectives, etc. (Mattingly/Bianchi 2003). Second, despite the common use of shared custody, about 95% of children stay in the maternal household after marital dissolution. It is surprising, however, that fathers of children at age 0-10 do not suffer mentally at all. This could be due to selection: Although marital dissolution may lead to paternal role strain and distress, those fathers who are more distressed may be more likely to divorce and overcome divorce faster (Umberson/Williams 1993).

While parenting of younger children seems to make a dissolution more difficult for mothers, the period of adolescence proves to be difficult for both mothers and fathers. Among parents whose youngest child was at age 11-17 in the year of marital dissolution, a significant decrease of mental health is visible up to one year after dissolution. This may reflect the usual mental coping with dissolution but also peculiarities of adolescence and behavioural problems triggered by dissolution (Strohschein 2005).

In our estimation sample, parents of adult child(ren) who decided to separate are older than 50 and have been married for 30 years, on average. Previous research on adaptation to divorce after a long-term marriage identified personality, repartnering and financial situation as the main determinants of adaptation (Perrig-Chiello/Hutchison/Morselli 2015). For fathers of adult children, we observe a similar V-shaped short-term pattern as for parents of adolescent children, whereas mothers of adult children begin to suffer mentally earlier and recover slowly afterwards. On the one hand, older mothers who experience a marital dissolution are less likely to suffer from loneliness than older fathers because of gender-specific support provided by children (Kalmijn 2007) but they are more likely to fare worse economically (Carr 2004). On the other hand, if they remarry, the new marriage would perhaps affect the contact with children and also the support from children in a negative way (Kalmijn 2007). Our results support these arguments: The effect of remarriage is positive for older fathers and strongly negative for older mothers. Finally, it is likely that (especially) mothers may suffer more from empty nest prior to dissolution, realize that without the buffer of resident children the marriage does not work anymore and make the decision to separate (Hiedemann/Suhomlinova/O'Rand 1998).

This study has limitations. First, it does not focus on mechanisms mediating the nexus between marital dissolution and mental health. Our intention was to specify parsimonious models to estimate the time path of mental health around marital dissolution while reducing the risk of overcontrol bias. In consequence, the role played by potential mediators, such as family relations and negative interactions with the ex-spouse after divorce (Afifi/Cox/Enns 2006), economic deprivation (Colletta 1983), or stressful life events (Lorenz et al. 2006) remains unclear and investigating them seems to be a promising task for future studies. Second, even if we use the longest panel data set for Germany, our data are limited. First, our outcome of interest is available biennially which produces gaps in the data. Second, information on partnership quality, involuntarily childlessness, miscarriages or stillbirths has not been collected, so we miss potentially important antecedents for our analysis.

To sum up, our study provides new longitudinal evidence on mental health dynamics around marital dissolution in Germany and raise the awareness of mental distress, loneliness and potential social exclusion faced by childless and parents, in particular mothers of infants and toddlers. Because consequences of dissolution may vary across legal and welfare regimes, further research studying other societal contexts is indispensable to provide comprehensive knowledge on mental health dynamics around marital dissolution.

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