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Still Doing Fine? The Interplay of Negative Life Events and Self-Esteem During Young Adulthood

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Abstract

This longitudinal study investigated the bidirectional relationship between negative life events and self-esteem during the transition from adolescence to young adulthood (N = 2272). Drawing on theories of human development over the lifespan and just-world theory, we analyzed age-graded changes in self-esteem and their interplay with negative life events at three measurement points over a 12-year period. We addressed both the short-term and the longer term effects of single as well as multiple negative life events on changes in self-esteem (socialization effects). We further investigated whether the pre-event level of self-esteem affected the likelihood of negative life events occurring (selection effects) and, finally, whether it had protective effects in terms of helping people adjust to negative events. Latent change models yielded four main findings: (1) self-esteem increased during young adulthood; (2) socialization effects were observed over shorter and longer timespans, but (3) selection effects were only found for multiple negative life events, with low self-esteem predicting a high number of negative life events; (4) high pre-event self-esteem acted as a protective factor, attenuating declines in self-esteem after experience of multiple negative life events.

Keywords: self-esteem, life events, protective factors, latent change models

Although self-esteem is commonly conceptualized as a stable trait, it is also subject to change (Kuster & Orth, 2013; Trzesniewski, Donnellan, & Robins, 2003). For example, the maturational changes and challenges that accompany the transition from adolescence to young adulthood can lead to age-graded mean-level changes in self-esteem (Chung et al., 2014; Wagner, Lüdtke, Jonkmann, & Trautwein, 2013). Idiosyncratic experiences also shape developmental trajectories (Baltes, Lindenberger, & Staudinger, 2006). Divorce, unemployment, and serious illness are examples of major life events that can threaten self-esteem. Indeed, previous studies have found associations between such negative life events and declines in self-esteem (e.g., Galambos, Barker, & Krahn, 2006). It has also been suggested that self-esteem levels can affect the probability of such life events occurring in the first place (e.g., Trzesniewski et al., 2006). To date, however, few investigations have addressed this bidirectionality (e.g., Orth, Robins, & Meier, 2009). In light of the crucial role self-esteem plays in developmental processes, including happiness (e.g., Diener & Diener, 1995), mental health (e.g., Orth & Robins, 2013), and occupational outcomes (e.g., Kuster, Orth, & Meier, 2013), a better understanding of the causes and consequences of changes in self-esteem at the transition from adolescence to young adulthood may offer important insights into successful development even into later life.

This article aims to advance the understanding of this important developmental issue by analyzing data collected at three measurement points over a 12-year period in the context of a large-scale longitudinal German study. As a starting point, it adds to the literature addressing age-graded changes in self-esteem from late adolescence to young adulthood. However, the article's main contribution is to investigate bidirectional relationships between self-esteem and negative life events (i.e., *selection* and *socialization* effects) with respect to both single and multiple negative life events and both short-term and longer term associations. Finally, it examines whether a high pre-event level of self-esteem can act as a

protective factor that helps young people adjust to negative events. To our knowledge, few previous longitudinal studies have examined the relationship between self-esteem and negative events, and we know of none that have considered the interplay between self-esteem and both single and multiple negative events during emerging adulthood. In contrast to most previous studies on life events, our data allowed us to create a control group of young people who had not experienced any major negative events. We were thus able to examine changes in self-esteem intraindividually and to compare outcomes among affected individuals against the general trajectory in the corresponding age group.

Stability and Change in Self-Esteem Across Emerging and Young Adulthood

Although self-esteem shows comparable stability to personality traits throughout much of the lifespan, people's evaluations of themselves do change over the course of development (Kuster & Orth, 2013; Trzesniewski et al., 2003). Previous studies examining the general trajectory of self-esteem have frequently reported that it drops in early adolescence (Robins, Hendin, & Trzesniewski, 2001; Trzesniewski et al., 2003) but then recovers and increases until middle adulthood (Chung et al., 2014; Erol & Orth, 2011; Hutteman, Nestler, Wagner, Egloff, & Back, 2015; Meier, Orth, Denissen, & Kühnel, 2011; Orth, Trzesniewski, & Robins, 2010; Wagner et al., 2013).

Several theoretical approaches shed light on these age-graded changes in self-esteem. On a general level, lifespan developmental psychology (e.g., Baltes et al., 2006) and transactional perspectives (e.g., Roberts & Robins, 2004; Sameroff, 2010) explain longer term change in terms of continuous interactional processes of personal characteristics with environmental influences. As humans grow up, shifts in social environments and maturational changes (i.e., puberty) can have considerable effects on self-esteem by altering their evaluations of their own behavior, their perception of others' evaluations of them, and their sense of how they compare with others (see Baumeister, Campbell, Krueger, & Vohs,

2003; Robins & Trzesniewski, 2005; Seligman, 1993). Havighurst (1972) defined salient developmental tasks for each period in life that arise from societal expectations, physical processes, and personal goals. In young adulthood, these tasks may include acquiring job skills, building a romantic relationship, or establishing a concept of one's future life (see also Masten, Obradović, & Burt, 2005). According to this approach, successfully accomplishing these tasks may pave the way for future positive development. Age-graded increases in self-esteem from late adolescence to young adulthood may therefore result from age-specific influences and demands (i.e., events and transitions associated with specific ages; see Baltes et al., 2006) that may require social role transitions, thereby prompt changes in identity and behavior to match new role expectations and normatively lead young adults to perceive themselves as competent individuals and increase their self-esteem (Arnett, 2000).

Several studies have found associations between self-esteem and demographic influences such as gender and socioeconomic status (SES): In general, self-esteem seems to be slightly higher in individuals with high SES (Chung et al., 2014; Robins, Trzesniewski, Tracy, Gosling, & Potter, 2002) and in males (Orth et al., 2010; Robins & Trzesniewski, 2005; von Soest, Wichstrøm, & Kvalem, 2016; Wagner, Lang, Neyer, & Wagner, 2014; Wagner et al., 2013). The gender differences observed are often small, peak in late adolescence, narrow during emerging adulthood, and converge in later life (Baldwin & Hoffmann, 2002; Galambos et al., 2006; Kling, Hyde, Showers, & Buswell, 1999; McMullin & Cairney, 2004). Taking a transactional view on developmental processes (e.g., Sameroff, 2010) and given that previous research has confirmed associations between demographic variables and certain experiences (e.g., Roberts, Kuncel, Shiner, Caspi, & Goldberg, 2007), we posit that individual differences in demographics may also influence the bidirectional dynamics between self-esteem and negative life events by providing individual and social resources for developmental processes during emerging adulthood.

Negative Life Events as Causes of Change in Self-Esteem: Socialization Effects

In addition to age-related changes and challenges, idiosyncratic experiences may also shape developmental trajectories. The lifespan perspective introduced the term *nonnormative influences* to refer to more individual experiences that do not affect the majority of those in a given age group (e.g., Baltes et al., 2006). Major negative life events such as the death of a parent, unemployment, or serious illness are examples of nonnormative experiences in adolescence and young adulthood. Empirical research has found associations between major life events and changes in personality (e.g., Lüdtke, Roberts, Trautwein, & Nagy, 2011), subjective well-being (e.g., Luhmann, Hofmann, Eid, & Lucas, 2012), depression (e.g., Hammen, 2005), and self-esteem (Galambos et al., 2006; Littleton, Magee, & Axsom, 2007; Pinquart, 2013). For example, several studies have reported that the experience of unemployment lowers self-esteem (Galambos et al., 2006; for an overview, see Paul & Moser, 2009). Likewise, divorce or separation (Waite, Luo, & Lewin, 2009), being a victim of an accident or crime (for overviews, see Hall, French, & Marteau, 2003; Littleton et al., 2007), and chronic illness (Pinquart, 2013) have been shown to be associated with declines in self-esteem. In the following, we refer to these associations between life events and subsequent changes in self-esteem as *socialization effects*.

Several theoretical approaches offer ideas about the developmental role of negative events. From a meta-theoretical point of view, transactional perspectives (Sameroff, 2010) conceptualize negative life events as changes in person–environment interactions that can require their reorganization and that may result in maladjustment. Following this developmental approach, negative life events may impede the age-graded increases in self-esteem that generally accompany emerging adulthood by hindering individuals from matching the expectations of their new social roles (i.e. stagnation hypothesis, see Durbin & Hicks, 2014).

Other theories make more specific predictions about possible mechanisms. In accordance with Havighurst's (1972) developmental task approach, some negative life events—such as breaking up with a partner or losing one's job—can be understood as age-graded demands. Whereas a successful response to these challenges might be associated with a positive evaluation of the self and increasing self-esteem, failure to deal with them may lead to negative self-evaluations and reduced self-esteem (Robins & Trzesniewski, 2005; Wagner et al., 2014). Lifespan developmental psychology (e.g., Baltes et al., 2006) and developmental psychopathology (cf. Durbin & Hicks, 2014) additionally conceptualize negative life events in terms of risk experiences. They acknowledge that overcoming such adversities may not necessarily lead to growth but that it may stall decline and enable continuous developmental processes (see Hutteman, Hennecke, Orth, Reitz, & Specht, 2014). Drawing on this risk perspective, diathesis-stress models postulate negative events as stressful experiences that can cause psychopathology in the context of unfavorable personal and environmental characteristics (cf. Hammen, 2005). Given that previous research emphasized self-esteem as a mental health risk factor (e.g., Orth & Robins, 2013), these assumptions may also serve to explain the association between negative life events and subsequent decreases in self-esteem. In sum, all these theoretical approaches suggest that the experience of negative life events in emerging adults may cause negative self-attributions and lower self-esteem. According to other theoretical approaches, however, negative life events do not necessarily have detrimental effects on self-esteem. Social psychologists argue that people tend to protect their self-esteem against threatening experiences by reframing situations or using self-serving attributions (Blaine & Crocker, 1993; Taylor & Brown, 1988).

Another notable issue might be that negative life events differ widely in several respects, including the extent to which they are controllable by the individual (Cohen, Burt, & Bjorck, 1987; Headey & Wearing, 1989). Some events, such as the death of a parent or

serious illness, are rather random and perhaps less likely to be attributed to personal failure, with detrimental effects on self-esteem. However, research has indicated that even these unforeseeable and uncontrollable events can lower self-esteem (Callan, Kay, & Dawtry, 2014). One explanation could be that they involve significant changes in social resources (Sameroff, 2010). For instance, divorce or the death of a loved one can involve the loss of significant others who were previously an inherent part of one's self-perception and threaten social inclusion. As sociometer theory (Leary & Baumeister, 2000) proposes self-esteem to be an internal monitor for social acceptance or rejection, self-esteem would decrease during those experiences in which individuals feel socially excluded. Another explanation can be drawn from Lerner's (1980) just-world theory, according to which most people implicitly assume that the world is basically an ordered and nonrandom place where everyone gets what they deserve (Hafer & Bègue, 2005). In an effort to give meaning to their experiences, individuals rationalize negative events—even uncontrollable and random ones—interpreting them as their own fault and devaluing themselves (Hall et al., 2003). Using an experimental approach, Callan and colleagues (2014) substantiated this approach by showing that participants who randomly lost (vs. won) three dollars showed decreased self-esteem. Other studies have indicated similar associations with respect to real-life events (Hall et al., 2003; Littleton et al., 2007; Pinquart, 2013).

The Accumulation of Negative Life Events

Even when research and theories support the idea that negative life events can lower self-esteem, these effects are usually postulated to be rather small and short lived. In order to protect their self-esteem and to maintain a coherent sense of themselves, individuals possess a broad range of adaptive capacities that enable them to return to their initial levels of self-esteem. These capacities include disengaging from goals that are no longer attainable (e.g., Heckhausen, Wrosch, & Schulz, 2010) or using self-serving attributions (Blaine & Crocker,

1993; Taylor & Brown, 1988). Studies on subjective well-being and depression have found that people usually adapt quickly to changing circumstances and adversities (e.g., Kendler, Karkowski, & Prescott, 1999; Lucas, 2007; Lucas, Clark, Georgellis, & Diener, 2004). Since previous research identified self-esteem as a mental health risk factor (Orth & Robins, 2013) and showed strong associations with subjective well-being (Schimmack & Diener, 2003), comparable effects may emerge for self-esteem. Accordingly, any changes in self-esteem invoked by life events can be expected to be rather short term.

But what about the joint impact of multiple negative life events? Even if young adults are able to adjust to most adversities, it appears reasonable to assume that this adaptive capacity may reach its limit if negative life events are too frequent or too severe. Repeated exposure to negative life events can be expected to make adjustment increasingly difficult and negative self-evaluations more likely. Indeed, research focusing on external risk factors in childhood has indicated that the total number of adverse events seems to be a more important predictor of individual outcomes than specific risk factors (e.g., Rutter, 1979; Sameroff, Seifer, Baldwin, & Baldwin, 1993). These studies concluded that the effects of multiple risk factors are cumulative in the sense that experience of more negative events is related to a higher likelihood of negative outcomes (Evans, 2004; Sameroff et al., 1993).

Only a few studies have addressed the relationship between self-esteem and the number of negative life events. Using a cross-sectional design, Youngs and colleagues (Youngs, Rathge, Mullis, & Mullis, 1990) demonstrated that higher numbers of negative life events were associated with lower levels of self-esteem. With longitudinal data, Baldwin and Hoffman (2002) found that adolescents who experienced a higher number of negative life events showed a decrease in self-esteem. In an earlier investigation, Cohen, Burt, and Bjorck (1987) also showed that negative life events predict changes in self-esteem, but found that this effect resulted from an initial association. A more recent, methodologically sophisticated

study used data from three longitudinal studies to investigate the bidirectional association between self-esteem and cumulated stressful life events (Orth et al., 2009). Although the results in all three samples indicated negative associations between life events and subsequent changes in self-esteem, this effect reached statistical significance only in the study with the largest sample size. Drawing on data from two longitudinal studies, Orth and Luciano (2015) most recently found that negative life events decreased subsequent self-esteem. In sum, the empirical evidence indicates socialization effects in the context of a higher number of negative events but also suggests that these effects are rather small and that their detection necessitates considerable statistical power.

However, various questions remain unanswered: For one, none of these studies investigated the shape of the effect: Is the effect of an increasing number of negative life events on self-esteem linear or quadratic? Second, none of these studies explicitly investigated whether the association between the number of negative life events and self-esteem persisted on the longer term.

Negative Life Events as Consequences of Self-Esteem: Selection Effects

Personal characteristics can also predispose people to specific experiences even before they occur, i.e. *selection effects* (e.g., Baltes et al., 2006; Luhmann, Lucas, Eid, & Diener, 2013; Roberts & Robins, 2004). For example, Trzesniewski and colleagues (2006) found that adolescents with low self-esteem were more likely to experience long-term unemployment, poorer mental and physiological health, and money problems in young adulthood (see also Boden, Fergusson, & Horwood, 2008). Recently, Orth and Luciano (2015) found that low self-esteem predicts the occurrence of a higher number of negative life events. The selection effect was not significant after controlling for depression.

Different mechanisms may be responsible for these effects. The transactional perspective emphasizes the active role that individuals play in creating their environments

and experiences (see Sameroff, 2010). From this perspective, self-esteem might play an important role in guiding behavior by leading individuals to seek out information and experiences that confirm their views about themselves (see Swann, Chang-Schneider, & Larsen McClarty, 2007; Trzesniewski et al., 2006). Accordingly, negative life events might be a direct behavioral consequence of low self-esteem. An alternative explanation is that individuals might anticipate some events and be affected by them even before they occur (e.g., Luhmann et al., 2013). For example, the death of a parent may be preceded by a long illness. Third variables such as SES may also play a role (see Baumeister et al., 2003). SES is known to be associated with self-esteem (e.g., McMullin & Cairney, 2004) as well as with certain experiences (e.g., Roberts et al., 2007). If these associations exist, there may also be associations between initial self-esteem and negative life events. Even if we cannot clearly explain the causality of potential initial associations pre-event connections have to be taken into account when investigating the longitudinal effects of negative life events on self-esteem.

The Moderating Role of Pre-Event Self-Esteem

Although negative life events might explain some of the variability in age-graded changes in self-esteem, associations between negative life events and self-esteem also vary between individuals (e.g., Cohen, Kasen, Chen, Hartmark, & Gordon, 2003; Diener, Lucas, & Scollon, 2006). Seeking to explain this variation, recent investigations have tried to detect *protective factors* that equip people to overcome adversities (e.g., Keyes, 2004; Luthar, Cicchetti, & Becker, 2000). Both theoretical and empirical findings suggest that a high level of self-esteem can be such a protective factor for a variety of outcomes (Baumeister et al., 2003; Swann et al., 2007). When confronted with negative life events, people with high self-esteem may respond less negatively to failure by focusing on their personal strengths and suppressing thoughts about their weaknesses (Dodgson & Wood, 1998). The individual level

of self-esteem may thereby influence both perceptions of negative events and responses to them. Building on this approach, we posit that high pre-event self-esteem can attenuate declines in self-esteem following negative life events.

Studies testing whether self-esteem moderates the link between stressful experiences and various outcomes have yielded mixed results. While several studies found a protective effect (DeLongis, Folkman, & Lazarus, 1988; Leary, Tate, Adams, Allen, & Hancock, 2007), others found none (Murrell, Meeks, & Walker, 1991; Orth et al., 2009; Robinson, Garber, & Hilsman, 1995). However, the results of these studies are difficult to compare because of large variations in the stressful experiences and outcomes considered, as well as in participants' ages. We know of only one study that has tested the moderating effect of pre-event self-esteem on changes in self-esteem following stressful events. DeHart and Pelham (2007) demonstrated that daily negative events affected the self-esteem of young adults with low initial self-esteem, whereas the self-esteem of those with high initial self-esteem remained stable. To our knowledge, no previous study has investigated this issue in the context of major life events.

The Present Study

The main aim of this study was to investigate the bidirectional relationship between self-esteem and negative life events during an especially important life period: emerging adulthood. Using data collected at three points over a 12-year period, we investigated short-term and longer term consequences of negative life events in relation to the initial level of self-esteem. Specifically, we addressed four main questions:

First, we examined the normative developmental trajectory of self-esteem from late adolescence to young adulthood. Drawing on a general developmental perspective (Arnett, 2000; Havighurst, 1972) and on previous empirical findings (Erol & Orth, 2011; Wagner et al., 2013), we predicted that young people's self-esteem would generally increase during

emerging adulthood. We further expected to find higher self-esteem in males than females and in people with high parental SES than people with low parental SES.

Second, we investigated the effects of idiosyncratic negative life events on changes in self-esteem (*socialization effects*). In line with theories of human development (Baltes et al., 2006; Havighurst, 1972; Sameroff, 2010), diathesis-stress models (cf. Hammen, 2005), just-world theory (Lerner, 1980), and recent empirical findings (e.g., Callan et al., 2014; Orth & Luciano, 2015), we expected that negative life events would pose a risk to further developmental processes and reduce self-esteem. We investigated the effects of single life events, as well as the absolute number of negative events. Given humans' robust adaptive capacity (e.g., Heckhausen et al., 2010), we predicted that the effects of single life events on self-esteem would be rather small and mainly short-term. However, we expected that exposure to a higher number of negative events would increase the likelihood of more pronounced and longer term declines in self-esteem.

Third, we examined whether self-esteem also predicts negative life events (*selection effects*). Based on theoretical assumptions of person–environment interactions (e.g., Sameroff, 2010) and the broad literature emphasizing the crucial role of self-esteem in various developmental outcomes (e.g., Trzesniewski et al., 2006), we expected to find selection effects for some life events. However, pre-event connections are also conceivable as a result of anticipatory effects or the influence of third variables. We also examined gender- and SES-specificity of potential socialization and selection effects as an open research question. Specifically, we investigated whether gender and parental SES moderated bidirectional associations between self-esteem and negative life events and thus act as individual variables that explain interindividual variability in associations.

Fourth, we investigated the moderating role of the initial level of self-esteem. Building on theoretical assumptions about the protective role of self-esteem (Swann et al.,

2007) and previous research with daily negative events (e.g., DeHart & Pelham, 2007), we expected to find that high self-esteem acts as a protective factor helping people adjust to negative life events.

Method

Data

We used a subset of data from the German longitudinal study "Learning Processes, Educational Careers and Psychosocial Development in Adolescence and Young Adulthood" (BIJU; see Baumert, Gruehn, Heyn, Köller, & Schnabel, 1997; Schnabel, Alfeld, Eccles, Köller, & Baumert, 2002, for details). Designed as a multi-cohort longitudinal study, BIJU investigated educational and psychosocial developmental trajectories from early adolescence to young adulthood in four German states.

In the present study, we used a subsample of $N = 2272$ (female: 66.2%; age at t1: $M = 17.80$, $SD = 0.71$) young adult participants who provided complete data on the occurrence of negative life events. Participants came from various educational backgrounds (66.8% of parents [father and/or mother] had at least a university entrance diploma) and socioeconomic backgrounds (highest parental SES: $M = 53.47$, $SD = 12.18$, range: 20.9–53.5; as measured by the Standard International Occupational Prestige Scale, SIOPS, Treiman, 1977; see Table A1 in the Appendix for sample characteristics). We considered three measurement points: a baseline measurement at the age of about 18 in 1997 (t1), a second measurement almost 3 years later in 2000/2001 (t2), and a third measurement in 2009/2010 at the age of about 30 years (t3). At baseline, 72.7% of participants were in the academically oriented track of the German school system (Gymnasium); 27.3% had already left school. Between t1 and t2, 46.7% started college. We tested for group differences between participants who had experienced at least one versus none of the observed negative life events at baseline, but

found no statistically significant differences in terms of age, parental SES, or gender (see Table A1).

In building our analytical sample on the basis of life event data at the second measurement point, we included participants with no data at the first (N = 207, 9.1%) and/or third measurement point (N = 463, 20.4%) in our analysis. Attrition analyses (comparing participants with data at all occasions to participants with data at only one or two occasions) revealed that continuers were slightly more likely to be female (d = 0.22; p < .001), but showed no statistically significant differences in self-esteem at t2 (d = 0.02), parental SES (d = 0.10), or the percentages of individuals who attended Gymnasium (d = 0.12).

Instruments

Self-esteem. We assessed self-esteem using a short German version (Jerusalem, 1984; Trautwein, 2003) of the Rosenberg Self-Esteem Scale (Rosenberg, 1965). Previous analyses have shown that latent correlations between the short and the long German version of the Rosenberg scale equal unity (Trautwein, 2003). The scale's three items (e.g., Sometimes I feel really useless; see also Trautwein, Lüdtke, Köller, & Baumert, 2006) are rated on a 4-point Likert scale (1 = *strongly agree*, 4 = *strongly disagree*). The reliabilities were α_{t1} = .83, α_{t2} = .81, α_{t3} = .84.

Life events. We retrospectively assessed the occurrence of eight negative life events (see Table 1 for events and descriptives) at t2, when participants were about 21 years old. Participants were asked to indicate whether they had experienced one or more of the listed events in the previous 3 years (the interval between t1 and t2). The list of negative events was drawn from existing questionnaires (e.g., Holmes & Rahe, 1967; Magnus, Diener, Fujita, & Pavot, 1993; Sarason, Johnson, & Siegel, 1978; Vaidya et al., 2002). We created a variable summing the absolute number of negative life events for each person (with a theoretical range from 0 to 8). This variable indicated that 951 persons had experienced none of the observed

events, 1009 had experienced one event, 246 had experienced two events, 52 had experienced three events, 12 had experienced four events, and two had experienced five events.

Analytical Strategy

We used latent change models to analyze mean-level changes in self-esteem over the course of emerging and young adulthood. All our models used latent factors that were stepwise tested for measurement invariance. This procedure allowed us to investigate structural relationships independently of random measurement error and longitudinal changes in the reliabilities of constructs (Bollen & Curran, 2006).

We used the software package M*plus* 6.11 (Muthén & Muthén, 1998–2011) for statistical modeling and applied the full information maximum-likelihood (FIML) estimation method to account for missing data.

The BIJU study was originally designed as a multi-cohort longitudinal study. Students were chosen using cluster sampling: schools were randomly selected and two full classes were then drawn per school. This procedure may have resulted in dependencies in our data resulting from similarities in background variables, self-esteem, or probabilities of life events within selected schools. To account for the hierarchical data structure, we estimated the models with robust standard errors and the analysis option type = complex (using school as cluster variable).

Measurement invariance model. As a basis for all further analyses, we specified a structural model across all data collection points with one latent factor for each point and progressively tested it for measurement invariance. As self-esteem was measured with three items at each data collection point, each latent factor was built using three manifest indicators. The measurement invariance model fitted the data well, indicating strong factorial invariance between the three measurement points (see also Table A3 in the Appendix). Because we can assume strong factorial invariance across time (as factor loadings and

measurement intercepts were constrained to be equal across time points; see Meredith, 1993), our results are relatively independent of changes in measurement across time. By the same token, we allowed for correlated residuals of the corresponding manifest items across adjacent time points (Bollen & Curran, 2006). We evaluated the fit of our models using multiple model fit indices: comparative fit indices (CFIs) and Tucker-Lewis indices (TLIs) above .90/.95 and root mean square errors of approximation (RMSEAs) and standardized root mean square residuals (SRMRs) below .08/.05 typically indicate an acceptable/excellent fit to the data (see Hu & Bentler, 1998; Meredith, 1993; Schermelleh-Engel, Moosbrugger, & Müller, 2003).

Latent change models. We investigated mean-level changes in self-esteem over the course of young adulthood (Question 1) using latent change models (see McArdle, 2009; McArdle & Hamagami, 2001; see Figure 1): We used the specified measurement model to estimate a latent intercept factor (t1) as well as difference scores (Diff t2–t1 and Diff t3–t1) as additional latent variables. The latent intercept factor thus represented interindividual differences in self-esteem at t1, whereas the latent difference scores reflected interindividual differences in mean-level changes over two time periods. To estimate those difference scores, we specified baseline change models, estimating change between the baseline measurement and t2 ($\Delta_{t1,t2}$) and between the baseline measurement and t3 ($\Delta_{t1,t3}$). This procedure allowed us to directly estimate interindividual differences in mean-level changes in self-esteem over both shorter (Diff t2–t1) and longer intervals (Diff t3–t1). To test the impact of demographic variables, we built a model including gender, parental SES, and an interaction term of gender and SES as covariates.

We next added the eight single negative life events simultaneously to our model (as depicted in Figure 1) to test for socialization effects (Question 2) and selection effects (Question 3). We used the latent intercept factor of self-esteem (t1) to predict negative life

events (selection effects); further, we used negative life events as predictors of mean-level changes in self-esteem (socialization effects) over shorter (Diff t2–t1) and longer (Diff t3–t1) time periods. This procedure allowed us to compare mean-level self-esteem changes in individuals who experienced life events against a control group (comparable on the demographic and educational variables described above) who had not experienced these life events. We included interaction terms of each negative life event and gender/parental SES stepwise; if their influence was not significant at $p < .01$ they were excluded from the final model. Independent of statistical significance, we included all eight negative life events in our final model. Because of the high number of effects tested, however, we set a significance level of $p < .01$.

To test the joint impact of several negative life events on self-esteem, we created a variable coding the absolute number of life events and added it to our model. We tested the interplay between self-esteem and the number of negative life events using the same modeling procedure we used for single life events (see Fig. 1). To test for nonlinearity in the relation between an increasing number of negative life events and self-esteem, we also included the squared number of life events in our model. To calculate this higher order term, we mean-centered the absolute number of life events.

Moreover, we examined whether the initial level of self-esteem moderated the impact of negative life events on mean-level changes in self-esteem (Question 4). We investigated this effect for single life events as well as for the absolute number of life events. To this end, we estimated latent interaction terms between the initial level of self-esteem (t1) and each negative life event (or the number of life events) and included them in the respective models as additional predictors for the latent difference scores ($\Delta_{t1,t2}$ and $\Delta_{t1,t3}$). To the best of our knowledge, M*plus* does not allow overall model fit indices to be calculated for analyses that include latent interactions (e.g., Klein & Moosbrugger, 2000). In line with previous research

(Specht, Egloff, & Schmukle, 2011), we assume that the model fit indices of these models will be comparable with those of the models without latent interactions.

Results

The descriptive statistics and correlations are reported in Table A2 in the Appendix. In the following, we report mean-level changes standardized relative to the standard deviation at the initial measurement of self-esteem. We also standardize all model parameters relative to the first measurement point (i.e., the mean of the intercept is set to 0 and the standard deviation is set to 1). To improve readability and avoid small values, we present the effects of SES in standardized units.

Age-Graded Changes in Self-Esteem and Influence of Gender and Parental SES

As the upper panel of Table 2 shows, self-esteem increased during young adulthood, both over the full 12 years of the study ($d = 0.61$, $p < .001$) and, more specifically, between the ages of 18 and 21 ($d = 0.20$, $p < .001$). Both initial self-esteem levels and difference scores varied statistically significantly between persons (see Table 2). To better illustrate the variability of mean-level changes, we calculated the 95% plausible value ranges of the difference scores using the average slope and its standard deviation (see Raudenbush & Bryk, 2002). The results showed that individual changes between t1 and t2 ranged between –1.09 and 1.28 units for approximately 95% of our sample under the assumption of normally distributed random effects. For mean-level changes between t1 and t3, changes ranged between 1.66 and –1.00 units.

The lower panel of Table 2 details the associations between demographic variables and self-esteem trajectories. For convenience, in the following description, we focus on associations between demographic variables and the initial level of self-esteem (t1) and mean-level changes in self-esteem across young adulthood (Diff t3–t1). We found a

statistically significant association between gender and self-esteem at t1 (b = .15, p < .001), indicating higher self-esteem at age 18 in men than in women. However, there was a negative relation between gender and mean-level changes in self-esteem (b = –.05, p = .032), reflecting more positive developmental trajectories for women during young adulthood. Parental SES had no main effect on self-esteem, but there was a positive association between parental SES and mean-level changes in self-esteem as a function of gender (b = .05, p = .048), statistically modeled as an interaction between gender and parental SES, indicating more favorable effects of high parental SES for men.

Interplay with Negative Life Events

Single negative life events. Table 3 presents the results of the conditional latent change models investigating bidirectional relations between self-esteem and single negative life events (model 1). The model parameters (b) should be interpreted as standardized relative to the first measurement. Regarding socialization effects, the results indicate statistically significant relations between certain life events and subsequent mean-level changes in self-esteem (as shown in the column headed *Diff t2–t1*). Specifically, we found statistically significant short-term effects (i.e., changes over the 3 years between t1 and t2; see also Figure 2) of parental divorce or separation (b = –.08, p = .011), serious illness or accident (b = –.08, p = .005), family relocation (b = –.09, p =. 001), and own divorce or separation (b = –.08, p = .005). There was also an interaction effect of unemployment and parental SES on short-term mean-level changes in self-esteem (b = .29, p <. 001), indicating that the impact of unemployment on mean-level changes in self-esteem was more pronounced in participants with lower parental SES (as depicted in Figure 3). The death of a parent, borrowing more than DM 10,000, or being a victim of violent crime had no statistically significant short-term effects on changes in self-esteem. None of the life events were associated with longer term

mean-level changes in self-esteem over a period of up to twelve years (i.e., between t1 and t3; as shown in the column headed *Diff t3–t1*).

Contrary to our hypothesis, we found no evidence of selection effects (as can be seen from the column headed *t1* in Table 3). In other words, there was no statistically significant predisposing association between the initial level of self-esteem and the occurrence of negative life events.

Multiple negative life events. The results for the absolute number of negative events showed socialization effects over shorter and longer timespans (see Table 4, model 1; see also Figure 4): A greater number of negative life events was related to decreases in self-esteem over both a shorter time period (i.e., up to 3 years between t1 and t2; $b = –.15$, $p < .001$) and a longer time period (i.e., up to 12 years between t1 and t3; $b = –.05$, $p = .044$). We found no support for a quadratic relationship between negative life events and declines in self-esteem (see Table 4, model 2).

We did, however, find a selection effect with respect to a higher number of negative life events (see Table 4, model 1): A lower baseline level of self-esteem predicted a higher number of negative events ($b = –.05$, $p = .039$). In addition, our results indicated that this association was nonlinear ($b = –.07$, $p = .049$; see Table 4, model 2): low self-esteem especially predicted a particularly high number of negative events.

The Protective Effects of Pre-Event Self-Esteem

Examining the protective role of high pre-event self-esteem, we found no statistically significant interaction effects on either short-term or longer term change in self-esteem in the context of single events (for details see Table 3, model 2). In the case of multiple events (see Table 4, model 3), there was a statistically significant positive interaction effect on short-term change in self-esteem ($b = .07$, $p = .027$). In other words, participants who faced higher numbers of negative life events showed less decline in self-esteem if they started with a

higher level of initial self-esteem. The interaction term for longer term changes in self-esteem was not significant (b = .01, p = .888).

Discussion

This study aimed to advance the understanding of whether, how, and why self-esteem changes across emerging and young adulthood. Overall, our results replicated previous findings, showing that self-esteem increases normatively from adolescence to young adulthood and that interindividual differences in levels and changes are partly attributable to gender, socioeconomic background, and negative life events. We also partly replicated previous findings of selection effects. Extending previous findings, our results indicated that a higher number of negative life events is associated with longer term decline in self-esteem (i.e., over up to 12 years between t1 and t3) and that the initial level of self-esteem can affect how well an individual adjusts to negative life events. Moreover, we found evidence that individual and social resources such as parental SES can influence how people deal with some life events.

Age-Graded Changes in Self-Esteem

Our first research question concerned normative age-graded changes in self-esteem. Drawing on theories of human development (Baltes et al., 2006; Havighurst, 1972), we expected to observe a general increase in self-esteem across emerging and young adulthood. The results indeed showed that participants' self-esteem increased during the transitional years between 18 and 21 as well as across the whole developmental period from late adolescence to young adulthood. Our study therefore replicated previous findings, most of which have shown that self-esteem increases normatively from early adolescence until middle adulthood (e.g., Wagner et al., 2013). The multitude of changes and challenges occurring during this crucial period in life may necessitate social role transitions (e.g., from

student to jobholder) that drive changes in identity and behavior (see Arnett, 2000; Havighurst, 1972) and thereby boost self-esteem. Notably, our findings indicated substantial interindividual variability in trajectories of self-esteem. Some participants showed more pronounced increases; others experienced no change or even decreases. Building on these findings, we further investigated whether between-person variability in the initial level and mean-level changes in self-esteem was associated with demographic variables and negative life events.

Associations with Gender and Parental SES

In general, we found that gender and parental SES explained some of the variability observed in self-esteem over the course of emerging and young adulthood. In line with earlier studies, our results showed lower levels of self-esteem in women than in men (e.g., Orth et al., 2010; Wagner et al., 2014) and indicated that gender differences remained stable during the transition to young adulthood (e.g., Wagner et al., 2013) and decreased over the course of young adulthood (e.g., Galambos et al., 2006). Although we found no main effect of parental SES on self-esteem, parental SES was more strongly associated with self-esteem changes in men than in women. In the same vein, McMullin and Cairney (2004)[1] reported gender-specificity in associations between self-esteem and SES at older ages. Our results therefore highlight the persisting influence of gender and social background on self-esteem during emerging and young adulthood. Findings from other areas can cast further light on this effect. Entwisle, Alexander, and Olson (2007) found low SES to be associated with poorer reading skills at elementary school level, especially in boys. They attributed this gender gap to disadvantaged boys being affected by lower ratings of classroom behavior and reading skills from their teachers and lower expectations for school achievement from their parents than disadvantaged girls. In a similar way, disadvantaged men may be more likely than their

[1] McMullin and Cairney (2004) measured socioeconomic status using the individual's own income.

female counterparts to receive lower ratings of their behavior and lower academic and occupational expectations that challenge their self-esteem. This interpretation is also in line with research on aggression that confirmed associations between SES and aggression (e.g., Leventhal & Brooks-Gunn, 2000) but also showed that men are more likely to engage in physical aggression, whereas women are more likely to use relational aggression, which is less subject to negative social feedback (Lansford et al., 2012). In sum, these findings indicate that demographic influences, such as gender and social background, may not only exert direct influences on self-esteem development during emerging adulthood, but may also provide differential environmental contexts for further developmental processes that affect whether and how personal and environmental factors influence self-esteem development.

Socialization Effects

Our main question concerned the bidirectional relationship between self-esteem and negative life events. Drawing on theories of human development (Baltes et al., 2006; Havighurst, 1972), diathesis-stress models (cf. Hammen, 2005), and just-world theory (Lerner, 1980), we predicted that negative life events would be associated with decreases in self-esteem. Overall, our results confirmed this prediction, replicating previous findings showing that emerging adults who experience negative life events are at risk of decreases in self-esteem (see Galambos et al., 2006; Littleton et al., 2007; Orth & Luciano, 2015; Pinquart, 2013).

Looking at single negative events, we found some of the events we observed to be associated with self-esteem. Participants who had experienced parental divorce or separation, serious illness or accident, family relocation, or own divorce or separation exhibited short-term decreases in self-esteem (i.e., up to 3 years). One possible mechanism is that humans tend to attribute negative experiences to their own failures and to devalue themselves (e.g., Callan et al., 2014; Hafer & Bègue, 2005). According to another possible mechanism, the

experience of these events may be associated with stress (Hammen, 2005) and may challenge the accomplishment of age-associated tasks and impede social role transitions that usually promote emerging adults' self-esteem (Durbin & Hicks, 2014). A third possible mechanism is that some of these events (especially family relocation or the own divorce) may challenge young adults perceptions of being socially included and thereby lower their self-esteem (Leary & Baumeister, 2000).

For unemployment, we found an interaction effect with parental SES: Unemployment seemed to lower young adults' self-esteem only in the context of low parental SES. High parental SES can thus act as an individual and social resource that moderates the impact of negative experiences on young adults' self-esteem. This finding confirmed the results of a meta-analysis by Paul and Moser (2009), who also found a stronger negative impact of unemployment on mental health indicators among low status individuals. They attributed these findings to high status individuals' better financial and social resources and better coping strategies, which enable them to overcome unemployment more rapidly. As we had expected, decreases in self-esteem following single life events were only slight, with effect sizes comparable with those reported in previous studies (e.g., Lüdtke et al., 2011), and mainly short-term. It seems that even if single negative experiences cause negative self-evaluations and thereby lower self-esteem, the broad range of human adaptive capacities (see Heckhausen et al., 2010; Taylor & Brown, 1988) and the multitude of daily experiences and person–environment interactions (see Sameroff, 2010) enable people to bounce back to their initial levels of self-esteem within a relatively short time.

However, exposure to a higher number of negative events was associated with more pronounced and longer term declines in self-esteem. Moreover, experiencing several negative life events in the crucial years between 18 and 21 appeared to affect young adults' self-esteem even through the age of 30. Although most young adults seem to be able to adjust to

single negative life events relatively quickly, adaption evidently becomes increasingly difficult as the number of adversities faced increases. Our longitudinal results therefore expand on previous findings that have shown an inconsistent pattern of results. We confirmed findings of decreased self-esteem following negative life events in adolescence (Baldwin & Hoffmann, 2002; Orth & Luciano, 2015). At the same time, our findings disagree with those of other studies (Cohen et al., 1987; Orth et al., 2009) that found no (or only partially) longitudinal associations after controlling for initial relations. One explanation for these disparate findings may be that the effects of negative life events are usually rather small and their detection requires considerable statistical power. Moreover, our study measured life events over a comparatively long period (i.e., 3 years). This may increase the opportunity for an accumulation of small effects.

Although theoretical work and preliminary findings suggested that uncontrollable events would also affect developmental trajectories (e.g., Callan et al., 2014), we found no associations between some of the single events we observed and changes in self-esteem. It may be the case that these associations are more short-lived and impossible to detect over a 3-year interval.

Selection Effects

We further examined associations between initial self-esteem and subsequent negative life events. Drawing on the person–environment interaction framework (e.g., Sameroff, 2010), we predicted that selection effects might in some cases occur in the context of negative life events. Indeed, our findings revealed associations between lower pre-event self-esteem and increased likelihood of experiencing several negative life events. This result thus also corresponded to previous findings indicating that individual characteristics can be related to specific experiences even before they occur (e.g., Orth & Luciano, 2015; Trzesniewski et al., 2006). Moreover, we found a quadratic pattern of growth in the number of life events

associated with lower pre-event self-esteem. Due to the design of our study, we cannot clearly interpret these associations as indicating that self-esteem plays an active role in developmental processes (see Sameroff, 2010; Swann et al., 2007). It is equally conceivable that they were the result of anticipatory effects (see Luhmann et al., 2013) or joint relations with third variables (see Baumeister et al., 2003).

The selection effects observed in our study were, however, rather small and not statistically significant for single negative events. These effects are contrary to previous findings. For instance, Trzesniewski and colleagues (2006) reported substantial selection effects that connected lower self-esteem in adolescence to the subsequent occurrence of life events such as long-term unemployment, poorer mental and physiological health, and money problems in young adulthood. We have two explanations for this discrepancy: First, even if selection effects of single life events did not reach statistical significance in our study, the overall pattern indicated negative associations. It might therefore be the case that a higher frequency of life events would reveal selection effects. A second explanation relates to specifics of the developmental period under investigation: Emerging adulthood offers many challenges and changes that make some negative events (e.g., unemployment, separation, and relocation) more frequent than in other life periods. The occurrence of these events might therefore be less strongly connected to personal characteristics than at other ages.

Protective Effects of Pre-Event Self-Esteem

Finally, we investigated whether the pre-event level of self-esteem made a difference to how well young adults adjusted to negative life events. In line with theoretical assumptions (see Swann et al., 2007), we found that higher initial self-esteem buffered the effects of a higher number of negative events on self-esteem and thus acted as a protective factor. According to Dodgson and Wood (1998), explained this effect as reflecting a higher tendency among high self-esteem people to focus on their personal strengths and suppress thoughts

about their weaknesses so as to avoid devaluing themselves. We found this buffering effect for short-term decreases (i.e., up to 3 years) in self-esteem, but not for long-term decreases (i.e., up to 12 years). This pattern of finding corresponds with previous empirical studies that also yielded mixed results (e.g., DeHart & Pelham, 2007; Orth et al., 2009). It could be the case that, if adversities are so frequent and severe that they overtax adaptive capacities (see Heckhausen et al., 2010) and lead to long-term decreases in self-esteem, then even higher self-esteem is not able to serve a buffering function.

Limitations

This study has several methodological advantages over similar investigations: the longitudinal design with three measurement points, the large sample size, and the availability of a control group that has not experienced negative life events. However, some methodological and theoretical limitations warrant consideration.

One limitation lies in the generalizability of our results. Our data involved an oversampling of students in the college-bound track of Germany's three-track secondary system and therefore represents young adults with an above-average socioeconomic background. It may be partly due to this reduction in variability that we found no associations between parental SES and self-esteem. Additionally, we used a subsample with complete data on the occurrence of negative life events. Yet is it possible that exposure to negative life events itself influences study participation as defined by positive selection. Accordingly, our results may represent a lower bound, and total effects might be even stronger.

Another limitation lies in the operationalization of negative life events. Because such life events are infrequent, we assessed their occurrence over a 3-year period. Consequently, the temporal distance between the event and the subsequent measurement of self-esteem varies. Accordingly, the effects of the "oldest" events (almost 3 years at t2) are, on the one hand, not so short-term and this longer temporal distance may, on the other hand, reduce the

observed effects. Moreover, we assumed that the events considered were perceived as negative but we had no information on individual variability in the evaluation of the events. It is quite conceivable that certain events were perceived as negative by some people and as positive by others.

Finally, investigating bidirectional associations between negative life events raised the methodological challenge of disentangling the effects of selection and socialization. To estimate socialization effects, we statistically controlled our life event measures for differences in pre-event self-esteem. An alternative approach would be propensity score matching (e.g., Ho, Imai, King, & Stuart, 2011), which would allow the effects of negative life events on self-esteem to be more clearly distinguished from initial differences in self-esteem between people with or without experience of negative life events.

Conclusion and Future Directions

Extending previous studies, our results indicated that while self-esteem generally increases during emerging and young adulthood, developmental trajectories differ systematically between persons. Apart from varying as a function of gender and SES, young adults' self-esteem changes as a result of negative experiences. Experience of a higher number of negative events is associated with longer term and more pronounced declines in self-esteem. Young people with lower levels of self-esteem are predisposed to experiencing more negative events and reacting more negatively to them. In sum, our results advance the understanding of antecedents of change in young adults' self-esteem.

This study followed a sample of German participants from 18 to 30 years of age. Further investigations should examine the interplay between self-esteem and negative life events in other age groups and social contexts. For example, it seems possible that unemployment has a differential impact on self-esteem as a function of age, which relates to the individual's growing employment history and the age-varying likelihood of

reemployment. Furthermore, it would be worthwhile considering positive life events in addition to negative ones. Finally, this study suggested that parental SES affects how young adults deal with unemployment. Future studies should focus on the moderating role of this and other individual and social resources.

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Table 1

Negative Life Events Assessed: Descriptive Statistics

				%	Parental SES	
Life event	*N*	*M*	*(SD)*	female	*M*	*(SD)*
Death of a parent	76	0.03	(0.18)	69.7	48.63	(12.90)
Parental divorce or separation	194	0.09	(0.28)	64.9	54.15	(12.63)
Serious illness or accident	291	0.13	(0.33)	72.5	53.06	(11.79)
Family relocation	246	0.11	(0.31)	63.0	54.48	(12.10)
Divorce or separation	569	0.25	(0.43)	67.1	54.44	(12.61)
Unemployment	235	0.10	(0.31)	60.4	47.23	(10.71)
Borrowed more than DM 10,000	65	0.03	(0.17)	58.5	47.22	(11.07)
Victim of violent crime	39	0.02	(0.13)	56.4	54.96	(11.96)

Note. DM 10,000 equate to approximately € 5,113 (US$ 5,684 at the 1998 exchange rate).

Table 2

Latent Initial Level and Difference Scores for the Development of Self-Esteem Across Emerging and Young Adulthood (Upper Panel) and Associations with Gender and Parental SES (Lower Panel)

	t1			Diff t2–t1			Diff t3–t1		
Parameters	*coef.*	*SE*	*p*	*coef.*	*SE*	*p*	*coef.*	*SE*	*p*
Measurement invariance model									
Means	3.29	.016	<.001	0.09	.017	<.001	0.33	.017	<.001
Variance	0.35	.018	<.001	0.35	.021	<.001	0.44	.029	<.001
Model fit indices									
$\chi 2$ (*df*)	151.19 (22)								
CFI	.976								
TLI	.961								
RMSEA	.051								
Effects of Gender and SES									
Means	3.24	.064	<.001	0.11	.069	.110	0.32	.083	<.001
Residual variance	0.34	.017	<.001	0.34	.021	<.001	0.42	.029	<.001
Gender	.15	.022	<.001	.01	.027	.667	–.05	.024	.032
SES	.02	.024	.370	–.01	.027	.692	.00	.028	.974
Gender*SES	–.01	.023	.575	.06	.027	.035	.05	.025	.048
Model fit indices									
$\chi 2$ (*df*)	225.08 (55)								
CFI	.974								
TLI	.962								
RMSEA	.037								

Note. Parental SES = Socioeconomic status as measured by SIOPS (Treiman, 1975).

Table 3

Impact of Single Negative Life Events (Model 1) and Moderation Effects of Initial Self-Esteem (Model 2)

	Model 1						Model 2					
	Selection		Socialization				Selection		Socialization			
	t1		Diff t2–t1		Diff t3–t1		t1		Diff t2–t1		Diff t3–t1	
Parameters	*b*	*p*	*b*	*p*	*b*	*p*	*b*	*p*	*b*	*p*	*b*	*p*
Negative life event												
Death of a parent	–0.02	.734	0.02	.702	–0.01	.895	–0.12	.297	0.01	.958	–0.04	.694
Parental divorce or separation	0.03	.561	**–0.08**	.011	–0.01	.758	0.05	.596	**–0.19**	.010	–0.01	.862
Serious illness or accident	–0.07	.063	**–0.08**	.005	–0.03	.339	–0.16	.033	**–0.18**	.013	–0.07	.306
Family relocation	0.00	.970	**–0.09**	.001	–0.03	.338	0.06	.479	**–0.21**	.002	–0.04	.598
Divorce or separation	–0.03	.345	**–0.08**	.005	0.01	.792	–0.05	.347	**–0.15**	.004	0.00	.939
Unemployment	–0.08	.064	–0.04	.260	–0.01	.723	–0.15	.059	–0.11	.214	0.00	.980
Borrowed more than DM 10,000	–0.08	.194	0.01	.757	–0.07	.104	–0.19	.238	0.04	.640	–0.29	.106
Victim of violent crime	–0.08	.157	–0.02	.658	–0.10	.036	–0.18	.365	–0.11	.520	–0.33	.189
Interaction terms												
Unemployment*SES	–0.01	.898	**0.29**	<.001	0.19	.040	0.04	.684	0.22	.043	0.15	.099
*Interaction term (life event*t1)*												
Death of a parent*t1									0.10	.463	0.06	.581
Parental divorce or separation*t1									0.12	.190	–0.03	.714
Serious illness or accident*t1									0.14	.103	0.05	.587
Family relocation*t1									0.10	.213	–0.13	.223
Divorce or separation*t1									0.06	.282	0.03	.608
Unemployment*t1									0.02	.783	–0.06	.552
Borrowed more than DM 10,000*t1									–0.05	.539	0.33	.175
Victim of violent crime*t1									–0.07	.687	0.15	.692
Model fit indices												
$\chi 2$ (*df*)	381.20 (228)											
RMSEA	.017											
CFI	.959											
TLI	.948											

Note. All negative life events were entered simultaneously in one model. Selection: Logistic regression of negative life events on initial self-esteem (t1); Socialization: Regression of change in self-esteem (Diff t2–t1 and Diff t3–t1) on negative life events and their interaction with initial self-esteem. Gender, SES, and an interaction term of gender and SES were included as control variables (see Fig. 1). Model parameters were standardized relative to the first measurement (the mean of the intercept was constrained to 0 and the variance was fixed to 1).

Table 4

Impact of the Absolute Number of Negative Life Events (Model 1 and Model 2) and Moderation Effects of Initial Self-Esteem (Model 3)

	Model 1						Model 2						Model 3					
	Selection		Socialization				Selection		Socialization				Selection		Socialization			
	t1		Diff t2–t1		Diff t3–t1		t1		Diff t2–t1		Diff t3–t1		t1		Diff t2–t1		Diff t3–t1	
Parameters	*b*	*p*	*b*	*p*	*b*	*p*	*b*	*p*	*b*	*p*	*b*	*p*	*b*	*p*	*b*	*p*	*b*	*p*
Number of life events	**–0.05**	.039	**–0.15**	<.001	**–0.05**	.044	**–0.05**	.036	**–0.17**	<.001	–0.05	.103	**–0.06**	.033	**–0.16**	<.001	–0.05	.118
Squared number of life events							**–0.07**	.049	0.02	.272	0.00	.987	**–0.08**	.050	0.04	.148	0.00	.896
Number of life events*t1															**0.07**	.027	0.01	.888
Model fit indices																		
$\chi 2$ (*df*)	314.27 (67)						337.12 (67)											
RMSEA	.040						.038											
CFI	.964						.967											
TLI	.949						.953											

Note. Selection: Logistic regression of negative life events on initial self-esteem (t1); Socialization: Regression of change in self-esteem (Diff t2–t1 and Diff t3–t1) on negative life events. Gender, SES, and an interaction term of gender and SES were included as control variables. Model parameters were standardized relative to the first measurement (the mean of the intercept was constrained to 0 and the variance was fixed to 1).

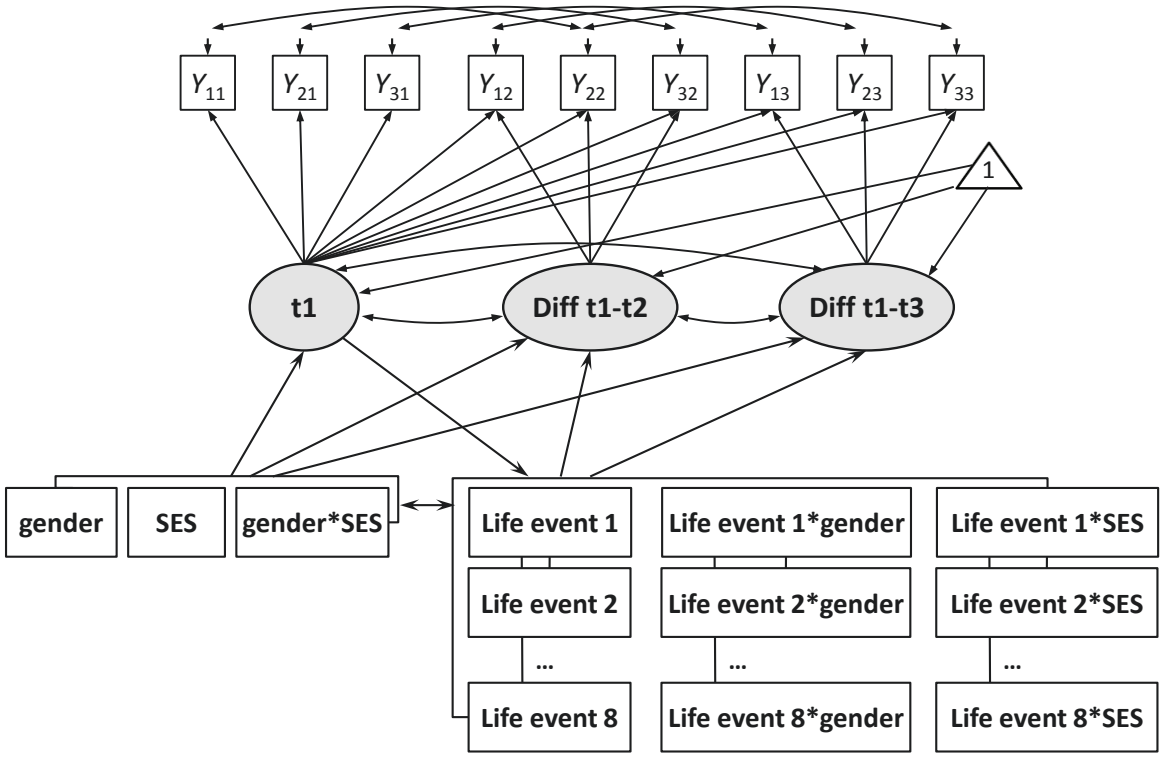

Figure 1. Latent baseline change model investigating the interplay of negative life events with self-esteem.

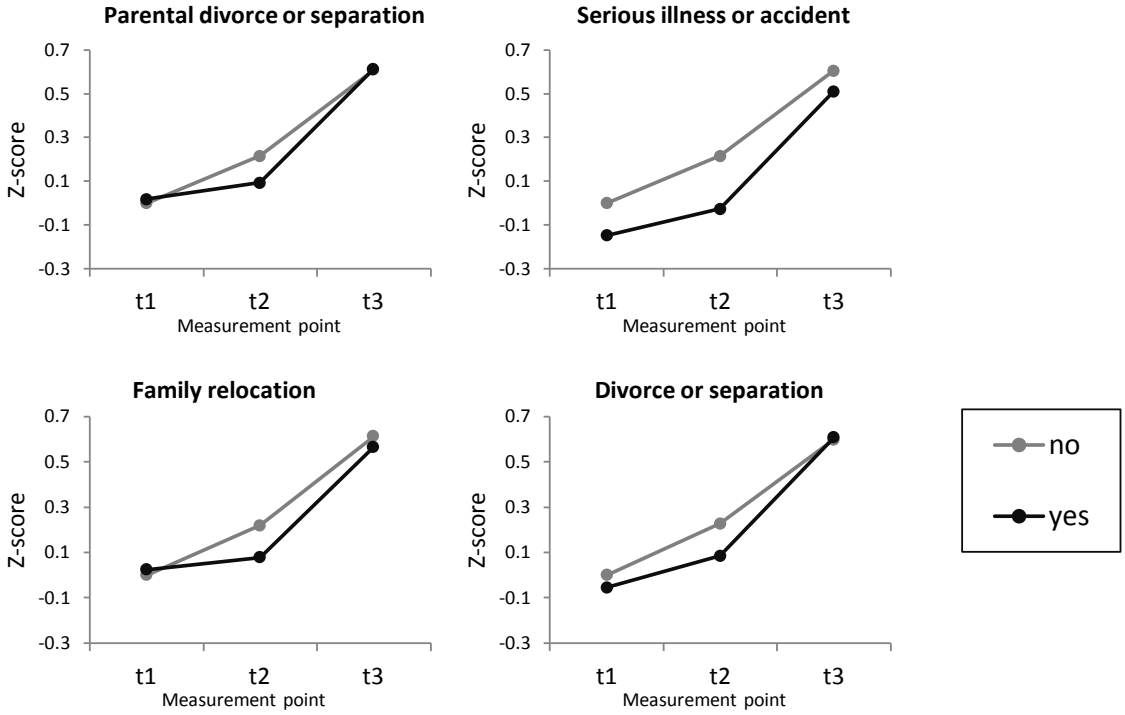

Figure 2. Mean-level changes in self-esteem as a function of the occurrence of negative life events between t1 and t2.

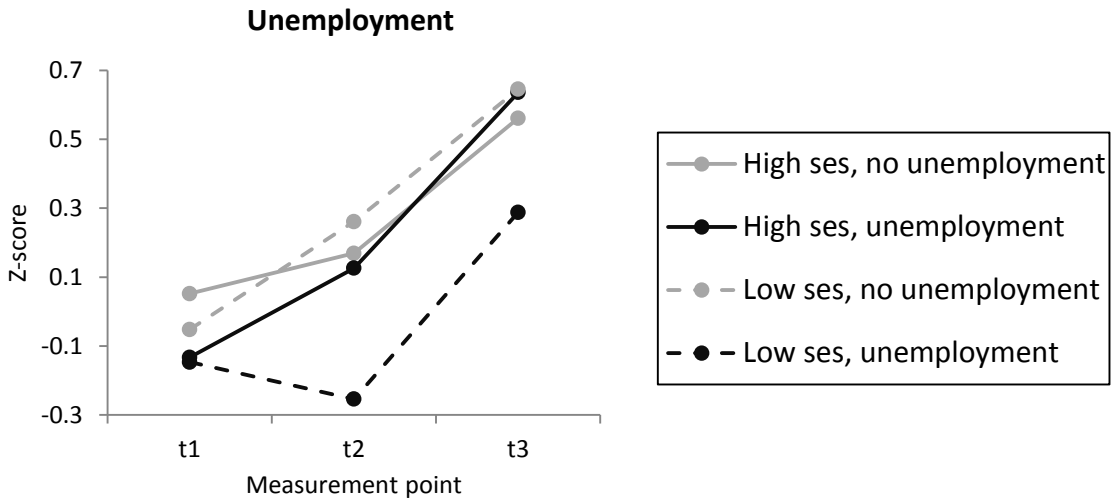

Figure 3. Differences in the impact of unemployment on self-esteem as a function of parental SES.

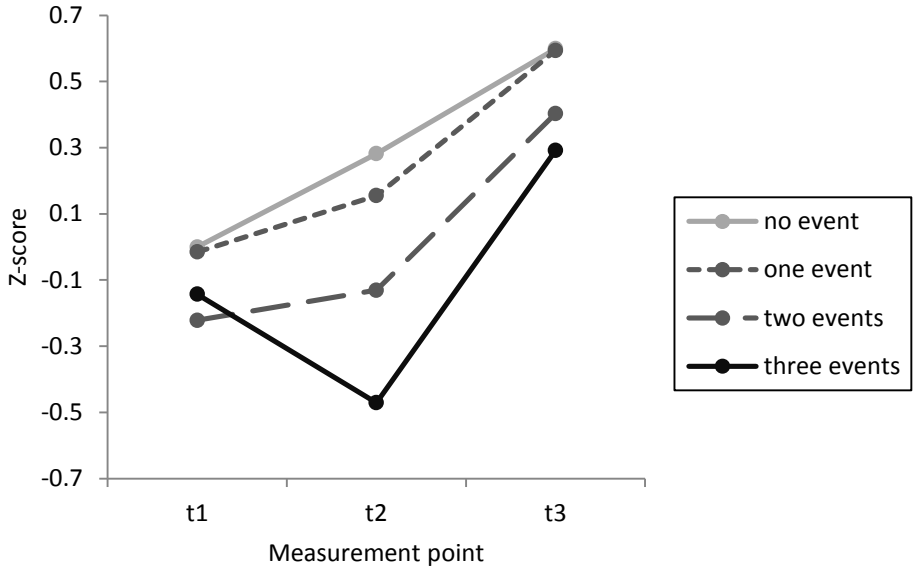

Figure 4. Mean-level changes in self-esteem as a function of the number of negative life events between t1 and t2.

Appendix

Table A1

Testing for Group Differences Between Participants with Experience of at Least One Versus No Negative Life Events: Comparisons of Means

	Full sample (N = 2272)		Occurrence of life events: No event (N = 951)		Occurrence of life events: At least one event (N = 1321)				
Construct	*M*	*SD*	*M*	*SD*	*M*	*SD*	*t*	*p*	*d*
Gender (0 = female, 1 = male)	0.34	0.47	0.32	0.47	0.35	0.48	–1.54	.124	–.03
Year of birth	78.20	0.71	78.21	0.70	78.19	0.72	0.82	.414	.02
Parental SES	52.93	12.60	53.30	12.50	52.67	12.66	1.06	.291	.05

Note. Parental SES = Socioeconomic status as measured by SIOPS (Treiman, 1975).

Table A2

Mean Levels, Standard Deviations, and Correlations of the Constructs and Variables

Construct	*N*	*M*	*(SD)*	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1 Death of a parent	76	0.03	(0.18)	1													
2 Parental divorce or separation	194	0.09	(0.28)	–.01	1												
3 Serious illness or accident	291	0.13	(0.33)	–.05***	–.02	1											
4 Family relocation	246	0.11	(0.31)	–.02	.04	–.03	1										
5 Divorce or separation	569	0.25	(0.43)	–.06***	–.02	.02	–.04*	1									
6 Unemployment	235	0.10	(0.31)	.02	–.02	.03	–.01	–.05**	1								
7 Borrowed more than DM 10,000	65	0.03	(0.17)	–.02	.04	.02	.04	.01	.07*	1							
8 Victim of violent crime	39	0.02	(0.13)	–.02***	–.00	.03	–.02	–.02	.04	.02	1						
9 Self-esteem t1		3.25	(0.68)	–.02	.01	–.05	.01	–.03	–.03	–.03	–.02	1					
10 Self-esteem t2		3.38	(0.61)	–.01	–.05	–.09**	–.05*	–.08	–.09***	–.02	–.02	.48***	1				
11 Self-esteem t3		3.64	(0.54)	–.02	–.00	–.05	–.02	.01	–.07*	–.06	–.07	.14***	.44***	1			
12 Socioeconomic status		52.93	(12.60)	–.10***	.04	.00	.03	.04	–.10***	–.10***	.03	–.00	.01	.04	1		
13 Gender (0 = female, 1 = male)		0.34	(0.47)	–.01	.01	–.05*	.02	–.01	.04	.03	.03	.16***	.18***	.08**	.04	1	
14 Year of birth		78.20	(0.71)	.00	.02	–.03	.00	–.01	–.02	–.06*	.01	–.00	.01	.10**	–.02	–.04	1

Note. SES = Parental Socioeconomic status as measured by SIOPS (Treiman, 1975); *** $p < .001$, ** $p < .01$, * $p < .05$.

Table A3

Stepwise Testing of Measurement Invariance for Self-Esteem Across the Three Data Collection Points

	Types of invariance			
	Configural invariance	Weak factorial invariance	Strong factorial invariance	Strict factorial invariance
χ^2 (*df*)	28.13 (15)	59.76 (19)	191.02 (23)	383.88 (29)
CFI	.998	.992	.969	.934
TLI	.994	.986	.951	.918
AIC	31349.98	31382.18	31534.32	31831.29
BIC	31573.14	31582.46	31711.70	31974.35
RMSEA	.020	.031	.057	.074
SRMR	.016	.041	.036	.095

Note. Strong factorial invariance was specified for further analyses.