ABSTRACT—Cross-sectional studies show that divorced people report lower levels of life satisfaction than married people. However, such studies cannot determine whether satisfaction actually changes following divorce. In the current study, data from an 18-year panel study of more than 30,000 Germans were used to examine reaction and adaptation to divorce. Results show that satisfaction drops as one approaches divorce and then gradually rebounds over time. However, the return to baseline is not complete. In addition, prospective analyses show that people who will divorce are less happy than those who stay married, even before either group gets married. Thus, the association between divorce and life satisfaction is due to both preexisting differences and lasting changes following the event.

One of the most surprising findings in the study of emotion and subjective well-being is that life events do not seem to have a strong effect on happiness and life satisfaction. Although people dread the prospect of becoming disabled, losing their job, or ending a romantic relationship, much existing research suggests that they will not suffer long-term emotional consequences from these events. Most studies show that life events affect well-being for only short periods of time, and that people have an amazing ability to adapt to almost any life circumstance (Brickman, Coates, & Janoff-Bulman, 1978; Frederick & Loewenstein, 1999; Headey & Wearing, 1989; Suh, Diener, & Fujita, 1996). In fact, adaptation effects appear to be so strong and so ubiquitous that some researchers have suggested that emotions are regulated by homeostatic processes designed to maintain happiness “set points” (Brickman & Campbell, 1971; Headey & Wearing, 1989, 1992). People may temporarily move away from their average level, but over time, hedonic adaptation returns them to baseline.

Although there is considerable evidence for the existence of these adaptation effects, questions remain about their strength and ubiquity. These questions result from the difficulties that arise when studying life events. Life events cannot be reproduced in the laboratory, and therefore it is almost impossible to study them experimentally. Furthermore, most life events are relatively rare, and thus large samples are needed to find sufficient numbers of individuals who have experienced the event in question. Finally, life events are not completely exogenous. Instead, individual differences—including differences in well-being—may make life events more or less likely to occur for different people (Diener, Nickerson, Lucas, & Sandvik, 2002; Headey & Wearing, 1989; Marks & Fleming, 1999). Thus, even when cross-sectional studies show that a past life event is or is not associated with subjective well-being, it is difficult to determine whether within-person changes in well-being have actually occurred. Without such information, it is impossible to draw strong conclusions about adaptation effects.

In the current study, I examined long-term changes in life satisfaction before and after divorce. Cross-sectional studies have consistently shown that marital status is associated with life satisfaction, with married people reporting higher levels than divorced people (Haring-Hidore, Stock, Okun, & Witter, 1985; Myers, 1999). Yet longitudinal evidence about the processes that are responsible for these effects is sparse and inconclusive. Most longitudinal studies are limited by small sample sizes, short durations, or few measurement occasions (see Johnson & Wu, 2002, and Lucas, Clark, Georgellis, & Diener, 2003, for reviews). In addition, most studies have started tracking people very close to the time of divorce, which means that preevent levels of well-being are not known. Finally, the few long-term prospective studies that exist have arrived at conflicting conclusions about adaptation effects. For example, Booth and Amato (1991) found that adaptation to divorce was complete, but when Johnson and Wu (2002) analyzed the same sample of participants (with an additional wave of data and a different analytic model), they found that divorce was associated with permanent changes in levels of distress.
If set-point theories are correct, individuals should experience a brief reaction to divorce followed by a period of adaptation during which satisfaction levels return to baseline. Differences in life satisfaction between divorced and married individuals should be due to preexisting differences between these groups. An 18-year-long panel study with a nationally representative sample of Germans was used to test this hypothesis.

**METHOD**

The data in this study were obtained from Waves 1 through 18 of the German Socio-Economic Panel Study (GSOEP), a longitudinal study of German households that began in 1984 (Haisken-De New & Frick, 2003). Households were selected using multistage random sampling, and all adult members of the selected households were asked to participate. Surveys were conducted yearly using face-to-face interviews. The entire sample consists of more than 30,000 respondents who participated in at least 1 of the 18 waves. However, five new samples were added over the years (an East German sample in 1990, two immigrant samples in 1994 and 1995, and two refreshment samples in 1998 and 2000); therefore, many people participated for fewer than 18 years. Eight hundred forty-five participants reported divorcing at some point after their first year of participation, and these individuals make up the primary sample for the analysis. Individuals who divorced during their first year were excluded because no data about their previous levels of satisfaction were available. An additional 28 participants were excluded from analyses because of missing data (in most of these cases, household income was missing), resulting in a total sample size of 817.

Each year, participants were asked to indicate how satisfied they were with their lives, using a scale that ranged from 0 to 10. Satisfaction scores were centered within each year of the survey and within each subsample, to account for average trends over time. Thus, a score of zero reflects the average level of satisfaction for a particular year within a particular subsample.

Multilevel models were used to investigate changes in life satisfaction before and after divorce (see the appendix for details). If set-point theories are correct, individuals should experience a brief reaction to divorce followed by a return to preexisting levels of satisfaction. Thus, any cross-sectional difference between married and divorced individuals should be due to preexisting differences between the two groups rather than to within-person changes following divorce.

To test different aspects of this hypothesis, I examined three models. First, a relatively simple model was constructed to determine whether within-person satisfaction was different after divorce than it was before divorce. Specifically, three different periods were examined for each individual in the study. The baseline period consisted of all years of marriage that were at least 3 years prior to the year during which the individual divorced. The reaction period consisted of the 2 years before the divorce, the year of the divorce, and the year after divorce. Finally, the adaptation period consisted of all years that were at least 2 years after the divorce occurred. The model tested the difference between average satisfaction in the baseline period and average satisfaction in the reaction and adaptation periods (see the appendix). If set-point theory is correct, satisfaction during the adaptation phase should have been different from satisfaction during the baseline phase.

This model of reaction and adaptation provided a strong test of one critical component of set-point theory. However, it provided only a rough approximation of the year-to-year changes that occurred before and after divorce. For instance, because the model tested the average of the 4 years surrounding divorce (the reaction period), it could not determine how far individuals dropped in the worst year of the experience. Similarly, because the adaptation period represented an average of all years that were at least 2 years after divorce, the model did not specify whether there was an upward trajectory and whether individuals would eventually return to baseline if enough years were to pass. To get a more precise estimate of these changes, I used a second model estimating separate quadratic trends before and after divorce. This model tested how far respondents’ life satisfaction dropped when the divorce occurred and whether life satisfaction gradually returned to baseline as people adapted.

The third and final model addressed questions about preexisting differences between divorced and married individuals. If set-point theory is correct, differences in life satisfaction between married and divorced individuals should be due to preexisting differences between the two groups. To test this possibility, I selected for analysis the 2,388 individuals who started the study unmarried and then got married. Separate trajectories were estimated for the periods before and during marriage. A level-2 variable that indicated whether a person eventually divorced was included as a moderator of all level-1 parameters. If this variable moderated the intercept during the premarriage period, then this would show that people who would eventually divorce differed from those who would not, even before either group got married. Age, sex, and previous divorce were also included as level-2 control variables.

Of course, not all marriages existed for 3 years before the divorce occurred. Multilevel modeling techniques can use the data that are available for each person to estimate the parameters in the model, even if some individuals do not have data for all three periods.

Some of the individuals subsequently got remarried. Because I was interested in reaction and adaptation to divorce, data from waves during which respondents were remarried were not included in the analysis. However, because individuals who remarry are likely to exhibit different trajectories during the adaptation period than individuals who stay single, remarriage was included as a level-2 moderator.

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1. I reran all analyses with the uncentered satisfaction scores, and results were very similar to those presented here.
RESULTS

To put the within-person effects in context, I first estimated the average cross-sectional differences between married and divorced individuals across all years of the GSOEP study. On average, married participants reported a centered life-satisfaction score of 0.05. Divorced participants reported a score of −0.54, a difference of 0.59. Thus, if the cross-sectional differences were due to the effect of divorce, people would have dropped slightly more than half of a point from the time they were married to the time they were divorced.

Estimates from the reaction-and-adaptation model are reported in Table 1. The intercept (γ_00) reflects the average level of baseline satisfaction during the initial years of marriage. The reaction (γ_10) and adaptation (γ_20) parameters indicate the extent to which respondents changed from baseline during the reaction and adaptation periods. The income parameter (γ_30) reflects the average effect of income. The additional parameters in the model indicate the extent to which sex, age, and eventual remarriage moderated changes in life satisfaction across these three periods.

The intercept (γ_00) in Table 1 shows that those individuals who would get divorced in the future were less happy than average even during the baseline period of marriage. Specifically, they reported satisfaction scores about a quarter of a point lower than the full-sample average. This effect was moderated by age, with older respondents reporting lower levels of initial satisfaction than younger participants.

The reaction parameter (γ_10) shows that during the 4 years surrounding divorce, participants reported a significant drop in satisfaction of about 0.42 points. This change was significantly moderated by sex, with men dropping about 0.56 points below baseline and women dropping about 0.28 points. Neither age nor eventual remarriage moderated this reaction.

The critical test for set-point theory is whether people eventually return to baseline following their initial reaction to an event. The significant adaptation parameter in Table 1 (γ_20) shows that even long after the divorce occurred, satisfaction was still significantly lower than it was during the baseline period. Neither age nor sex moderated this effect, but eventual remarriage did. During the adaptation period, those participants who would eventually remarry reported satisfaction scores that were 0.20 points higher than their baseline levels. People who would remain divorced, in contrast, were still approximately 0.22 points below baseline long after divorce.

The reaction-and-adaptation model showed that long-term levels of satisfaction following divorce were lower than long-term levels before divorce. However, because the model focused on average levels of satisfaction across multiple years, it could not determine whether trends in satisfaction over time suggested an eventual return to baseline. For that reason, I examined quadratic trends before and after divorce. Figure 1 shows predicted levels of satisfaction before and after divorce based on the estimated parameters from the quadratic-trend model. The figure shows that life satisfaction decreased before divorce, reached a nadir in the year before divorce, increased following divorce, and then eventually leveled off after about 5 years. The linear and quadratic terms were significant both before divorce, γ_linear = 0.20, t(813) = 5.55, p < .01, and γ_quadratic = −0.01, t(813) = −3.55, p < .01, and after divorce, γ_linear = 0.09, t(813) = 2.35, p < .05, and γ_quadratic = −0.01, t(7769) = −2.12, p < .05. In addition, the linear trend immediately following divorce was significantly weaker than the linear trend immediately preceding divorce, \( \chi^2(1, N = 817) = 5.38, p < .05 \). In other words, satisfaction levels dropped more quickly before divorce than they rebounded after divorce. Note that peak satisfaction after divorce was significantly lower than peak satisfaction during marriage, γ = 0.34, t(813) = 2.83, p < .01. Together, these results suggest that people do not completely adapt to the experience of divorce.

Table 1

<table>
<thead>
<tr>
<th>Effect</th>
<th>Coefficient</th>
<th>SE</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial level, ( \beta_0 )</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept, ( \gamma_{00} )</td>
<td>−0.27</td>
<td>0.06</td>
<td>−4.30</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Sex, ( \gamma_{01} )</td>
<td>−0.03</td>
<td>0.11</td>
<td>−0.29</td>
<td>n.s.</td>
</tr>
<tr>
<td>Remarriage, ( \gamma_{02} )</td>
<td>0.02</td>
<td>0.13</td>
<td>0.19</td>
<td>n.s.</td>
</tr>
<tr>
<td>Age, ( \gamma_{03} )</td>
<td>−0.01</td>
<td>0.01</td>
<td>−2.44</td>
<td>&lt;.05</td>
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<tr>
<td>Reaction, ( \beta_1 )</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept, ( \gamma_{10} )</td>
<td>−0.42</td>
<td>0.06</td>
<td>−6.43</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Sex, ( \gamma_{11} )</td>
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<td>0.11</td>
<td>−2.50</td>
<td>&lt;.05</td>
</tr>
<tr>
<td>Remarriage, ( \gamma_{12} )</td>
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<td>0.12</td>
<td>0.86</td>
<td>n.s.</td>
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<tr>
<td>Age, ( \gamma_{13} )</td>
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<td>0.01</td>
<td>0.46</td>
<td>n.s.</td>
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<tr>
<td>Adaptation, ( \beta_2 )</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept, ( \gamma_{20} )</td>
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<td>0.08</td>
<td>−2.77</td>
<td>&lt;.01</td>
</tr>
<tr>
<td>Sex, ( \gamma_{21} )</td>
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<td>0.14</td>
<td>−1.10</td>
<td>n.s.</td>
</tr>
<tr>
<td>Remarriage, ( \gamma_{22} )</td>
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<td>0.15</td>
<td>2.72</td>
<td>&lt;.01</td>
</tr>
<tr>
<td>Age, ( \gamma_{23} )</td>
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<td>0.01</td>
<td>0.78</td>
<td>n.s.</td>
</tr>
<tr>
<td>Income, ( \beta_3 )</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept, ( \gamma_{30} )</td>
<td>0.36</td>
<td>0.06</td>
<td>5.98</td>
<td>&lt;.001</td>
</tr>
</tbody>
</table>

Note. \( N = 817 \).
As expected given the results from the reaction-and-adaptation model, sex significantly moderated many of these effects. Specifically, sex moderated the linear and quadratic parameters during marriage, $\gamma = 0.13, t(813) = 2.13, p < .05$, and $\gamma = -0.01, t(813) = -2.00, p < .05$, respectively. In addition, sex moderated the overall intercept (which, in this coding, represented the level of satisfaction in the year before divorce), $\gamma = -0.31, t(813) = -2.22, p < .05$. Together these results show that men's life satisfaction drops farther and more quickly than women's before divorce. The only other significant level-2 moderator was age. Age moderated the intercept, $\gamma = -0.02, t(813) = -2.52, p < .05$, with older respondents reporting lower levels of life satisfaction than younger respondents.

Previous research using this same German sample has shown that married people do not get a lasting boost in satisfaction when they get married (Lucas et al., 2003). Instead, people who get and stay married are happier than average even before they get married. However, this previous study did not explicitly test whether people who get and stay married are significantly happier than those who get married and then get divorced. Given that the life satisfaction of divorced people was approximately 0.60 points lower than that of married people in cross-sectional analyses and that satisfaction dropped between 0.22 points (in the reaction-and-adaptation model) and 0.34 points (in the quadratic-change model) following divorce, it was important to test whether selection effects contributed to the cross-sectional difference between divorced and married individuals.

To address this question, I tested a model that estimated quadratic trends before and after marriage for participants who stayed married and for those who eventually divorced. Results from this model are presented in Figure 2. As shown in a previous study (Lucas et al., 2003), people who would get and stay married started out with life satisfaction about a quarter point higher than average, got a small boost around the time of marriage, and then adapted back to baseline within a few years. People who would marry and then divorce, in contrast, reported satisfaction scores that were slightly below average before marriage, and they did not get a boost during the year of marriage. Respondents' levels of life satisfaction when they were single were significantly lower among those who would get divorced than among those who would stay married, $\gamma = -0.37, t(2353) = -2.56, p < .05$. Thus, part of the difference in satisfaction levels between divorced and married individuals appears to be due to preexisting differences between these groups.

**DISCUSSION**

The current study used a nationally representative sample of Germans who were followed for up to 18 years to study reaction and adaptation to divorce. Cross-sectional analyses replicated existing research in this area: Divorced respondents reported life-satisfaction scores that were more than half a point lower than those of married respondents. Longitudinal analyses showed that this cross-sectional difference was due to two effects. First, contrary to set-point theory, both the reaction-and-adaptation model and the more complicated quadratic-trend model showed that satisfaction levels did not return to baseline after the experience of divorce. Although some adaptation did occur in the years immediately following divorce, adaptation was not complete. Instead, people's satisfaction ended up 0.22 to 0.34 points lower than baseline levels.

Yet the difference between divorced and married individuals was not due entirely to the effect of divorce itself. Instead, people who eventually divorced were less happy than those who stayed married, even before marriage. Previous studies have shown that people who will divorce are less happy in the early years of marriage than are people who will stay married (Hope, Rodgers, & Powers, 1999; Johnson & Wu, 2002). However, even these early differences could be due to differences in the quality of the marriage. The fact that the current study found differences in satisfaction even before marriage is strong evidence for the existence of selection effects.

The effects in the current study may seem small. Together, the preexisting differences and the within-person changes amounted to just over a half-point difference between divorced and married people on an 11-point scale. However, most people fall within a relatively small range in well-being measures. For instance, in this large, nationally representative sample, respondents reported an average score of about 7, with a standard deviation of only about 1.5. Thus, effects that may seem small are actually substantial when considered in relation to the amount of variability that exists in the sample.

It is important to note that there is considerable variability in the extent to which people react and adapt to major life events. For instance, in the simple reaction-and-adaptation model, the standard deviation for the adaptation parameter ($SD = 0.99$) was almost as large as the standard deviation for the baseline level of satisfaction ($SD = 1.15$). Thus, just as people vary in their

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**Fig. 2.** Predicted changes in life satisfaction in the years before and after marriage for those respondents who eventually divorced and those who did not. Satisfaction scores are centered. The vertical line (0 years) indicates the year of marriage.
average levels of happiness, people vary in the degree to which their happiness changes following life events. Many people actually experience an increase in satisfaction following their divorce, whereas many others experience a greater drop in satisfaction than the average parameters suggest. Because few psychological variables were assessed in this data set, it is difficult to determine why the respondents varied in their reactions. The few demographic moderators I tested did relate to well-being, but their effects on reaction and adaptation were limited. Age seems to have had an effect primarily on baseline levels, and no significant association with the changes that occurred over time. The significant effect of eventual remarriage was likely due to the fact that people’s happiness increases as they enter a new relationship—the remarriage indicator was associated only with the adaptation parameter, but not with baseline levels or the reaction around the time of the event. Sex does seem to have affected the changes that occurred over time, with men reacting more negatively than women to divorce. However, interpreting this effect is difficult because previous findings have been somewhat inconsistent: Some studies have found benefits for men after divorce, whereas others have found benefits for women (see Simon, 2002, for a review). Thus, future research will be required to clarify these inconsistencies and to determine additional moderators of these effects.

This study adds to a small but growing body of research showing that adaptation is not always quick and complete. For instance, using the same German sample analyzed here, my colleagues and I (Lucas et al., 2003) showed that although people adapt very quickly to marriage (within about 2 years), they take much longer to adapt to the death of a spouse (about 8 years). In addition, both Johnson and Wu (2002) and Hope et al. (1999) found that divorce has lasting effects on levels of distress. Finally, incomplete adaptation has also been found in domains outside of marriage. For instance, my colleagues and I (Lucas, Clark, Georgellis, & Diener, 2004) showed that unemployment is associated with long-term changes in well-being. Respondents who became unemployed seemed to be permanently scarred by the experience.

Together, these studies show that although some amount of adaptation to life events does occur, it is not necessarily quick or inevitable. Reactions vary for different events and even for different individuals who experience the same event. Researchers, clinicians, and friends and family members of persons who have experienced such events should not assume that time naturally heals all wounds. Instead, some people may never adapt to some life events, at least not without intervention. The challenge for future research will be to identify which events cause lasting changes and why.

Acknowledgments—The data used in this article were made available by the German Socio-Economic Panel Study at the German Institute for Economic Research, Berlin.

REFERENCES


Hypotheses were tested using a random-intercept and random-slopes model (Bryk & Raudenbush, 1992) estimated with HLM 5 (Raudenbush, Bryk, & Congdon, 2000). For the first two models, data from the time of marriage (or from the start of the survey if the participant began the study married) to the final year during which the participant was divorced were included. For the 204 respondents who eventually remarried, data from the second marriage were not included in the analysis. However, the fact that the person remarried was treated as a level-2 moderator.

The first model tested whether people were less happy after divorce than they were when married. Life satisfaction during a baseline marriage period was compared with life satisfaction during a reaction period and an adaptation period. The level-1 model was

\[
\text{life satisfaction} = \beta_0 (\text{constant}) + \beta_1 (\text{reaction}) + \beta_2 (\text{adaptation}) + \beta_3 (\text{income}) + r
\]

Reaction and adaptation were dummy variables coded in such a way as to allow the estimated parameters to reflect the changes in life satisfaction that occurred during the reaction and adaptation phases. The reaction variable was coded as 1 for the 2 years prior to divorce, the year of divorce, and the year after divorce. It was coded as 0 for all other years. The adaptation variable was coded as 1 for all years that were at least 2 years after divorce and 0 for all other years. Thus, \( \beta_0 \) reflects baseline level of satisfaction during the initial years of marriage, \( \beta_1 \) reflects the change from baseline that occurred in the reaction period, and \( \beta_2 \) reflects the change from baseline that occurred in the adaptation period. The \( \gamma \) parameters reported in the text reflect the weighted average of these within-person parameters across all participants. This and all other models controlled for income change over time.

All level-1 parameters (with the exception of the income parameter) were predicted from respondent's sex and age at divorce, along with a dummy variable indicating whether the respondent eventually remarried. Sex and age were centered; the remarriage variable was not. Because this variable was not centered, the other parameters can be interpreted as the effects for those respondents who did not remarry.

The second model tested quadratic trends before and after divorce. The level-1 model was

\[
\text{life satisfaction} = \beta_0 (\text{constant}) + \beta_1 (\text{married linear}) + \beta_2 (\text{married quadratic}) + \beta_3 (\text{divorced constant}) + \beta_4 (\text{divorced linear}) + \beta_5 (\text{divorced quadratic}) + \beta_6 (\text{income}) + r
\]

Because the marriage linear variable was coded 0 in the last year of marriage and the divorce linear variable was coded 0 in the first year of divorce, the overall intercept can be interpreted as the level of satisfaction in the last year of marriage, and the divorce intercept can be interpreted as the change in satisfaction from the last year of marriage to the first year of divorce. Biesanz, Deeb-Sossa, Papadakis, Bollen, and Curran's (2004) procedures for transforming parameters were used to determine the level of satisfaction at peak years of marriage and divorce. Age, sex, and eventual remarriage were included as level-2 moderators. The random component was not significant for the divorce quadratic parameter, so this parameter was treated as fixed. In addition, the income parameter was treated as fixed.

The final model tested whether people who would get divorced were less happy than those who stayed married even before either group got married. All individuals who started the survey unmarried and got married at some point in the study were included. Separate intercepts and linear and quadratic parameters were estimated for the periods leading up to and during marriage. Sex, age at marriage, and two dummy variables indicating whether the person had been previously divorced and whether he or she eventually divorced were included as moderators of all level-1 parameters except within-person income. Sex and age were centered; previous divorce and eventual divorce were not. All level-1 parameters except within-person income and the marriage-period quadratic term were treated as random.