# Trajectories of Life Satisfaction Before, Upon, and After Divorce: Evidence From a New Matching Approach

DIAL Working Paper Series 01/2019

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Dynamics of Inequality Across the Lifecourse: structures and process

dynamicsofinequality.org

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 724363

NORFACE NETWORK

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## Abstract

The aim of the current study was to compare changes in divorcees' life satisfaction to changes in a control sample of non-divorcees. Prospective longitudinal data came from 33 waves of the German Socio-Economic Panel Study. Divorcees (n = 787) were propensity-score matched to non-divorcees (n = 1,629) in the year of marriage. In this way, we created a clear starting point and time scale related to the different phases of divorce. Piecewise growth models indicated gradual declines in the years before divorce, a sudden decline in the year of divorce and gradual increases in the years after. The matched control sample of people who remained married throughout the study period showed gradual declines in life satisfaction, suggesting that some but not all of the declines found in divorcees were associated with the divorce process. Divorcees showed larger individual differences in change as compared to non-divorcees. Time-invariant moderators explained a small amount of variance in divorcees' life satisfaction trajectories. Discussion focuses on the implications of these findings for theory and research on hedonic adaptation during major life transitions.

**Keywords:** life satisfaction, divorce, longitudinal, hedonic adaptation

## Acknowledgments

Research reported in this manuscript is part of the project CRITEVENTS, which is part of the joint NORFACE research program "Dynamics of Inequality Across the Life-course" (DIAL). DIAL is funded by the European Commission via an ERA-NET Cofund grant (grant number 724363). Supplemental Material for this article can be found at the Open Science Framework (OSF). This paper is under peer review. Please consult the first author before citing.

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# Introduction

Many longitudinal studies have found that life events are associated with changes in life satisfaction (for a meta-analysis, see Luhmann, Hofmann, Eid, & Lucas, 2012). Yet, our understanding of the impact of life events on life satisfaction is still incomplete. How does life satisfaction change before, upon, and after critical life events? Is the impact of life events on life satisfaction transient or permanent? What part of the observed changes is due to the occurrence of life events and what part is due to other life course changes? Answers to these questions can deepen our understanding of the role of environmental factors for general well-being and inform policy makers and practitioners in designing interventions that promote well-being during critical periods.

The goal of the present study was to examine trajectories of life satisfaction before, upon, and after divorce. Divorce is a major life event that involves many psychological, social, and economic changes (for a review, see Amato, 2010). Longitudinal studies have found that divorcees show mean-level changes in life satisfaction (e.g., Denissen, Luhmann, Chung, & Bleidorn, 2018) and large individual differences in change (e.g., Doré & Bolger, 2017). However, in most extant studies on divorce and life satisfaction, analytic samples were restricted to divorcees. The main limitation of this sample restriction is that changes in life satisfaction that are associated with the divorce process are confounded with other changes over time that are not associated with divorce. Several studies have indicated that life satisfaction declines in the years after marriage (Lucas, Clark, Georgellis, & Diener, 2003; Luhmann et al., 2012). If analytic samples are restricted to divorcees, these declines in life satisfaction will be mistakenly attributed to the divorce process. The same limitation applies to conclusions about heterogeneity in divorcees' life satisfaction trajectories. Individual differences in change in life satisfaction can occur across the entire lifespan (Mroczek & Spiro, 2005). Previous studies focusing solely on divorcees' life satisfaction may therefore have overestimated the impact of divorce on individual differences in change.

The present study addressed these limitations by comparing changes in life satisfaction observed in divorcees to changes observed in a control sample of married individuals. The control sample was matched to divorcees in the year of marriage, using a large array of variables that accounted for pre-existing differences in life satisfaction and various other relevant factors. Based on this novel design, our main contribution was to disentangle changes in life satisfaction that are associated with the divorce process from changes found in individuals who remain married.

# Mean-level Change in Divorcees' Life Satisfaction

Various perspectives on well-being and marital transitions have provided theoretical guidance on how divorce impacts life satisfaction. Early work on hedonic adaptation (for an overview, see Luhmann & Intelisano, 2018) has emphasized that life satisfaction is mainly influenced by genetic and biological factors, with life stressors mostly having temporary effects. For example,

adaptation-level theory (Brickman & Campbell, 1971; Helson, 1964) states that initial well-being gains or losses in response to life events fade over time, and that people eventually return to neutral levels of well-being. Others (e.g., R. L. Solomon & Corbit, 1974) have focused on processes underlying hedonic adaptation, suggesting that after an initial positive or negative response to an event, adaptation follows from automatic and physiological processes that allow constant stimuli (e.g., the experiences related to divorce) to fade into the background. According to these theories, divorce can be seen as a crisis that entails short-term declines in well-being (Booth & Amato, 1991; Williams & Umberson, 2004).

Some of these theories have now been revised (e.g., Diener, Lucas, & Scollon, 2006; Easterlin, 2003; Headey, 2008), recognizing that active processes (e.g., coping strategies) may also play a role in explaining hedonic adaptation, and that life events may trigger long-term changes in well-being. The revised theories still expect some degree of adaptation after life events, but recognize that adaptation may remain incomplete. The rate and degree to which people adapt partly depends on the type of life event (Easterlin, 2003; Lyubomirsky, 2011). A common assumption is that people are more sensitive to negative experiences as compared to positive experiences (Baumeister, Bratslavsky, Finkenauer, & Vohs, 2001; Cacioppo, Gardner, & Bernston, 1999). Therefore, hedonic adaptation might be incomplete in response to negative life events, such as divorce, as compared to complete adaptation following positive life events, such as winning the lottery. Perspectives from sociology and family studies provide further reasons for why people may not fully adapt to divorce. Here marriage is seen as an important source of social integration, emotional support, income, and health. If divorcees cannot fully compensate for the loss of these marital resources, their life satisfaction might not recover completely. These ideas are known as the chronic strain model (Booth & Amato, 1991; Ross, Mirowsky, & Goldsteen, 1990; Williams & Umberson, 2004).

Results from prospective longitudinal Dutch (Denissen et al., 2018), German (Lucas, 2005), and British (Clark & Georgellis, 2013) samples with multiple annual measurement waves have found that divorce is associated with declines in life satisfaction. These studies have shown declines not only in the year of divorce, but already in the preceding years of marriage, suggesting that divorce is a process that starts years before the actual separation. These so-called anticipatory or lead-effects (Clark, Diener, Georgellis, & Lucas, 2008; Luhmann et al., 2012) may reflect that divorce is usually preceded by years of marital problems (Kalmijn & Monden, 2006; Wheaton, 1990).

After divorce, the results of these longitudinal studies have all shown increases in life satisfaction, suggesting some adaptation. These increases might be explained by the fact that divorce can bring relief or escape from a bad marriage (Kalmijn & Monden, 2006), but also by positive effects of repartnering and economic recovery (Leopold, 2018). Studies are mixed on whether life satisfaction might recover fully. These mixed findings might be partly caused by the unclarity of how to measure baseline levels. The common approach to determine if people show full recovery is comparing their levels years after divorce with their level years before divorce. In the studies that defined the baseline more than 5 years before divorce and followed divorcees until more than 5 years after (Denissen et al., 2018; Lucas, 2005), recovery seemed incomplete. Specifically, life satisfaction years after divorce remained below baseline levels as measured at the start of the study period.

Conclusions about incomplete adaptation to divorce remain preliminary, however, as part of the mean-level decreases in life satisfaction might be unrelated to divorce and instead reflect time trends (Anusic, Yap, & Lucas, 2014a, 2014b; Yap, Anusic, & Lucas, 2012) related to relationship duration, aging, or other developmental processes. In line with this, a meta-analysis including 18 longitudinal studies on married couples has shown that, after a short "honeymoon period", life satisfaction declines in the first years of marriage (Luhmann et al., 2012). To distinguish between these trends and the effects of divorce, a control sample of married individuals is needed.

## Heterogeneity in Change in Divorcees' Life Satisfaction

In addition to asking if life events such as divorce are associated with mean-level changes in adult life satisfaction, another relevant question is under what circumstances divorce effects people more positively or negatively (Amato, 2010; Lucas et al., 2003). Classical theories on hedonic adaptation implicitly assume that adaption to life events is similar for most individuals. However, revised versions have suggested that people differ in how they respond to life events, with some returning to pre-event levels and others showing lasting changes over time (Diener et al., 2006). Divorce is a heterogeneous experience, and divorcees may show large differences in the degree to which they return to adaptation levels or show long-term changes in their well-being.

Some longitudinal studies have looked into individual differences in life satisfaction trajectories during divorce. A first line of studies has used exploratory approaches to map the amount of individual differences in change around mean-level trajectories. Infurna and Luthar (2016) and Mancini, Bonnanno and Clark (2011) used annual data from the German Socio-Economic Panel (SOEP) to examine if divorcees' life satisfaction trajectories could be divided into more than one distinct subclass of change (i.e., resilient, recovery, or prolonged grief). Using a mixture modeling framework, both studies found more than one subclass of change in life satisfaction. However, Infurna and Luthar showed that the 95% confidence intervals of these subclasses overlapped, indicating that subclasses may not be distinct. An explanation for finding multiple latent classes can be that change in divorcees' life satisfaction is better captured by one class with a complex nonlinear growth trajectory and variability around this trajectory (Bauer, 2007). The results of a recent study using the SOEP (Doré & Bolger, 2017) were in line with this alternative explanation. This study showed that change in life satisfaction around divorce was best described by one class with nonlinear mean-level change and continuously distributed individual differences in change, instead of discrete subgroups.

A second line of studies has examined the role of event-related and individual-level characteristics (see Amato, 2010, for a review). Experiences within the marital relationship are predictive of the direction and degree of change in life satisfaction after divorce. Research has shown that marriages that involved more conflict and lower levels of relationship satisfaction were followed by stronger *increases* in well-being after divorce compared to lower-distress marriages (Amato & Hohmann-Marriott, 2007; Kalmijn & Monden, 2006).

In addition to marital history, several other factors have been found to strengthen or buffer the negative impact of divorce on life satisfaction (Amato, 2010). A study using annual data from the SOEP found that men's initial decline in life satisfaction exceeded women's. In the years after, men recovered faster than women, resulting in similar levels of life satisfaction 5 years after divorce (Leopold, 2018). The direction and degree of change in divorcees' life satisfaction may also depend on the length of marriage. Compared to newlyweds, spouses that have been together for a long time have usually established clear marital patterns, such as a division household labor and exchanges of emotional support (Proulx, Helms, & Buehler, 2007). As the length of the marriage increases, the divorce and the accompanied loss of these marital resources may therefore impact life satisfaction more negatively. Additionally, longitudinal studies have shown stronger declines in life satisfaction and other measures of well-being in the presence of children (Gardner & Oswald, 2005; Leopold & Kalmijn, 2016; Williams & Dunne-Bryant, 2006). Taken together, existing research on divorce and well-being indicates that event-related and individual-level factors may buffer or strengthen the amount of pre-divorce declines and post-divorce recovery.

An untested assumption in all of these studies on heterogeneity in change is that the results are due to divorce. Similar to studies examining mean-level trajectories of life satisfaction surrounding divorce, studies on heterogeneity have solely focused on divorcees. These studies assume that the wide variety of experiences during the divorce process increases individual differences in change in life satisfaction. Yet, in the absence of a control sample it remains unknown whether this increase at least partially results from other processes experienced by married people who do not divorce.

Normative marital processes should also be considered when examining moderators of change. For example, studies have shown that most first-time parents experience a decline in life satisfaction in the years following childbirth (Luhmann et al., 2012). This decline in parents' life satisfaction might be similar for divorcees and individuals who remain married, which would point to a normative decline experienced by most parents. Alternatively, the divorce process might involve a unique drop in parents' life satisfaction that is not found in parents who remain married. When examining individual differences in divorcees, the inclusion of a control sample is needed to disentangle divorce effects from the influence of other marital processes.

In sum, research on mean-level change and heterogeneity in change in divorcees' life satisfaction has shown that (1) life satisfaction is best described by a nonlinear or discontinuous mean-level trajectory of pre-divorce declines and post-divorce increases, (2) divorcees show substantial individual differences in change in well-being. Yet, in the absence of a matched control sample of individuals who remain married, studies have not adequately disentangled the effects of divorce from changes over time in life satisfaction. In the current study, we compared life satisfaction trajectories of divorcees to a control sample of non-divorcees matched to divorcees in the year of marriage. In addition to this key contribution, we addressed two other pertinent methodological issues that are crucial in quasi-experimental designs.

# Methodological Issues

The first methodological issue is that the inclusion of a control sample is not sufficient to determine the impact of divorce on life satisfaction. Notably, differences in mean-level change and heterogeneity in change between samples could reflect stable pre-existing differences. Research has shown that divorcees and married couples differ on a large number of socio-economic, social, and psychological characteristics, including their life satisfaction. These differences are already present at the beginning of marriage. For example, individuals who will later divorce already show lower levels of well-being at the beginning of marriage compared to individuals who stay together (Hope, Rodgers, & Power, 1999; Johnson & Wu, 2002; Lucas, 2005). Stable individual differences between married people and divorcees have also been found for other characteristics, such as age and education level (e.g., Bramlett & Mosher, 2002; B. C. Solomon & Jackson, 2014). These differences need to be addressed when comparing change in life satisfaction between individuals who divorce and individuals who stay married (cf. Schwaba & Bleidorn, 2018; van Scheppingen et al., 2016).

Propensity-score matching is a technique to control for confounding pre-existing differences in quasi-experimental designs (e.g., Shadish, Cook, & Campbell, 2002). With this technique, respondents that will experience a life event later in their observation period are matched to a control sample that is very similar in their propensity to experience this life event. The propensity to experience a life event is estimated from a set of covariates, including the pre-event outcome variable (i.e., life satisfaction).

Variables included in the matching process should not be influenced by the divorce process itself (Frangakis & Rubin, 2002; Greenland, 2003; Rosenbaum, 1984). Especially for life satisfaction, marital problems might trigger declines in future divorcees many years before the actual divorce. This means that matching based on survey years, as done in earlier studies on life events other than divorce (Anusic et al., 2014a, 2014b; Yap et al., 2012), cannot address the risk of matching during the divorce process, when many covariates may already be colored by the impending event. In the current study, we therefore matched divorcees to non-divorcees *in the year of marriage*.

This approach had two key benefits. First, th*e early match at* the start of a marriage substantially reduced the risk of matching during the divorce process. Second, matching in the year of marriage enabled us to create a *comparable time scale* for divorcees and control respondents. That is, we assigned an artificial year of divorce to each control respondent. This year was based on the distance between the year of marriage and the year of divorce taken from each control respondent's match in the divorce sample.

The benefit of comparable time scales allowed us to address a second methodological issue: the phases of the divorce process. Previous studies have assumed that the divorce process consists of distinct phases but have not rigorously tested this assumption. As previously mentioned, future divorcees may experience marital problems in the last years of marriage resulting in gradually declining life satisfaction before the actual divorce. After separation, divorcees' life satisfaction may follow a discontinuous trajectory. The year of separation might be most stressful because it entails many practical and psychological challenges, such as finding new housing and a disruption or rearrangement of social relationships with family and friends (Mulder & Wagner, 2010). Therefore, divorcees' life satisfaction may decrease in the year of divorce. After the first year of separation, divorcees' life satisfaction may show gradual

increases, as divorcees adjust to new circumstances. Taken together, these considerations suggest that the life satisfaction trajectory across the divorce process likely reflects the distinct impact of three phases – pre-divorce, upon-divorce, and post-divorce. Similar three-phase trajectories have been identified for other psychological outcomes and life events, such as self-esteem and retirement (Bleidorn & Schwaba, 2018), and relationship satisfaction and the transition to parenthood (Doss, Rhoades, Stanley, & Markman, 2009).

Piecewise growth curve modeling (Duncan, Duncan, & Strycker, 2013) allows studying if observed trajectories in divorcees' life satisfaction are consistent with this assumption. This would be the case if a piecewise model with distinct phases before, upon, and after divorce fits better with divorcees' life satisfaction than a continuous one-piece change model or a two-piece change model. An additional advantage of piecewise growth curve modeling is that it provides a flexible framework to study individual differences in change. Piecewise growth models estimate mean-level change and individual differences in change for each phase of divorce. Furthermore, each growth parameter of life satisfaction can be predicted not only by covariates, but also by changes in preceding phases. Change in life satisfaction in the years before divorce might be negatively associated with changes in the years after. Specifically, if an individual experienced stronger declines in the years before divorce, this might indicate long-standing and accumulating marital problems, potentially leading to a stronger recovery in the years after (e.g., Amato & Hohmann-Marriott, 2007).

## The Present Study

The present research used longitudinal data on 787 divorcees who reported on their life satisfaction across up to 12 annual observations before and after divorce. In addition, we included a matched control sample of 1,629 non-divorcees that remained married across the study period. To the best of our knowledge, no study to date has included a matched control sample to study divorce and change in life satisfaction. We addressed three research questions.

First, how is the divorce process associated with mean-level change in life satisfaction? To answer this question, we examined life satisfaction trajectories before, upon, and after divorce, and we compared these trajectories to life satisfaction trajectories in the matched control sample. We expected divorcees to show declines in well-being in the years before divorce, followed by a sudden decline in the year of divorce, and increases in the years after. We expected the control sample to show slight but continuous declines across the study period.

Second, is the divorce process associated with increasing individual differences in change in life satisfaction? To answer this question, we estimated the amount of individual differences in change before, upon, and after divorce. Again, we compared this to individual differences in change observed in the matched control sample. We expected divorcees to show larger individual differences in change as compared to non-divorcees.

Third, what explains individual differences in life satisfaction trajectories across the divorce process? To answer this question, we first examined the role of correlated change across different phases of divorce. Based on previous research on marital history (e.g., Amato & Hohmann-Marriott, 2007), we expected changes in life satisfaction in the years before divorce

to be negatively associated with changes in the years after. This means that larger declines before divorce would be associated with smaller declines and/or larger increases upon divorce and after divorce. In addition, we examined the role of four pertinent moderators (i.e., gender, age, having children, and marital duration) for change in life satisfaction. We built on previous literature by examining if the effects of these moderators on change in life satisfaction differed between divorcees and a matched control sample non-divorcees.

# Method

## Data and Sample

The current study made use of publicly available de-identified data. Therefore, the current study's analyses were considered exempt by University of Amsterdam's Institutional Review Board.

We used data from 33 waves of the German Socio-Economic Panel Study (SOEP-long, version 33, release 2018; Wagner, Frick, & Schupp, 2007). The SOEP is a household panel survey in which each household member age 17 and older is interviewed separately. Annual measures of life satisfaction and marital status were available from 1984 to 2016, allowing us to model year-to-year changes in life satisfaction across the divorce process. Moreover, the SOEP data provided a large sample of respondents followed from marriage until divorce. Data are publicly available and can be downloaded from the SOEP website: https://www.diw.de/en/soep.

We selected a sample of respondents who entered a marital union during the panel and then (a) separated over the observation period – the *divorce sample*, or (b) stayed together – the *control sample*. We used the following restrictions to define the samples accordingly. First, we selected a starting sample of individuals who were observed across their transition to marriage. This condition dropped all respondents who were already married upon panel entry and all respondents who never married across their observation period. From this sample, we subsequently selected all panel observations from the year of marriage onwards ($N$ = 6,647 individuals, $N$ = 61,606 person-years).

This sample comprised the divorce sample ($N$ = 916 individuals, $N$ = 13,391 person-years) of respondents who went on to separate during their subsequent observation period and the control sample ($N$ = 5,731 individuals, $N$ = 48,215 person-years) of respondents who remained married. We limited the divorce sample to ensure a precise temporal identification of the year of divorce, removing 84 respondents who were not observed in the calendar year before they were initially observed as divorced. Moreover, we dropped 45 respondents from the divorce sample that were not married and living together in all of the years before divorce. After all restrictions, the divorce sample consisted of 787 individuals, comprising 11,302 person-years in the panel.

The *year of divorce* was defined as the year of separation although change of the legal status from married to divorced is often delayed due to an obligatory year of separation before divorce. For the models described below we considered only observations within an interval of

five years before or after the year of divorce, ensuring a sufficient number of observations across time points.

Table S1 shows the number of responses for life satisfaction at each measurement wave. To assess the selectivity of our final divorce sample, we compared it to a broader sample ($N$ = 2,610) that included divorcees who were not observed from the transition to marriage (all statistics measured in the year before divorce). Compared to this broader sample, our divorce sample was younger in the year before divorce (36 vs. 41 years), had a similar level of education, a slightly lower percentage of males (40% vs. 44%), a slightly lower equivalized household income (20,600 EUR vs. 21,000 EUR) and a slightly lower number of children living in the household (1.1 vs. 1.2). Compared to this broader sample, the mean of life satisfaction in our divorce sample was higher in the year before divorce (6.62 vs. 6.41) and in the year of divorce (6.23 vs. 6.07), consistent with the 5-year difference in mean age and the expectation of a negative age trend in life satisfaction.

## Measures

**Life Satisfaction.** The dependent variable in our analysis was global life satisfaction, which was measured annually in the divorce sample and the control sample using the following survey question: "How satisfied are you with your life, all things considered?" Respondents answered on an 11-point Likert scale ranging from 0 (completely dissatisfied) to 10 (completely satisfied).

Global life satisfaction captures cognitive evaluations of life overall, as opposed to transient affective states. Studies have shown that this single-item assessment of life satisfaction is valid, sensitive, and reliable (Diener, Inglehart, & Tay, 2013; Lucas & Donnellan, 2012). Life satisfaction is empirically linked to, but conceptually distinct from, related constructs such as affective well-being, mental health, and physical health, and it shows discriminant validity from such related constructs (Diener et al., 2013).

**Moderators.** We included 4 moderators: gender (male or female), age (in years), children living in the household (yes or no), and marriage length (in years). Gender and age were measured in the year of marriage. Marriage length and number of children were measured at the timepoint just before divorce.

## Analyses

To test our main hypotheses, we used structural equation modeling and Full Information Maximum Likelihood (FIML) estimation in Mplus version 7 (Muthén & Muthén, 2012). We included the household identifier as a cluster variable to account for nonindependence of individuals living together before divorce. Model fit was indicated by the root mean square error of approximation (RMSEA) < .08, comparative fit index (CFI) > .90 and Tucker-Lewiss fit index (TLI) > .90 (Hu & Bentler, 1998). Life satisfaction scores were transformed to T-scores using the grand mean and the standard deviation of all life satisfaction scores in the complete SOEP sample (N = 65,534). T-scores have a mean of 50 and a standard deviation of 10. Effect sizes of 2 are considered small, 5 medium, and 8 large (Cohen, 1988).

**Propensity-Score Matching.** Propensity-score matching (Rosenbaum & Rubin, 1983) in Stata version 15 (StataCorp, 2017) was used to match the divorce sample to the control sample

on a large number of covariates measured in the year of marriage. Stata do-files are available at the Open Science Framework (OSF).

The matching was conducted by estimating a propensity score for each respondent. The propensity score reflects the probability that a respondent will divorce or not, given the values of all covariates observed in the year of marriage. Although the best matching method is debated (King & Nielsen, 2017), propensity score matching leads to similar results as alternative multivariate matching methods (e.g., coarsened exact matching) when the most reliable matching algorithm is used (i.e., one-to-many matching with replacement; Jann, 2017).

The propensity score was calculated by regressing various covariates on the binary treatment variable (divorce). The predictors included life satisfaction and satisfaction with health and income as well as many other variables associated with divorce and/or life satisfaction (a full list is included in Table S2). For each divorcee, the matching model used a nearest neighbor algorithm to find the three best matches based on their propensity scores (Thoemmes & Kim, 2011). We used matching with replacement, which means that respondents in the control sample were allowed to be included more than once. This approach ensured that each divorcee could be matched to the nearest control, even if this control was already included in a previous match. Compared to matching without replacement, this approach reduces the risk of matching divorcees to controls that are quite different in their propensity scores (Dehejia, 2002). We employed a tolerance level on the maximum propensity-score distance between matches using a caliper width of .2 standard deviations of the logit of the propensity score (Austin, 2011).

The matching model identified control respondents for all 787 divorcees. These divorcees were matched to a total of 1,629 individuals from the control sample. We found three matches per divorcee but because we used one-to-many matching, some controls were matched to more than one divorcee. Specifically, 1,122 of the controls were matched to one divorcee, 345 were matched to two divorcees, 119 were matched to three divorcees, and 43 were matched to four or more divorcees (see Table S1 for the number of respondents per measurement wave). Table S2 shows the standardized differences (Cohen's *d*) between the divorce sample and the control sample with and without matching on all covariates included in propensity-score model. The absolute standardized difference between the divorce sample and control sample ranged from .02 to .26 before matching and .01 to .04 after matching, suggesting that the matching procedure improved the balance of covariates.

For the piecewise growth curve models, we created an artificial year of divorce for each control respondent, imputing the year of divorce of their match in the divorce sample (for a visualization of the data structure, see Figures S1 and S2). In this way, we created a similar time scale for life satisfaction trajectories in the divorce sample and the control sample and were able to compare change in life satisfaction before, during, and after divorce in the divorce sample and the control sample.

**Unconditional Piecewise Growth Curve Models.** We used piecewise latent growth curve modeling to examine trajectories of change in the divorce sample and the control sample. Mplus input and output files are available at the OSF. The selection of change models was guided by previous longitudinal research on psychological change during life transitions (e.g., Doss et al., 2009). To find the best-fitting model, we systematically examined a total of 22

models that contained every possible combination of no change (i.e., intercept-only), linear change, and quadratic change from one up to three phases. We determined the best-fitting model by the Bayesian Information Criterion (BIC), with lower values indicating better fit (Schwarz, 1978). A better model fit was indicated by a decrease in BIC that was larger than 2 (Burnham & Anderson, 2004; Rafferty, 1995). If the difference in BIC between best-fitting models was smaller than 2, we chose the more parsimonious model.

We started with three one-phase models assuming no change (1a), linear change (1b), and quadratic change (1c). If one of these models fit the data best, this would imply no effect of divorce. We subsequently tested if model fit improved when dividing change into two phases: before and after divorce (Models 2a-2j). Two-phase models did not allow for an additional change in the year of divorce. Finally, we tested if estimating three phases improved model fit (Models 3a-3k). Similar to Doss et al. (2009), three of these models implied only sudden effects in the year of divorce. Because changes in the years before and after divorce were constrained to be equal, these models would indicate no long-term shifts in the trajectory of life satisfaction (Models 3a-3c). The remaining models indicated not only a sudden shift, but also gradual changes in the years after divorce that differed from changes in the years before divorce (Models 3d-3k). Figure 1 shows the specific setup of a linear three-phase model in a structural equation framework (Model 3h). Mplus input files for all 22 models can be found in the supplemental materials. After establishing the best-fitting model, we used multiple group latent change models to test if the divorce sample and the control sample differed in mean-level change and in heterogeneity in change.

**Conditional Piecewise Growth Curve Models.** We tested if change in life satisfaction in one phase of the divorce process was predicted by change in life satisfaction in preceding phases. Specifically, latent parameters (e.g., intercept, linear change) of life satisfaction in a preceding phase were added as predictors of latent parameters of life satisfaction in a subsequent phase. If a linear three-phase model had the best fit, 6 predictions were added: the initial level predicting the linear slopes before, upon, and after divorce, the linear slope before divorce predicting the linear slope upon divorce and after divorce, and the linear slope upon divorce predicting the linear slope after divorce. Furthermore, we estimated a multiple group model to compare if these correlated changes between phases of divorce were different in the divorce sample as compared to the control sample.

As a final step, we tested moderators of individual differences in change, by adding gender, age, having children, and marriage length to the unconditional growth model. We again estimated multiple group models to compare if the effects of covariates on change were different in the divorce sample as compared to the control sample.

# Results

## Unconditional Piecewise Growth Curve Models

We used unconditional piecewise growth curve models in both the divorce and control sample to test the direction and degree of mean-level change (research question 1) and the degree of individual differences in change (research question 2). Fit indices and latent parameter

estimates for the best-fitting models in the divorce sample and control sample can be found in the supplemental materials (Table S3-S5). Based on BIC values, Model 3i had the best fit for life satisfaction in divorcees. Specifically, Model 3i had the lowest BIC value and the difference compared to all other models was larger than 2. Adequate model fit was also indicated by the RMSEA (0.025), CFI (0.982), and TLI (0.980). This result shows that the divorce process was characterized by three phases, supporting the notion that divorce entails both short-term and long-term effects on life satisfaction. Divorcees showed linear declines in the years before divorce, a sudden decline in the year of divorce, and curvilinear increases in the years after that were most pronounced in the first year after divorce. Furthermore, divorcees showed significant individual differences in change in each of the three phases.

For the control sample, Model 2c had the best fit based on BIC values (Table S4; improvement on other models > 2). Based on the RMSEA (0.019), CFI (0.988), and TLI (0.986), this model also fit the data well. This suggested that the control sample showed small linear declines across the first six measurement waves and small curvilinear declines across the last six measurement waves. Non-divorcees showed significant individual differences in all growth parameters.[2]

For both the divorce sample and control sample, estimated means at each of the 12 time points were very close to the non-parametric means. Table 1 and Figure 2 show that, on the mean-level, divorcees did not fully recover 5.5 years after divorce compared to their initial levels 5.5 years before divorce (a total decline of approximately 4 T-scores). However, the difference to the matched control sample at the last time point was much smaller (-1.5 T-scores), emphasizing the importance of including a control sample to determine the extent of recovery after divorce. Specifically, a before-after comparison of divorcees gives a biased view of (non-)recovery because if these people had not divorced, their life satisfaction would still have declined, as indicated by the matched controls.

The best-fitting unconditional growth model in the divorce (Model 3i) and control sample (Model 2c) differed in the number of phases and number of growth parameters. Furthermore, the best-fitting models included a linear and quadratic growth parameter in the post-divorce phase, which cannot be interpreted independently. In our subsequent models, this would hamper our ability to compare (heterogeneity in) change across phases and between divorcees and non-divorcees. Therefore, we restricted all subsequent analyses to the more parsimonious linear three-phase model (3h). This was the second-best fitting model in the divorce sample.

Model 3h showed a good fit in the multiple group model (RMSEA = 0.026, CFI = 0.977, TLI = 0.976). Differences between divorcees and controls in their life satisfaction intercept were not statistically significant (centered 5.5 years before divorce; Wald = 1.32, $p$ = .250). Divorcees showed steeper declines in life satisfaction in the pre-divorce phase (Wald = 37.56, $p$ < .001) and in the year of divorce (Wald = 5.40, $p$ = .020) as compared to non-divorcees. Furthermore, divorcees showed a significantly stronger increases life satisfaction in the years after divorce (Wald = 35.24, $p$ < .001).

[2]We additionally replicated the models as specified by Infurna and Luthar (2016) and Mancini et al (2011) with freely estimated time points. These studies also used the SOEP to examine individual differences in divorcees' life satisfaction trajectories. For both the divorce sample and the control sample, these models showed worse model fit than the best-fitting Models 3i and 2c. Fit indices for these models can be found in the supplemental materials (Table S3 and S4).

We found that individual differences in linear change in the divorce sample were significantly larger in the year of divorce (Wald = 13.55, $p < .001$), and in the years after divorce (Wald = 10.42, $p = .001$), as compared to individual differences in change in the control sample. Heterogeneity in initial level (Wald = 0.14, $p = .710$) and pre-divorce linear change (Wald = 0.492, $p = .483$) did not differ significantly between the two samples. These results indicated that the increasing individual differences in divorcees' life satisfaction were indeed partly due to divorce, and could be distinguished from individual differences in change in people who remained married.[3]

## Conditional Piecewise Growth Curve Models

In the next step of our analysis, we addressed our third research question about predictors of individual differences in change. To accomplish this, we first tested if changes in life satisfaction in the year of divorce and in the years after divorce could be predicted by the initial level of life satisfaction and change in the preceding phases (Table 2). To compare estimates between the two samples and across phases, we again used the more parsimonious linear three-phase model 3h.

In the divorce sample, the initial level of life satisfaction was negatively related to linear change before, during, and after divorce, suggesting that people who started with higher levels of life satisfaction showed steeper declines. Furthermore, changes in the years before divorce were negatively related to changes in the year of divorce. This means that larger pre-divorce declines were associated with smaller declines or increases upon divorce. In addition, changes in the year of divorce were negatively related to changes in the years after divorce. This means that larger declines in the year of divorce were associated with stronger increases in the post-divorce period. The association between changes in the years before divorce and changes in the years after divorce was nonsignificant. Preceding growth parameters explained between 9.8 percent (year of divorce slope) and 32.3 percent (post-divorce slope) of the variance in change in life satisfaction.

To test if these associations across phases were related to divorce, we compared the effects between the divorce sample and the control sample using Wald tests. None of the associations between growth parameters differed significantly between samples. This indicated that similar associations between levels and change in life satisfaction in previous years with change in subsequent years could be found in people who remained married. This means, on the one hand, that associations between preceding and subsequent levels of and changes in life satisfaction could not be attributed to the divorce process. On the other hand, however, the impact of these associations on trajectories of life satisfaction were much more visible in the divorce sample because divorce resulted in larger changes in life satisfaction, along with the associated tradeoffs across the different phases.

[3]Because we used one-to-many matching, some controls were used more than once (see method section for details). By including the household identifier as a cluster variable, the estimates of standard errors were adjusted for nonindependence of these duplicate cases. To check the robustness of our findings, we repeated the multiple group models with a control sample in which duplicate cases were excluded. Model comparison tests led to the same conclusions about differences compared to the divorce sample in mean-level change and heterogeneity in change. An overview of these findings can be found at the OSF.

After this assessment of correlated changes across three phases of the divorce process, we turned to the role of time-invariant factors in individual differences in change. To accomplish this, we tested the role of time-invariant factors in individual differences in change. Table 3 shows the results of the conditional piecewise growth curve models. We first included all four covariates in the multiple group model. Similar to the previous group comparisons, we used the more parsimonious linear three-phase model (3h). Specifically, we regressed intercept, the linear pre-divorce slope, the linear slope in the year of divorce, and the linear post-divorce slope on gender, age, having children, and marriage length.

In the divorce sample, the total variance explained by gender, age, having children, and marriage length varied between 1.9 percent (intercept) and 5.5 percent (year-of-divorce slope). Only 2 out of 16 effects were statistically significant. Specifically, years of relationship length was negatively related to the intercept of life satisfaction 5 years before divorce. This effect was very small (-0.1 T-scores). In addition, gender was significantly related to the linear slope in the year of divorce. Women's life satisfaction declined less in the year of divorce than men's. This difference amounted to 2.9 T-scores. All other effects of time-invariant factors were smaller than 2 T-scores and insignificant ($p \geq .050$).

We compared the effects of the covariates between the divorce sample and the control sample using Wald tests. The effect of gender in the year of divorce differed significantly between samples ($p < .001$). That is, the moderation effect of gender on change in life satisfaction upon divorce was only found in the divorce sample, and not in the control sample. All other effects, including the negative effect of relationship length on the initial level of life satisfaction, did not differ between the divorce sample and the control sample.

# Discussion

The main aim of the current study was to compare change in divorcees' life satisfaction to a matched control sample of non-divorcees. In previous studies, changes in life satisfaction that were due to divorce were confounded with changes over time that were unrelated to divorce. In the current study, we introduced a control sample of individuals who were highly similar to the divorcees in the year of marriage but stayed married. We used rigorous model-testing strategies and piecewise growth models to estimate the life satisfaction trajectories and compare these trajectories between divorcees and the control sample. In this way, our study provided better estimates of changes across the divorce process, the extent of individual differences, and predictors of individual differences.

Our first research question was: how is the divorce process associated with mean-level change in life satisfaction? Previous assessments of recovery and adaptation compared divorcees to themselves many years before divorce. Because some of the declines in divorcees' life satisfaction might be unrelated to divorce, complete recovery after divorce should not be specified as a return to pre-divorce levels. Divorce is always connected to marriage, and studies have shown that married individuals that do not go through divorce also decline in life satisfaction (Luhmann et al., 2012). Therefore, we measured recovery by comparing divorcees followed across the entire divorce process to controls matched in the year of marriage.

We systematically tested if life satisfaction showed a disrupted trajectory across the divorce process. As expected, our results indicated that divorcees' life satisfaction trajectory was best described by three phases: the pre-divorce phase, the year-of-divorce, and the post-divorce phase. Divorcees showed gradual linear declines before divorce, a sudden decline in the year of divorce, and gradual nonlinear increases after divorce that were most pronounced in the first year after divorce. These results were in line with longitudinal studies suggesting that divorce involves short-term and long-term changes in life satisfaction (Denissen et al., 2018; Lucas, 2005).

However, compared to previous studies, our design provided a better view of the long-term impact of divorce. Our results showed that very similar individuals who stayed married also declined in their life satisfaction. Long-term declines were smaller when compared to a matched control sample at a similar time point after divorce (-1.5 T-scores), than when compared to pre-divorce levels (-4 T-scores). These findings suggest that in previous studies that lacked a control sample, a large amount of the long-term declines observed in divorcees' life satisfaction has been incorrectly attributed to divorce.

The current study has theoretical implications because when applying an adequate comparison, hedonic adaptation to divorce is not as incomplete as thought. According to theories on hedonic adaptation, both automatic processes (e.g., physiological responses; Brickman & Campbell, 1971) and active processes (e.g., behavioral choices; Headey, 2008) may explain why divorcees recover to a large extent. For example, people may cope with divorce by seeking support from family members or developing new social relationships. However, even when compared to declines in non-divorcees, divorce had a long-term negative impact on life satisfaction, although not large in magnitude. According to the chronic strain model, a long-term decline might reflect the permanent loss of marital resources, such as emotional support, income, and health (Booth & Amato, 1991; Ross et al., 1990; Williams & Umberson, 2004).

Based on the current study and studies on other life events that used propensity-score matching (Anusic et al., 2014b, 2014a; Yap et al., 2012), transitions involving a change in marital status (i.e., divorce, widowhood, and marriage) seem to have small but lasting effects on life satisfaction compared to control samples that do not experience these transitions. Yet, it is important to note that Anusic et al. (2014b, 2014a) and Yap et al. (2012) matched a control sample based on survey year, which creates a control group without a clear starting point and time scale related to the different phases of a transition. This technique may produce biased estimates if people already change in the phase before the event (Frangakis & Rubin, 2002; Greenland, 2003; Rosenbaum & Rubin, 1983). For example, if widowhood follows from a period of illness, there might be changes in life satisfaction and other covariates included in the matching procedure (e.g., health) that take place in anticipation of the event. More research using a clearly identified starting point to match a control sample is needed before we can thoroughly compare the long-term effects of divorce on life satisfaction with long-term effects of other life events.

Our second research question was: is divorce associated with individual differences in change in life satisfaction? Again, a new feature of our study was comparing effects between divorce and control sample. Furthermore, we contributed to the literature by examining

heterogeneity in three phases of divorce that were identified using model-fitting strategies. In line with previous studies (Doré & Bolger, 2017; Infurna & Luthar, 2016; Mancini et al., 2011), we found that divorcees showed substantial differences in the direction and degree of change in life satisfaction. An important novel finding was that, in the year of divorce and in the years after divorce, divorcees showed larger individual differences in change as compared to the married control sample. These findings indicate that the experience of divorce is associated with increasing individual differences in life satisfaction.

Whereas divorcees also showed significant individual differences in the years before divorce, the amount of individual differences in change was similar in divorcees and non-divorcees during this phase. Divorcees and non-divorcees were very similar on a on a large number of covariates (e.g., age, income, health) in the year of marriage, which may have triggered similar deviations from the average trajectory during the following years of marriage. After divorce, the substantial variation in post-divorce factors such as the amount of economic recovery, repartnering, and coping strategies may have boosted individual differences in change in divorcees compared to the matched control group that remained married.

Our third research question was: What explains individual differences in life satisfaction trajectories across the divorce process? In general, most effects of explanatory factors were similar in the divorce and the control sample. Although this suggests that the associations per se are not unique to the divorce process, we note that divorcees experienced more changes in life satisfaction, giving rise to these associations.

This study was the first to test correlated changes in life satisfaction across the three phases of divorce. Tradeoff relationships emerged as the key finding on the linkages between these phases. This means that people who increased in life satisfaction in the years before divorce showed weaker increases or decreases in the year of divorce. Conversely, people who decreased in the years before divorce showed weaker decreases or increases in the year of divorce. Change in the year of divorce showed a similar negative association with change in the years after divorce. Given that we also found negative correlated changes in the control sample, these may reflect fluctuations in life satisfaction that take place in most adults, related to the normal ups and downs that people may experience in the areas of family, work, health, and relationships. For example, some people in the control sample may experience negative changes in life satisfaction because of marital conflict, but manage to resolve marital problems over the years and therefore recover from a dip in life satisfaction. Given that our matching conditioned on similarity on pre-event variables, it is likely that those who stayed married also experienced marital problems. In contrast to the divorce sample, these problems were either resolved or did not lead to divorce.

An alternative explanation is that the tradeoffs that we found between the phases represent floor or ceiling effects. People who reach the top or bottom of the life satisfaction scale because of strong change in one phase are not be able to increase or decrease further and therefore show opposite change in a subsequent phase. Future research is needed to study the causes of correlated changes in life satisfaction across different developmental phases (e.g., early adulthood to old age) and life transitions (e.g., marriage, job loss).

The effects of covariates that other studies have identified as potential moderators of divorce effects on well-being – gender, age, having children, and relationship length – were mostly not

significant and small in size, explaining less than 3 percent of the variance in trajectories of life satisfaction. Furthermore, most effects of covariates on change in life satisfaction were similar in the divorce sample and control sample.

Explaining the variability in change in life satisfaction by these factors may be difficult because the developmental pattern depends on a complex combination of many individual-related and event-related variables that mediate and moderate the impact of divorce. For example, divorce may partly bring relief from a bad marriage (Kalmijn & Monden, 2006), but also emotional and financial hardship. Some individuals may experience these countervailing factors simultaneously, whereas positive or negative factors prevail in others.

Two out of 16 effects were significant in the divorce sample. One of these effects – the negative effect of marriage length on the initial level of life satisfaction – was very similar in the control sample, showing the importance of a case-control design when studying moderators of change. The only effect that differed between samples was the effect of gender in the year of divorce. Divorced men showed steeper declines in life satisfaction compared to divorced women. This result extends similar evidence of previous studies on gender differences using the SOEP (Andreß & Bröckel, 2007; Leopold, 2018) by showing that the effect was unique to the divorce process and could not be found in married individuals. A potential explanation for this gender difference is that women are more aware of relationship problems. Research has shown that women more often file for divorce (Brinig & Allen, 2000; Kalmijn & Poortman, 2006). This suggests that immediate distress following the breakdown of a marriage might be stronger in men.

## Limitations and Future Directions

The main contribution of our study was to examine the effects of divorce on life satisfaction by including a matched control sample. Our study was also the first to use systematic model-fitting strategies and piecewise growth models to not only examine mean-level change, but also individual differences in change. In this way, we provided the most rigorous examination of adaptation-level theory in the context of divorce. Despite these strengths, our study has limitations regarding measurement and sample selection.

First, similar to many large-scale panel studies, life satisfaction in the current study was measured using a general 1-item self-report measure. This measure has good reliability and validity, and can be used to detect mean-level changes (Diener et al., 2013). Yet, a 1-item measure might be limited when examining individual differences in change. Multi-item measures are more precise on the individual-level (Kemper, Trapp, Kathmann, Samuel, & Ziegler, 2018), which is important when examining individual differences in change and predictors of these individual differences. Future work would benefit from using multi-item measures when examining individual differences in life satisfaction trajectories.

Second, large-scale panel studies are also limited in examining underlying mechanisms of change. Representative panel studies such as the SOEP only measure relatively broad factors with time intervals of 1 or more years between measurement occasions. Therefore, we were not able to capture more nuanced processes that may emerge on shorter time intervals, such as day-to-day interactions between spouses (e.g., Feeney, 2002). Future studies could combine

measurement-burst designs with longer-term designs (Wrzus & Roberts, 2016) to provide more insights in the mechanisms that underly change in life satisfaction during the divorce process.

Third, our selection criteria limited our analyses to younger couples that mostly divorced in the first years of marriage. Therefore, our results may not be generalizable to older couples that have been together for a long time. Divorce after a long marriage might be more disruptive than divorce after being married for only a couple of years. Furthermore, differences in work- and family-roles between life phases might cause differences in the direction and degree of change in life satisfaction.

A fourth related limitation is that we did not measure changes in life satisfaction before marriage. By following people from marriage onwards, we created a control sample with a comparable time scale, and we were able to match on covariates at marriage. Although marriage is a key transition in a romantic relationship, it is usually planned in advance, and most romantic partners have lived together before marriage. People who eventually divorce might already show different life satisfaction trajectories at the beginning of their relationship or even before meeting their future spouse. Future research that follows romantic couples in early stages of union formation (e.g., dating, moving in together) and across multiple life events are needed to account for these possible early differences between non-divorcees and divorcees.

In general, we hope that our study inspires future longitudinal research on hedonic adaptation to carefully consider the timing of changes during life transitions, and compare changes to a control group that is matched on a clear time point. Previous findings on the effects of other life transitions on mean-level change, individual differences in change, and predictors of change should be replicated by matching a control group on a clearly identified point in time at which respondents are not or less likely effected by the forthcoming event. For studies of job loss, this time point could be job entry; for parenthood, union formation; for other events such as widowhood, finding an appropriate starting point for matching is less straightforward but a potential solution is selecting an anchor age such as 65 which precedes most transitions to widowhood by at least a few years. Long-running panel studies such as the SOEP provide sufficient case numbers to apply the sample restrictions required for our matching approach.

## Conclusion

Using a large longitudinal sample and a new technique to match a control sample, our findings provide important information about the development of life satisfaction before and after divorce. Several key findings emerged from this study. First, our results indicated gradual declines in the years before divorce, a sudden decline in the year of divorce and gradual increases in the years after. The matched control sample of people who remained married throughout the study period showed gradual declines in life satisfaction, suggesting that some but not all declines were associated with the divorce process. Second, in the year of divorce and the years after divorce, divorcees showed larger individual differences in change as compared to non-divorcees. Third, time-invariant moderators explained a small amount of variance in divorcees' life satisfaction trajectories. In sum, our study provided a fine-grained picture of how life satisfaction changes before and after divorce.

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Table 1.

*T-scores for Life Satisfaction across the 12 Assessments for the Divorce and Control Sample*

| Year (centered around Divorce) | Divorce Sample | | Control Sample (matched) | |
|---|---|---|---|---|
| | Non-Parametric | Parametric (model 3i) | Non-Parametric | Parametric (model 2c) |
| -5.5 | 51.33 | 51.94 | 51.23 | 51.42 |
| -4.5 | 51.09 | 51.16 | 50.83 | 51.30 |
| -3.5 | 50.87 | 50.39 | 51.48 | 51.18 |
| -2.5 | 49.87 | 49.61 | 51.32 | 51.05 |
| -1.5 | 49.25 | 48.83 | 51.01 | 50.93 |
| -0.5 | 47.46 | 48.06 | 50.79 | 50.80 |
| 0.5 | 45.31 | 45.63 | 50.40 | 50.66 |
| 1.5 | 47.94 | 47.12 | 50.15 | 50.37 |
| 2.5 | 47.74 | 48.09 | 50.08 | 50.10 |
| 3.5 | 48.15 | 48.54 | 49.73 | 49.83 |
| 4.5 | 48.66 | 48.47 | 49.75 | 49.58 |
| 5.5 | 47.96 | 47.89 | 49.10 | 49.35 |

*Note.* The parametric models were based on the best-fitting models in the divorce sample (3i) and control sample (2c). Both models used 12 annual life satisfaction assessments from -5.5 years before divorce until 5.5 years after. The 0.5 steps indicate uncertainty about the exact date of divorce between annual measurements. Model 3i in the divorce sample indicated annual linear change from 5.5 years until 0.5 years before divorce, linear change in the year of divorce, and annual linear and quadratic change from 0.5 years until 5.5 years after divorce. Model 2c in the control sample indicated annual change in the 5.5 years before divorce, and annual linear and quadratic change from the year of divorce until 5.5 years after divorce.

Table 2

*Effects of Preceding Phases on Life Satisfaction Trajectories in the Divorce Sample and the Control Sample*

| | | Divorce Sample | | | | Control Sample | | | | Difference | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Outcome | Predictor | *B* | *S.E.* | *p* | 95% CI | *B* | *S.E.* | *p* | 95% CI | Wald | *p* |
| Linear Δ1 | Intercept | -0.08 | 0.02 | < .001 | [-0.11, -0.04] | -0.06 | 0.02 | < .001 | [-0.09, -0.03] | 0.79 | .374 |
| | Total $R^2$ | .180 | 0.07 | .006 | | .127 | 0.06 | .023 | | | |
| Linear Δ2 | Intercept | -0.25 | 0.07 | < .001 | [-0.39, -0.11] | -0.12 | 0.04 | .006 | [-0.21, -0.03] | 2.53 | .112 |
| | Linear Δ1 | -1.60 | 0.72 | .025 | [-3.00, -0.20] | -0.12 | 0.64 | .851 | [-1.37, 1.13] | 2.38 | .123 |
| | Total $R^2$ | .098 | 0.06 | .100 | | .048 | 0.04 | .245 | | | |
| Linear Δ3 | Intercept | -0.04 | 0.02 | .008 | [-0.08, -0.01] | -0.03 | 0.01 | .017 | [-0.05, -0.01] | 0.79 | .376 |
| | Linear Δ1 | -0.21 | 0.14 | .133 | [-0.48, 0.06] | -0.27 | 0.11 | .010 | [-0.48, -0.06] | 0.14 | .714 |
| | Linear Δ2 | -0.15 | 0.02 | < .001 | [-0.20, -0.11] | -0.10 | 0.04 | .016 | [-0.20, -0.02] | 1.52 | .217 |
| | Total $R^2$ | .323 | 0.07 | < .001 | | .170 | 0.07 | .018 | | | |

Table 3

*Moderating Effects of Covariates on Life Satisfaction Trajectories in the Divorce Sample and the Control Sample (Model 3h)*

| | | Divorce Sample | | | | Control Sample | | | | Difference | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Parameter | Predictor | *B* | *S.E.* | *p* | 95% CI | *B* | *S.E.* | *p* | 95% CI | Wald | *p* |
| Intercept | Gender (1 = female) | -0.35 | 0.72 | .624 | [-1.76, 1.06] | 1.34 | 0.58 | .022 | [0.19, 2.48] | 3.31 | .069 |
| | Age at marriage (years, centered) | -0.01 | 0.06 | .934 | [-0.13, 0.12] | -0.10 | 0.04 | .025 | [-0.18, -0.01] | 1.39 | .238 |
| | Having Children (1 = yes) | 1.26 | 0.93 | .173 | [-0.55, 3.07] | -0.67 | 0.88 | .449 | [-2.39, 1.06] | 2.29 | .131 |
| | Marriage Length (years, centered) | -0.17 | 0.08 | .036 | [-0.33, -0.01] | -0.28 | 0.07 | .000 | [-0.42, -0.15] | 1.20 | .273 |
| | $R^2$ | .019 | 0.01 | .185 | | .061 | 0.03 | .016 | | | |
| Linear Δ1 | Gender (1 = female) | -0.15 | 0.18 | .424 | [-0.50, 0.21] | -0.12 | 0.13 | .344 | [-0.37, 0.13] | 0.01 | .907 |
| | Age at marriage (years, centered) | -0.02 | 0.02 | .290 | [-0.04, 0.01] | 0.00 | 0.01 | .884 | [-0.02, 0.02] | 0.95 | .329 |
| | Having Children (1 = yes) | -0.31 | 0.22 | .158 | [-0.73, 0.12] | 0.03 | 0.17 | .859 | [-0.30, 0.36] | 1.49 | .222 |
| | Marriage Length (years, centered) | 0.01 | 0.02 | .536 | [-0.03, 0.05] | 0.02 | 0.02 | .164 | [-0.01, 0.05] | 0.11 | .746 |
| | $R^2$ | .025 | 0.03 | .392 | | .011 | 0.01 | .428 | | | |
| Linear Δ2 | Gender (1 = female) | 2.85 | 0.73 | <.001 | [1.43. 4.28] | -0.07 | 0.40 | .871 | [-0.85, 0.72] | 12.35 | <.001 |
| | Age at marriage (years, centered) | 0.04 | 0.04 | .316 | [-0.04. 0.12] | -0.02 | 0.02 | .440 | [-0.06, 0.03] | 1.57 | .210 |
| | Having Children (1 = yes) | -1.30 | 0.83 | .118 | [-2.92. 0.33] | -0.62 | 0.49 | .207 | [-1.58, 0.34] | 0.50 | .481 |
| | Marriage Length (years, centered) | 0.01 | 0.08 | .873 | [-0.15. 0.18] | -0.06 | 0.06 | .278 | [-0.18, 0.05] | 0.56 | .454 |
| | $R^2$ | .055 | 0.03 | .044 | | .016 | 0.02 | .337 | | | |
| Linear Δ3 | Gender (1 = female) | -0.40 | 0.20 | .047 | [-0.80, -0.01] | -0.12 | 0.11 | .246 | [-0.33, 0.09] | 1.48 | .225 |
| | Age at marriage (years, centered) | 0.00 | 0.01 | .908 | [-0.02, 0.03] | 0.00 | 0.01 | .663 | [-0.01, 0.02] | 0.01 | .906 |
| | Having Children (1 = yes) | 0.33 | 0.22 | .133 | [-0.10, 0.75] | 0.13 | 0.13 | .294 | [-0.12, 0.38] | 0.58 | .445 |
| | Marriage Length (years, centered) | 0.03 | 0.02 | .235 | [-0.02, 0.07] | 0.00 | 0.02 | .958 | [-0.04, 0.04] | 0.74 | .391 |
| | $R^2$ | .029 | 0.02 | .134 | | .007 | 0.01 | .418 | | | |

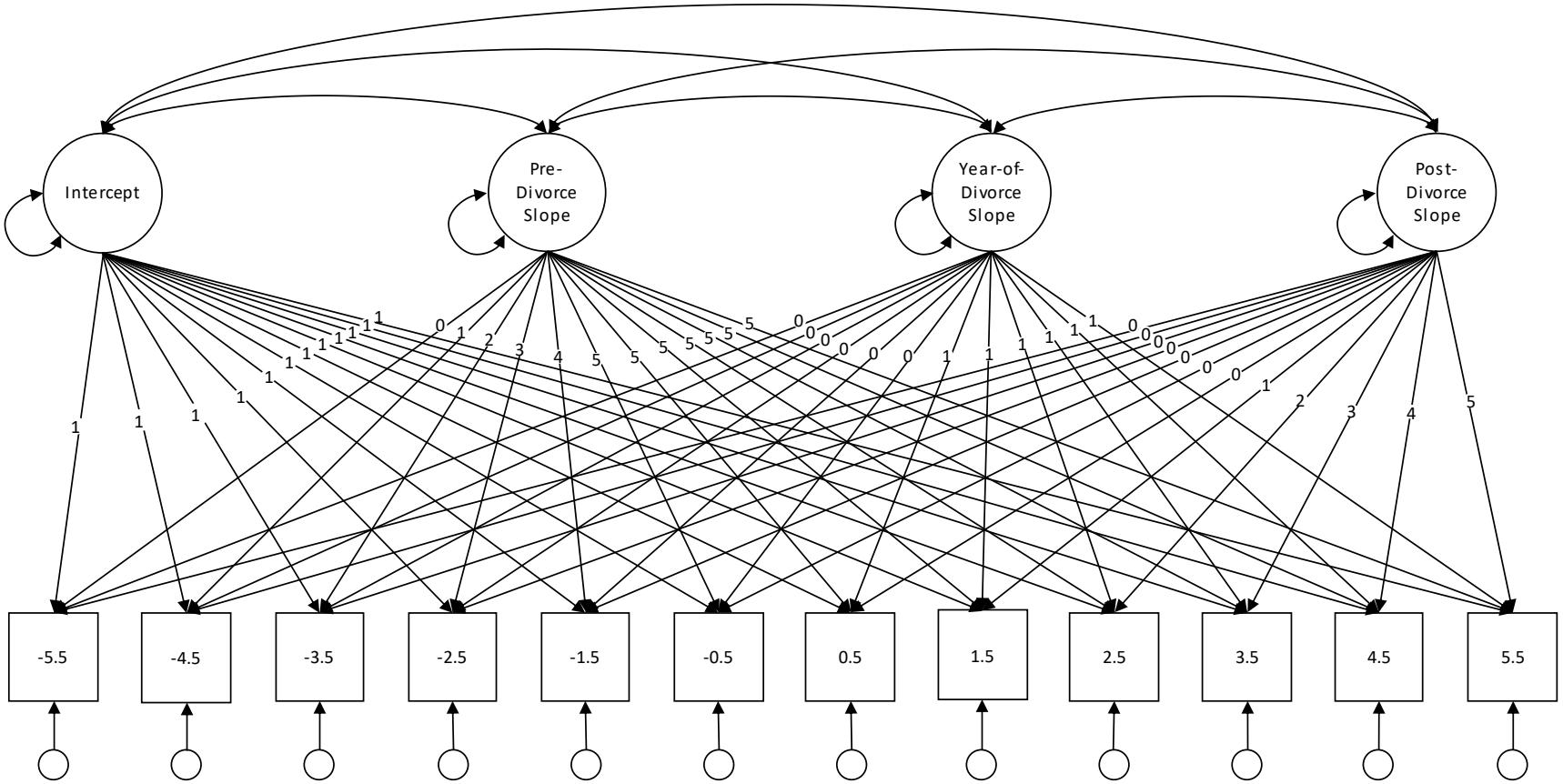


*Figure 1.* Unconditional latent growth curve model for life satisfaction in Model 3h. The life satisfaction manifest variables (squares) are measured from -5.5 years before divorce to 5.5 years after divorce. The 4 latent variables (circles) capture the initial level 5.5 years before divorce (*intercept*, all factor loadings set to 1), linear change in the 5 years before divorce (*pre-divorce slope*, factor loadings 0,1,2,3,4,5,5,5,5,5,5,5), linear change in the year of divorce (*year-of-divorce slope,* factor loadings 0,0,0,0,0,0,1,1,1,1,1,1), and linear change in the 5 years after divorce (*post-divorce slope*, factor loadings 0,0,0,0,0,0,0,1,2,3,4,5). The variances of the intercept, linear slope, and quadratic slope were freed and allowed to covary.

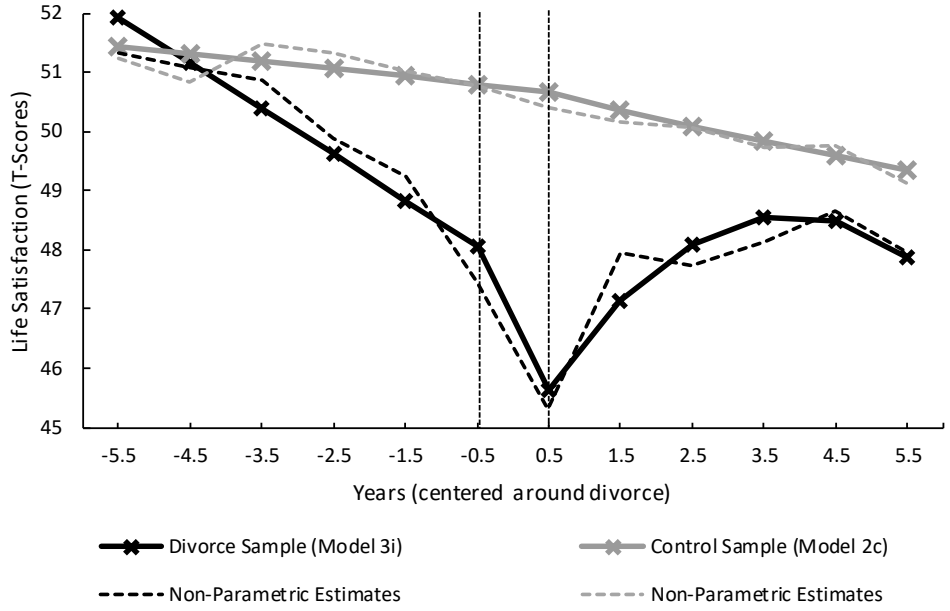


*Figure 2.* Estimated parametric (solid lines) on non-parametric (dotted lines) change in life satisfaction in the divorce sample and the matched control sample. For the divorce sample, the 12 assessments were centered around divorce (i.e., between the two dotted vertical lines). The time scale of each control was based on the year of divorce of their match in the divorce sample.

# Supplemental Material

Table S1.
*Life Satisfaction Number of Responses per Measurement Wave in the Divorce Sample and the Control Sample*

| | | Divorce Sample | | Control Sample (with duplicates) | | Control Sample (without duplicates) | |
|---|---|---|---|---|---|---|---|
| | | *n* | % | *n* | % | *n* | % |
| Total | | 787 | 100.0 | 2,361 | 100.0 | 1,629 | 100.0 |
| year of marriage | | 786 | 99.9 | 2,356 | 99.8 | 1,626 | 99.8 |
| Years (centered around divorce) | -5.5 | 327 | 41.6 | 741 | 31.4 | 502 | 30.8 |
| | -4.5 | 398 | 50.6 | 887 | 37.6 | 585 | 35.9 |
| | -3.5 | 465 | 59.1 | 1,000 | 42.4 | 673 | 41.3 |
| | -2.5 | 571 | 72.6 | 1,228 | 52.0 | 835 | 51.3 |
| | -1.5 | 679 | 86.3 | 1,443 | 61.1 | 967 | 59.4 |
| | -0.5 | 787 | 100.0 | 1,613 | 68.3 | 1,095 | 67.2 |
| | 0.5 | 786 | 99.9 | 1,443 | 61.1 | 970 | 59.5 |
| | 1.5 | 675 | 85.8 | 1,329 | 56.3 | 897 | 55.1 |
| | 2.5 | 621 | 78.9 | 1,228 | 52.0 | 821 | 50.4 |
| | 3.5 | 566 | 71.9 | 1,128 | 47.8 | 750 | 46.0 |
| | 4.5 | 511 | 64.9 | 1,034 | 43.8 | 680 | 41.7 |
| | 5.5 | 454 | 57.7 | 942 | 39.9 | 612 | 37.6 |