The Emotional Timeline of Unemployment: Anticipation, Reaction, and Adaptation

Christian von Scheve [1,2]
Frederike Esche [1]
Jürgen Schupp [1,2]

[1] Department of Sociology, Freie Universität Berlin, 14195 Berlin, Germany
[2] SOEP, DIW Berlin, 10108 Berlin, Germany

9758 Words (incl. refs, excl. tables, abstract)

Article in press in *Journal of Happiness Studies*

Corresponding author:

Christian von Scheve
Email: scheve@zedat.fu-berlin.de
Telephone: +49 30 838 57695
Fax: +49 30 838 57652

Abstract. Unemployment continues to be one of the major challenges in industrialized societies. Aside from its economic and societal repercussions, questions concerning the subjective experience of unemployment have recently attracted increasing attention. Although existing studies have documented the detrimental effects of unemployment for cognitive (life satisfaction) and affective well-being, studies directly comparing these two dimensions of subjective well-being and their temporal dynamics in anticipation of and response to unemployment are absent from the literature. Using longitudinal data of the German Socio-Economic Panel (SOEP) and applying fixed effects regressions, we investigate changes in cognitive and affective well-being prior to and after job loss. Extending previous studies, we use discrete emotion measures instead of affect balance indicators to assess affective well-being. Our results support existing findings that unemployment leads to decreases in life satisfaction and that the unemployed do not adapt towards previous levels of life satisfaction. We also find that individuals more often experience sadness and anxiety, and less often happiness when transitioning into unemployment. Importantly, changes in affective well-being are less enduring compared to the changes in life satisfaction.

Keywords: Unemployment, cognitive well-being, affective well-being, life satisfaction, emotions, SOEP

The Emotional Timeline of Unemployment: Anticipation, Reaction, and Adaptation

1 Introduction

Unemployment is one of the most severe and enduring problems facing economies worldwide. It therefore comes as no surprise that a large quantity of research has examined the manifold consequences of job loss and unemployment for individuals and social relations, the economy, the political and institutional landscape (e.g., Brand 2015). More recently, there has been a surge in research on the individual consequences of unemployment in the social and behavioral sciences, in particular in terms of subjective well-being (SWB) as an outcome of the experience of unemployment (e.g., McKee-Ryan et al. 2005; Lucas et al. 2004; Nordenmark and Strandh 1999; Wanberg 2012; Chen et al. 1994; Ross and Mirowsky 1995, for summary see Catalano 1991; DeFrank and Ivancevich 1986; Dooley et al. 1996).

Although there are competing definitions of SWB across disciplines (see, e.g., Bruni and Porta 2007; Fischer 2009; Veenhoven 2000), a frequently referenced view conceives of SWB as an "umbrella term for the different valuations people make regarding their lives, the events happening to them, their bodies and minds, and the circumstances in which they live" (Diener 2006, 400). Looking at these different valuations in more detail, SWB is thought to involve "people's multidimensional evaluation of their lives, including cognitive judgements of life satisfaction and affective evaluations of emotions and moods" (McGillivray 2006, 10). Hence, SWB is supposed to consist of at least two different ingredients, a cognitive ("life satisfaction") and an affective ("emotional well-being") component (Diener 1984; Kahneman et al. 1999; Davern et al. 2007; Lucas et al. 1996; OECD 2013). [1]

[1] In addition to cognitive and affective components, some have highlighted the "eudaimonic" aspects as an alternative to the "hedonic approaches" of SWB that represent the functioning and realization of the individual's potential (Deci and Ryan 2008; Ryan and Deci 2001; OECD 2013).

Life satisfaction as the cognitive component of SWB is usually defined as "a global judgment that people make when they consider their life as a whole" (Diener 1994, 107). This judgment is based on a comparison with a relevant standard (Schimmack et al. 2008; Schwarz and Strack 1999, 63) and can be understood as an *overall retrospective evaluation* of one's living conditions. In the economics literature, life satisfaction is often used interchangeably with the term "happiness" (Easterlin 2004; Frey 2008, Fischer 2009).

In contrast to this, the affective component of SWB refers to particular feelings or emotions experienced during a specific time frame (OECD 2013) and represents a process of *ongoing evaluation* (Diener et al. 2004). Past research has established that not only are cognitive and affective well-being conceptually distinct; they also correlate only moderately in studies assessing the two constructs (Lucas et al. 1996; Schimmack et al. 2008). Regarding the relevance of the distinction between cognitive and affective well-being, which goes beyond individual phenomenal experiences and attitudes towards one's life, Fischer (2009) points out that the two constructs are likely to have different policy implications depending on the specific policy area in question. For example, measures of life satisfaction might understate the psychic costs of pain and illness, whereas assessments of affective well-being have been argued to overstate momentary effects on decision-making.

The majority of research on the impact of unemployment on SWB using survey data has focused *either* on life satisfaction *or* on affective well-being. These studies have documented significant drops in life satisfaction upon unemployment (e.g., Gerlach and Stephan 1996; Lucas et al. 2004; Winkelmann and Winkelmann 1998; Winkelmann 2008; Kassenboehmer and Haisken-DeNew 2009) as well as significant increases in the frequency

of experiencing negative feelings after having lost one's job (e.g. Clark 2003; Clark and Georgellis 2013; Krueger and Mueller 2011).[2]

Some studies have also looked into the dynamics of life satisfaction and affective well-being during prolonged unemployment. Findings suggest that the unemployed do not adjust either to pre-unemployment levels of life satisfaction (Clark et al. 2001; Clark et al. 2008; Clark and Georgellis 2013; Knabe and Rätzel 2011; Lucas et al. 2004; Oesch and Lipps 2013) or to pre-unemployment levels of affective well-being (Clark and Georgellis 2013; Krueger and Mueller 2011). Research also suggests that, once unemployed, individuals do not adjust to their initial levels of life satisfaction even when re-employed again (Lucas et al. 2004; Knabe and Rätzel 2011). These lasting repercussions of unemployment have been referred to as "scarring effects" since they leave notable marks on an individual's SWB, independently of his or her current labor market status (Clark et al. 2001) and which cannot be attributed to childhood and early-life psychological factors (Daly and Delaney 2013).

Finally, research has also investigated changes in SWB as self-selection effects into unemployment, i.e., before job loss actually occurs. Some studies indicate that life satisfaction (Clark et al. 2008, Oesch and Lipps 2013, Uglanova and Staudinger 2013) as well as affective well-being (Clark and Georgellis 2013) already significantly decrease *prior* to unemployment, suggesting that (anticipated) future unemployment significantly reduces current SWB. Hence, poor affective well-being and low life satisfaction should also be taken into account as factors increasing the likelihood of job loss rather than merely as consequences thereof (Wanberg 2012).

[2] Whereas Clark (2003) and Clark and Georgellis (2013) use the GHQ-12 measure, which mainly assesses the frequency of experiencing specific negative feelings, Krueger and Mueller (2011) investigate the impact of job loss on the frequency of positive (happy) and negative emotions (sad, stressed) separately.

Taken as a whole, existing research has shown that low levels of both life satisfaction and affective well-being are consequences of as well as precursors to unemployment. However, studies directly comparing life satisfaction and affective well-being are relatively rare. We know of only four studies that have *directly* compared the effects of unemployment on affective and cognitive well-being. Whereas results based on cross-sectional data suggest a stronger effect of unemployment on cognitive than on affective well-being (Schimmack et al. 2008; Boarini et al. 2012; Knabe et al. 2010), Clark and Georgellis (2013), analyzing longitudinal data, find a stronger effect on affective well-being. Whereas the first three studies use affective well-being measures that include both positive and negative feelings, Clark and Georgellis (2013) rely on the GHQ-12 indicator that only captures negative feelings. Yet, as outlined in more detail in Section 2, the absence of negative feelings does not necessarily mean experiencing more positive feelings. Clark and Georgellis (2013) are therefore likely to overestimate the impact of unemployment on affective well-being. Furthermore, we know little about the potentially distinct patterns of change in life satisfaction and affective well-being, both prior and in response to (prolonged) unemployment. Gaining insights into these dynamics is important, not only to better assess the individual experiential repercussions of unemployment, but also to develop more precise policy recommendations (see Fischer 2009).

To investigate these issues, the present study analyzes changes in life satisfaction and affective well-being prior to and during unemployment. Going beyond previous research, we are not primarily interested in affective well-being as a net measure of positive and negative feelings but will focus instead on the specific emotions of anger, anxiety, happiness, and sadness (see below). Using longitudinal data from the German Socio-Economic Panel (SOEP), we investigate the level of life satisfaction and the frequencies with which these emotions are experienced before and during continued unemployment. In the following, we

first highlight the relevance and need to look at specific emotions rather than at affect balance (as the net outcome of positive and negative emotions) as indicators of affective well-being. Second, we review theories explaining change and stability in SWB. Third, we describe the data we use, estimate two fixed effects models, and present the results of our analyses. Finally, we summarize and discuss our findings, highlight potential shortcomings, and outline perspectives for future research.

2. Affective well-being and discrete emotions

Affective well-being is widely considered to consist of two distinct dimensions, positive and negative affect. As emphasized by Lucas and colleagues, "positive affect and negative affect are not simply opposite poles on the same continuum. Instead, they are clearly discriminable […] and in many cases appear to be only slightly correlated" (Lucas et al. 1996: 625f.). Previous studies examining the impact of unemployment on affective well-being have predominantly used "affect balance" measures to assess affective well-being (e.g., Boarini et al. 2012). Affect balance is a "net measure" of emotional experience and usually computed as the sum of positive feelings minus the sum of negative feelings experienced during a specific timeframe. For example, Schimmack et al. (2008) measure affective well-being by subtracting the sum frequency of experiencing discrete negative emotions (unpleasant, sad, fearful, angry, worried) from the sum frequency of experiencing discrete positive emotions (relaxed, joyful, happy, pleasant, affectionate).

Using a single affect balance indicator to assess the consequences of unemployment for affective well-being might be less than optimal for several reasons. First, affect balance hardly does justice to the multidimensionality of affective well-being, since, for example, the presence of negative emotions does not necessarily imply the absence of positive emotions, and people indeed report experiencing both positive and negative emotions during the same

specific timeframe (Lucas et al., 1996). Second, conflating the experience of a number of positive and negative emotions into a single indicator results in the loss of valuable information when one is interested in the experiential repercussions of unemployment. Third, the experience of different emotions might follow different trajectories prior to and in response to unemployment and we might find distinct adaptation and anticipation effects not only for positive and negative emotions but also within the domain of negative emotions, for instance, for anger and sadness. Fourth, discrete emotions have been shown to have distinct consequences for thinking, reasoning, and cognitive processes underlying decision-making and usually go hand in hand with specific motivational and behavioral tendencies. For example, research based on the *Appraisal Tendency Framework* (Lerner et al. 2015) suggests that anger and sadness, albeit both of negative valence, have specific consequences for attributions of responsibility. Anger increases attributions of individual responsibility whereas sadness emphasizes situational circumstances (Lerner et al. 2015). Likewise, fear and anger differentially affect risk perceptions in that anger is linked to more optimistic judgments whereas fear is associated with pessimistic judgments of future events (Lerner et al. 2015). Hence, these consequences of discrete emotions are not only important to more precisely assess the experiential repercussions of unemployment, but also have implications for policy recommendations regarding the behavioral dispositions of unemployed portions of the population.

With respect to unemployment, we know of only two studies (Krueger and Mueller, 2011, 2012) that have investigated specific emotions (happy, sad, and stressed). These studies show that the unemployed feel happy less often and sad more often the longer they are in unemployment. However, the frequency of feeling happy, sad, or stressed was only assessed with reference to three randomly sampled daily activities and therefore may not provide an appropriate overall assessment.

3 Stability and Change in Well-Being

In order to explain changes in life satisfaction and affective well-being in relation to unemployment, previous research has drawn on established theoretical frameworks that account for dynamics in SWB more generally, two of the most prominent being set-point theory and social production function theory. Although they do not make specific predictions about possible differences between life satisfaction and affective well-being, they allow for certain conjectures regarding these differences.

3.1 Set-point theory[3]

Set-point theory argues that individuals adapt comparably quickly to changing life circumstances and sooner or later return to an assumed "baseline" of well-being (Brickman and Campbell 1971; Headey and Wearing 1989). Hence, individuals are expected to have relatively stable levels of well-being over the long run. Studies in support of this assumption have shown, for example, that lottery winners do not report higher levels of life satisfaction and that victims of accidents are not substantially more dissatisfied with life compared to others (see Brickman et al. 1978). One presumed consequence of this perspective is that individuals – as part of their general adaptation to change – are constantly striving for new positive experiences and are caught in a "hedonic treadmill" (Brickman and Campbell 1971). Set-point theory generally assumes that individual "set-points" regulate the long-term stability of SWB. Various mechanisms have been proposed to explain how individual set-points are determined. For example, Costa and McCrae (1980) argue that individual differences in personality bring about corresponding differences in individuals' set-points.

[3] Set-point theory has been developed in a cumulated fashion from different theories (for an extended overview see Headey 2010). Therefore, set-point theory, as it is known today, has been labelled differently over time.

Headey and Wearing (1989) showed that stable personality traits predispose individuals to experience stable levels of favorable and unfavorable life events and, correspondingly, stable levels of SWB. However, they also suggest that life events can influence SWB over and above the effects of personality, in particular in cases of life events that are highly unlikely and exceptional (Headey and Wearing 1989; Headey et al. 2010).

More recently, numerous studies have failed to show adaption to baseline levels of life satisfaction and called the concept of set-points into question (Headey 2010). For instance, investigating marital transitions on life satisfaction, Lucas et al. (2003) found that, although individuals show a general tendency to adapt towards baseline levels, a substantial number of cases did not adapt at all or even showed trajectories in the opposite direction of that predicted by set-point theory. Likewise, studies on unemployment have shown long-term decreases in life satisfaction and no adaptation to previous levels, suggesting instead that unemployment alters individuals' set-points (Clark et al. 2001; Clark et al. 2008). Still other studies have shown that, over longer periods of time (20 years), a large number of individuals (14-30%) showed marked and apparently permanent changes in life satisfaction and, hence, in their individual set-points (Headey 2010).

Diener et al. (2006), for example, have suggested that to properly account for these inconclusive results, research on stability and change in SWB should consider that, most likely, (a) set-points are not hedonically neutral; (b) people have different set-points depending partly on temperament; (c) they have multiple set-points for cognitive and affective well-being that can move in different directions; (d) set-points can change under certain conditions; and (e) individuals differ in their adaptation to events. Hence, the inconclusive evidence of stable set-points of SWB suggests – among other things – giving more careful consideration to the possibility of different set-points for cognitive and affective

well-being and of different patterns in response to negative life events such as unemployment.

3.2 Social Production Function Theory

Contrary to set-point theory, Social Production Function (SPF) theory explains variation and change in SWB as a consequence of major life events primarily through shifts in goal attainment and pursuit (Ormel et al. 1997; Ormel et al. 1999; Lindenberg 1996). According to SPF theory, SWB is determined by the attainment of five instrumental goals: stimulation, comfort, status, behavioral confirmation, and affection (Ormel et al. 1999). Depending on individuals' resources, certain activities can be undertaken to satisfy these instrumental goals and, hence, to promote SWB. Whereas interindividual differences in general levels of SWB result from general differences in the resources individuals have at their disposal, intraindividual differences result from changes in the composition and amount of resources available to individuals following major life events. For example, negative life events such as divorce, widowhood, and unemployment tend to reduce the availability of resources necessary to carry out certain activities aimed at satisfying instrumental goals, which in turn usually results in a decrease in overall SWB.

SPF theory stands in the tradition of the utility-maximizing actor, and individuals are thus assumed to try to substitute available for unavailable resources. Therefore, changes in SWB as a consequence of major life events are assumed to be long-lasting if – and only if – individuals are *unable* to find substitutes for unavailable resources and cannot attain the respective goals on at least the pre-event level of attainment (Ormel et al. 1997; Ormel et al. 1999). However, substitution is limited meaning that all instrumental goals have to be met at some minimum level. For example, no possible level of affection can increase SWB if basic needs, such as housing or food, are not met.

Compared to other negative life events, such as divorce or widowhood, unemployment has been considered to have the most prolonged consequences for life satisfaction (Clark et al. 2008; Clark and Georgellis 2013; Fujita and Diener 2005; Lucas 2007). These long-term changes in consequence of job loss result from the multifunctional character of being in the workforce. Employed persons profit not only from income but also from non-material benefits such as status, prestige, and social contact, and many studies have emphasized the pecuniary as well as the non-pecuniary costs of unemployment (e.g., Young 2012; Winkelmann and Winkelmann 1998). It has been argued that these multifunctional resources are critical since they satisfy several goals simultaneously and are therefore difficult to substitute in a cost-effective way (Ormel et al. 1999). Hence, in line with SPF theory, studies have shown that shifting patterns of time use, which may represent one means of substitute goal attainment during unemployment, can counter the negative effects of unemployment specifically for affective well-being (Knabe et al. 2010; but see Krueger and Mueller 2012, for contrasting evidence).

3.3 Hypotheses

Based on the results of previous research and the two theoretical paradigms outlined above, we generally hypothesize that (H1) unemployment is associated with decreases in affective well-being, more specifically with an increased experience of negative emotions and decreasing experiences of positive emotions. The same should be true of life satisfaction (H1a). With respect to set-point or SPF theories, contrasting hypotheses can be postulated regarding the question of whether unemployment affects affective well-being and life satisfaction in the short and/or the long run. According to set-point theory, stable personality traits are closely linked to equally stable set-points (Headey and Wearing 1989). Although some personality traits apparently do change in response to unemployment, those generally

associated with affective well-being do not change significantly (Boyce et al. 2015). Therefore, we hypothesize (H2) that the unemployed approximate near pre-unemployment levels of affective well-being when unemployment persists for longer periods. Given that personality traits have been identified as stronger predictors of affective than of cognitive well-being (Schimmack et al. 2008), and looking at SPF theory and numerous replications in the literature (Diener et al. 2015), we do not expect complete adaptation effects regarding life satisfaction (H2a): Following SPF theory, long-lasting decreases in well-being result from a lack of possibilities for substitution. Since employment has to be considered as a multifunctional resource, the unemployed are expected to have difficulties in finding suitable substitutes for the benefits of being in the workforce. Hence, changes in life satisfaction are likely to be long-lasting. However, with regard to affective well-being and discrete emotions, substitution seems to be much easier, since the unemployed may overcome negative emotions by investing their time in other pleasant activities (Knabe et al. 2010). In this regard, SPF would make the same predictions as set-point theory (see H2). Finally, based on previous research, we assume that individuals who become unemployed experience negative emotions more often and positive emotions less often, even before the job loss actually occurs (H3). The same should be true of life satisfaction (H3a).

4 Methods

4.1 Data and Sample

To investigate how affective well-being relates to unemployment, we use data from the Socio-Economic Panel (SOEP), a longitudinal and representative survey of more than 20,000 respondents living in private households in Germany (Wagner et al. 2007). Aside from a wide array of standard socio-demographic indicators and unemployment data that have been collected since the beginning of the study in 1984, since 2007 the SOEP has also

included measures tapping the experience of certain discrete emotions (assessed on an annual basis) that have been conceptualized to represent the affective components of well-being (see Schimmack et al. 2008, for details).

Using the last eight waves of the SOEP (2007-2014), our sample comprises individuals between 18 and 65 years of age living in private households in Germany. To be included in the sample, respondents must have participated in the survey for at least two successive years, since two points of measurement are the minimum needed to apply our data analysis strategy (fixed effect models). This means that respondents who transitioned into unemployment at some point must have taken part in the survey at least in their final year of employment and subsequent initial year of unemployment. In the case of gaps between two points of measurement, all observations following the gap are excluded to ensure that possible unobserved changes in employment status do not bias our results. Moreover, our sample only comprises individuals who have been continuously employed or unemployed during an observational period (spanning one year); hence, we excluded individuals who, for example, were out of the labor market for only a few months. Finally, we excluded civil servants, trainees, and the self-employed. This sampling yields an unbalanced panel of 9,297 respondents, 539 of whom became unemployed during the period under observation (see Appendix Table A1 for sample description).

4.2 Measures

In the SOEP, discrete emotions have been assessed since 2007 using a four-item scale. Respondents are asked how often they felt *happy*, *angry*, *anxious*, and *sad* during the past four weeks (very rarely, rarely, sometimes, often, very often). The scale was originally designed to assess affective well-being as an affect balance, and past research has documented that this measure is clearly distinct from measures of life satisfaction (Schimmack 2003). Internal consistency of the affect scale ranges from 0.65 to 0.68

(measured for the years 2007 to 2009). An exploratory factor analysis (reported in Rackow et al. 2012) shows that all items load on a single factor representing a positive-negative affect continuum as expected (anger = 0.4844; anxiety = 0.6440; happiness = -0.3670; sadness = 0.7946). Although retrospective measures of affective well-being may not be as accurate as momentary assessments (e.g., experience sampling (Schimmack 2003)) or short-term recall procedures (e.g., Day Reconstruction Method (Kahneman et al. 2004)), they are among the most widely used instruments. Moreover, more accurate alternatives have not typically been realizable in nationally representative surveys (Stone and Mackie 2013), and are currently[4] unavailable on a yearly panel basis, which is essential to our design. Although the emotions available in the SOEP reflect theoretical considerations pertaining to affect balance as an indicator of affective well-being, they are equally well suited to being studied separately. Anger, fear/anxiety, sadness, and happiness/joy feature on almost every list of "basic" or "primary" emotions that are thought to be associated with (evolutionarily stable) prototypical response patterns, such as physiological reactions, cognitive appraisals, and motivational tendencies (e.g., Izard 2007).

In the SOEP, life satisfaction is measured on an 11-point scale ranging from 0 "completely dissatisfied" to 10 "completely satisfied" by asking "How satisfied are you with your life, all things considered?" (Kroh 2006).

Information on employment status is obtained from activity spell data on employment available in the SOEP. This activity spell data is acquired by asking respondents about their employment status (among other variables) for every single month of the last calendar year using an "activity calendar" (Goebel 2015). Please note that information on employment

[4] It is worth mentioning, however, that this method has recently been introduced in the SOEP Innovation Sample, although the data are not yet available; for details, see http://www.europeansurveyresearch.org/conference/programme2015?sess=176#372

status is always surveyed retrospectively for the year *previous* to the survey interview. Therefore, our analyses will be based on data from the years 2007 to 2013 only. Using employment spell data, we generated a binary variable representing the employment status for the month in which the interview took place. The category "employed" includes all full-time, part-time, or marginally employed people as well as individuals in part-time "mini-jobs", a specific kind of non-taxable low-wage job in Germany. The category "unemployed" includes all respondents who are, according to the labor force concept, not working and registered unemployed.

To account for general macro-level trends, business cycles and conditions in the labor market that might affect the impact of unemployment on SWB, we looked up the monthly unemployment rate (at the time the interview took place) for all German federal states in which respondents reside and included them as controls in our model (Destatis 2015). To ensure that changes in affective well-being and life satisfaction are not driven by other life events, we furthermore control for the number of children in the household as well as the partnership status. Regarding the latter, we distinguish among married, single, and individuals in a steady relationship. Since we are interested in the experiential consequences of unemployment as a conglomerate of effects, we do not seek to control for time-variant factors known to be directly or indirectly associated with unemployment, for instance income or health.[5]

4.3 Data Analysis

To investigate the impact of unemployment on affective and cognitive well-being, we use fixed effects models (e.g., Allison 2009; Wooldridge 2006, Andreß et al. 2013).

[5] As a robustness check, we also ran our analyses including household income as an explanatory variable. Although the unemployment coefficients became smaller, the overall results did not change substantially.

Because all outcome variables, which are either measured on a five-point (affective well-being) or 11-point scale (life satisfaction), are treated as cardinal constructs, we use linear fixed effects models. This is justified by findings from life satisfaction research suggesting that assumed cardinality or ordinality of life satisfaction is relatively unimportant for estimation results (Ferrer-i-Carbonell and Frijters 2004, 654-55; Clark et al. 2008). Since our dependent variables are measured using different scales, we opted to standardize them (mean of zero and standard deviation of one) to make anticipation, reaction, and adaptation effects comparable across all outcome variables.

Equation 1 illustrates the standard linear panel data regression model:

$$y_{it} = \beta X_{it} + \gamma Z_i + \alpha_i + \varepsilon_{it} \quad (1)$$

for individual$_i$ (i =1,…,n) at time point t (t = 1,…T), where X is a vector for measured time-varying explanatory variables, Z is a vector for measured time-constant explanatory variables, and β and γ are vectors of coefficients. Furthermore, it includes two distinct error terms. Whereas the first error term α_i represents the combined effect on y of all unobserved time-constant variables and only varies across individuals (unobserved heterogeneity), the second error term ε_{it} varies across individuals as well as over time and represents the random variation.

In contrast to random effects, the main advantage of fixed effects is that they rely solely on within-person variation and therefore control for unobserved heterogeneity without making any assumption about whether or not α_i is correlated with any of the explanatory variables as demonstrated in the following. Averaging equation 1 over time

$$\bar{y}_i = \beta \bar{X}_i + \gamma Z_i + \alpha_i + \bar{\varepsilon}_i \quad (2)$$

and subtracting it again from the observed data (equation1), equation 3 illustrates the fixed effects model.

$$y_{it} - \bar{y}_i = \beta(X_{it} - \bar{X}_i) + \varepsilon_{it} - \bar{\varepsilon}_i \quad (3)$$

Because all observed (Z_i) as well as unobserved time-constant (α_i) variables are by definition fixed over time, they drop out of the equation. Unlike random effects, fixed effects models therefore automatically control for all observable and unobservable time-constant differences between individuals, regardless of whether or not those differences affect the likelihood of event occurrence, i.e., job loss (Allison 1994: 181). This is particularly important when analyzing the net effect of unemployment on SWB because job loss cannot be considered a random event. Rather, it is socially patterned. Likewise, affective well-being is assumed to be socially patterned. For example, education affects the likelihood of job loss and may at the same time be one reason why people are unhappy. Hence, our models do "control" for social structural factors that might further qualify and specify the subjective experience of unemployment, but they do not estimate their effects, since we are primarily interested in the general net effect of job loss and its temporal dynamics.

To assess the effects of unemployment on the affective components of well-being in terms of anticipation, reaction, and adaption, we follow an approach proposed by Clark et al. (2008) and estimate two different fixed effects models for each outcome variable. To measure reaction and adaptation to unemployment, Model 1 is specified as follows:

$$Y_{it} = \beta_1 unemployment_{it} + \beta_2 plus1_{it} + \beta_3 plus2_{it} + \beta_4 reemployment_{it} + \beta_5 X_{it} + \varepsilon_{it} \qquad (4)$$

The dependent variable Y_{it} represents the discrete emotions (anger, anxiety, sadness, happiness) and life satisfaction as the cognitive component of SWB. To investigate possible changes in affective (and cognitive) well-being, we divided the unemployed into three different categories depending on the duration of their unemployment (see Clark et al. 2008): those who have been unemployed for up to one

year, one to two years, and two to six years. If respondent$_i$ became unemployed since last year's interview, $unemployment_{it}$ equals 1 while $plus1_{it}$ and $plus2_{it}$ all equal 0. If, however, respondent$_i$ is still unemployed one year later (two or six years later, respectively), $plus1_{it}$ equals 1 ($plus2_{it}$, respectively) while $unemployment_{it}$ and any other non-applicable *plus* variables equal 0.

Following this approach, $unemployment_{it}$, $plus1_{it}$ and $plus2_{it}$ coefficients represent the changes in well-being if respondents become unemployed ($unemployment_{it}$) or remain unemployed ($plus1_{it}$ and $plus2_{it}$) compared to their well-being scores in the year before job loss. Given that respondents can adapt to unemployment in terms of affective well-being, we expect $unemployment_{it}$ to have the strongest impact on well-being with decreasing coefficients for $plus1_{it}$ and $plus2_{it}$. Adaptation takes places if the latter coefficients become insignificant, indicating that respondents' well-being is not lower than it was during their previous employment. We assume that no adaptation occurs if all variables have approximately the same magnitude and become significant.

Variable $reemployment_{it}$ measures the difference in individuals' affective (and cognitive) well-being when re-entering the labor market compared to well-being scores in the year before job loss. $Reemployment_{it}$ equals 1 if respondent$_i$ re-enters the labor market after being unemployed in the previous year(s), and equals 0 if respondent$_i$ remains unemployed. Finally, vector X_{it} includes all time-varying control variables, such as the number of children, partnership status, regional unemployment rate, as well as year dummy variables.

Although it is a common approach to investigate the changes in SWB in consequences of major life events on a yearly basis, recent studies also suggest to apply a more precise temporal resolution within the first year after an event (Frijters et al. 2011; Uglanova and Staudinger 2013). Therefore, we also looked at the changes in affective

well-being within the first year of unemployment more closely. Specifically, we further distinguished the unemployed according to whether they became unemployed within the previous three months, four to six months, seven to ten months, and ten to twelve months. This procedure allows us to address two issues. First, it provides more precise information on how quickly adaptation occurs. Second, it provides a more accurate estimate of the impact of unemployment on affective well-being, which might otherwise be underestimated if adaptation proceeds very quickly (i.e., in terms of months rather than of years) and if the temporal resolution is not high enough, that is, if it is measured in years rather than months or weeks.

To measure the anticipation of and reaction to unemployment, Model 2 is specified as follows:

$$Y_{it} = \beta_1 minus2_{it} + \beta_2 minus1_{it} + \beta_3 unemployment_{it} + \beta_4 X_{it} + \varepsilon_{it} \quad (5)$$

As in Model 1, $unemployment_{it}$ represents reactions to unemployment and equals 1 if respondent_i became unemployed since last year's interview and hence, has been unemployed for up to one year. $Minus1_{it}$ ($minus2_{it}$ respectively) represents possible anticipation effects and equals 1 if respondent_i in year_t will lose his or her job in the following year or the year after that (given that respondent_i is currently employed). Anticipation occurs if $minus2_{it}$ and $minus1_{it}$ have a significant negative effect on well-being and a significant positive effect on the frequency of experiencing the negative emotions anxiety, anger, and sadness, indicating that well-being scores differ two (one) year(s) before becoming unemployed compared to respondents' reported well-being three and four years before unemployment. No anticipation occurs if $minus2_{it}$ and $minus1_{it}$ coefficients are insignificant and hence, are not significantly different from well-being scores three to four years prior to job loss. Similar to Model 1, vector X_{it} again represents

all time-varying control variables. Please note that analyses regarding anticipation effects are based on a subsample. In addition to individuals who did not experience unemployment at any time (N=8,758), this subsample also includes those unemployed individuals who are observed in the first year of unemployment as well as in the previous three years of employment (N=190) (see Appendix, Table A1).

5 Results

5.1 Reaction and adaptation to unemployment

Table 1 shows estimates obtained from the specification of Model 1 measuring the reaction and adaptation to unemployment depending on the duration of unemployment. Columns 1 to 5 depict the impact of unemployment on affective (the frequency of experiencing anxiety, anger, sadness, and happiness) and cognitive well-being (life satisfaction, LS) for those who are unemployed for up to one year, one to two years, and two to six years. Coefficients represent the changes in well-being compared to well-being levels in the year before unemployment.

< Table 1 around here >

Looking at affective well-being (columns 1-4), results show that respondents feel anxious and sad more often and are less happy when they became unemployed within the last year, thus lending partial support to hypothesis H1. As for possible adaptation, different patterns emerge for the different emotions, yet all of them suggesting that unemployment decreases affective well-being only in the short run, hence, supporting hypothesis H2. The most long-lasting effects seem to appear with regard to happiness (column 4). Results show that the frequency of feeling happy decreases slightly the longer the respondents remain unemployed. Note, however, that the coefficient for being unemployed for one to two years is only significant at the 10% level and that the

coefficient for two to six years in unemployment fails to reach statistical significance, which might be due to the small cell size (see Appendix, Table A1). Looking at sadness, results show adaptation effects after two years in unemployment (column 3). Findings indicate that respondents feel sad more often not only when they recently became unemployed but also when they remain unemployed for up to two years. Again, the coefficient for one to two years in unemployment is only significant on the 10% level. If unemployment persists for more than two years, the frequency of feeling sad does not differ significantly from respondents' pre-unemployment levels. Regarding anxiety, adaptation occurs even faster (column 1). Coefficients for one to two and two to six years in unemployment are smaller in magnitude and not significantly different from pre-unemployment levels. Hence, unemployment seems to affect anxiety only in the short run. The impact of unemployment on experiencing anger clearly differs from its impact on any other emotion we investigated: Respondents do not feel angry more often when becoming or remaining unemployed as compared to being in the labor force (column 2).

Since the unemployed seem to adapt comparably quickly in terms of anxiety and do not show notable changes in experiencing anger when unemployed for one to up to six years, we looked at changes in affective well-being within the first year of unemployment more closely. Specifically, we investigated individuals who became unemployed within the previous three months, four to six months, seven to ten months, and ten to twelve months (Table 1, columns 6-10). To better visualize mean changes in affective well-being and life satisfaction following unemployment, Figure 1 illustrates the estimates obtained from the fixed effects regressions when accounting for the temporal distance from job loss in more detail (Table 1, columns 6-10).

< Figure 1 around here >

Again, we find different patterns for the different emotions. Regarding anger (column 7), results do not show any significant effects. Hence, unemployment does not impact the frequency of feeling angry, regardless of the temporal resolution. Looking at anxiety (column 6), results indicate that the unemployed feel anxious significantly more often only within the first three months as well as after seven to nine months in unemployment. Hence, the increased feeling of anxiousness during the first year of unemployment might be driven mainly by the initial shock of losing the job as well as increasing worries about the future after unemployment benefits run out (in Germany usually after one year of unemployment). Regarding sadness (column 8) and happiness (column 9), we would not expect to find significant differences between shorter and longer periods of unemployment. Although the sadness coefficient within the first three months of unemployment is just above the 10% level of significance ($p=0.106$), findings indicate that the unemployed in general show a higher frequency of feeling sad. Interestingly, with regard to happiness (column 9), results only reveal a significant effect within seven to nine months of unemployment.

Focusing on the impact of unemployment on life satisfaction (column 5), results are almost perfectly in line with previous studies. Respondents not only suffer significantly within the first year of unemployment, but also become even more dissatisfied with life when they remain unemployed for a longer period. Thus, results support our hypotheses H1a and H2a. Consistent with this finding, coefficients are also roughly the same when "zooming in" on changes within the first year of unemployment (column 10).

So far, we have investigated whether respondents adapt to unemployment in terms of affective well-being and life satisfaction. This clearly is only the case for affective well-being. However, to test whether full adaptation to pre-unemployment levels takes

place, it is useful to investigate whether affective well-being during prolonged unemployment differs significantly from the time when unemployment strikes (one to three months unemployed). We assume full adaptation to occur only if affective well-being during prolonged unemployment is not significantly different from pre-unemployment levels *and* is significantly different from affective well-being at the time of job loss (one to three months unemployed). Although coefficients are in general smaller when unemployment lasts for more than three months, findings do not reveal any significant differences (see Table A2 in the appendix). Overall, results therefore suggest that adaptation takes place in a sense that the frequency of experiencing anxiety and sadness does not differ significantly from pre-unemployment levels if the respondents remain unemployed for a longer time. Nevertheless, given the fact that the frequency of feeling anxious and sad is not significantly lower with respect to the time of job loss (one to three months), full adaptation does not occur.

5.2 Anticipation and reaction to unemployment

Table 2 shows fixed effects estimates obtained from the specification of Model 2 measuring anticipation and reaction towards unemployment. Coefficients now represent the mean changes in respondents' well-being when approaching job loss (anticipation) and facing job loss (reaction) compared to well-being levels two to three years prior to job loss. Significant anticipatory changes only occur with regard to sadness and happiness, partially confirming our hypothesis H3. Results show that respondents feel sad more often already two years before job loss and happy less often one year before job loss. Contrary to previous findings (Clark et al. 2008; Uglanova and Staudinger 2013), our analyses do not lend support to the existence of anticipatory changes in life satisfaction or to our hypothesis H3a (see *Discussion* for possible explanations and shortcomings of our data).

< Table2 around here >

Looking at the actual impact of unemployment, results are more or less identical to those reported in Table 1, which is why we will not discuss results on the scale of monthly differences here. Our analyses show that respondents feel anxious and sad more often and happy less often when they become unemployed. Likewise, life satisfaction also declines significantly upon job loss. Interestingly, results now also show that respondents feel angry significantly less often when they become unemployed. Deviations from findings presented in Table 1 probably result from two different factors. First, the reference categories differ between Model 1 and Model 2. Unlike in Model 1, we now compare changes in well-being upon job loss to well-being three to four years before unemployment. Given that affective well-being already seems to change in the years prior to job loss, it is not surprising that the coefficients are now somewhat larger. Secondly, in order to investigate possible anticipation effects, analyses are based on a smaller subsample (see Table A1 in the Appendix). Therefore, the number of unemployed respondents (N = 190) further decreases.

6 Discussion

Given that unemployment continues to be a social and economic challenge in most industrialized countries, it is urgent to better understand the individual repercussions of job loss. Unemployment is usually accompanied by feelings of worthlessness, desperation, frustration, and social isolation. These effects result from the social and economic consequences of unemployment as well as from the inability to meet social expectations about being part of the workforce by a certain age. These negative consequences, of course, have to be seen in the light of the positive effects of being out of the workforce, for example, being subjected to less work-related stress and having more flexibility in time use and more time to pursue other activities.

The individual consequences of unemployment have been examined primarily by assessing two different dimensions of subjective well-being, cognitive (life satisfaction) and affective. Although previous research has documented that cognitive and affective well-being (a) are conceptually distinct, (b) correlate only moderately, and (c) are influenced by different factors (Lucas et al. 1996; Schimmack et al. 2008), only few studies have directly compared the effects of unemployment on both facets of well-being with both cross-sectional and longitudinal data. Our study therefore compared the changes in affective well-being and life satisfaction in terms of anticipation as well as adaptation effects, using a representative longitudinal data source for Germany. Moreover, our study goes beyond existing research in that we do not use an affect balance measure to assess affective well-being, but rather look at discrete emotions.

Generally, our results highlight the need to differentiate between the cognitive and affective components of well-being when investigating the subjective consequences of unemployment. Although unemployment clearly affects both dimensions, long-term changes only occur with regard to life satisfaction. Furthermore, our findings also emphasize the need to look at distinct emotions instead of, for example, a single affect balance measure. Given that emotions follow different trajectories in response to unemployment, the overall impact of unemployment might be over- or underestimated when using a balanced affect measure. For example, whereas increased sadness and decreased happiness tend to persist during unemployment, anxiety returns to pre-unemployment levels quite rapidly, that is, in a matter of months. Interestingly, our results show that the experience of anger is largely unaffected by unemployment. This is probably because working life is one of the most frequent elicitors of anger, and lack of these anger-eliciting situations likely compensates for the experience of anger due to unemployment (see Rackow et al. 2012).

Our study also speaks directly to set-point theory and the Social Production Function theory of changes in well-being following major life events. Based on our results, it appears that set-point theory in particular holds for affective well-being and much less for life satisfaction, as expected. This is in line with recent findings indicating the need to further specify set-point theory to account for alternative or multiple set-points, for instance, regarding cognitive and affective well-being (Diener et al. 2006). Given that individual set-points are determined by personality, among other factors, our findings are hardly surprising since personality is a much stronger predictor for affective well-being than contextual factors (Schimmack et al. 2008) and because the personality traits most strongly associated with affective well-being do not change in response to unemployment, whereas other traits show notable changes (Boyce et al. 2015).

With regard to Social Production Function theory, our findings highlight the limitations of substitution, as other studies have previously shown. Although the unemployed may find alternative ways to rebalance and improve their affective well-being, as shown by Knabe et al. (2010), substitution is much more limited in the area of life satisfaction, probably due to the difficulty of finding substitutes for the benefits of being in the workforce. To better account for substitution effects, future research should therefore specifically address the impact of changes in time-use patterns on affective and cognitive well-being in consequence of unemployment.

In line with previous research, we also find evidence for anticipatory changes in affective well-being, that is, changes that take place before unemployment occurs. Compared to the baseline level (three to four years prior to job loss) the frequency of feeling sad increases the faster the actual job loss approaches. Furthermore, respondents feel happy less often within the year immediately preceding job loss. Contrary to our expectations, we do not find evidence of anticipatory changes in life satisfaction. There

are two possible explanations for this. First, due to the fact that our longitudinal analyses are limited to eight waves of the SOEP, we took life satisfaction three to four years prior to job loss as our reference category. Thus, coefficients of anticipation effects represent mean changes in life satisfaction between one and two years prior to job loss compared to three to four years prior to the event. Results of other studies (Clark et al. 2008; Uglanova and Staudinger 2013) are based on a broader time span, using five and more years prior to entering unemployment as the reference category.

According to Clark et al. (2008), anticipatory changes in life satisfaction for men already occur up to three to four years prior to unemployment. Hence, our results may underestimate existing effects since the mean scores in the reference year may already be lower as a consequence of approaching unemployment, resulting in insignificant and lower coefficients of possible anticipation and reaction in our data. Second, whereas Clark et al. (2008) conducted separate analyses for men and women, we cannot do so because our sample size would become too small. However, men and women have been shown to react differently to actual unemployment, with only little habituation in life satisfaction for men and some habituation for women in the long run (Clark et al. 2008). Likewise, future unemployment reduces life satisfaction for both men and women with slightly larger effects for men (Clark et al. 2008). This shows the necessity for future research to explicitly address the different consequences of unemployment for men and women.

In sum, our research contributes to a better understanding of the individual and, in particular, emotional consequences of and precursors to unemployment. Knowledge about how the individual experience of discrete emotions changes in the face and as a consequence of unemployment not only helps to better comprehend the individual challenges related to unemployment, but also gives insights into likely behavioral patterns

that are associated with unemployment. Given that anxiety and sadness and a lack of happiness are the predominant feelings experienced during the first year of unemployment, the appraisal tendencies associated with these emotions might lead to different cognitions, motivations, and behavioral outcomes. Whereas sadness is linked to the general tendency to prefer high-risk, high-reward options in decision-making and to external attributions of responsibility, anxiety is associated with a preference for low-risk, low-reward options and the self-attribution of responsibility for life outcomes (Keltner et al. 1993; Lerner et al. 2015). These effects of anxiety and sadness have been shown, for example, regarding hypothetical gambling and job-selection decisions (Raghunathan and Pham, 1999). Happiness, for instance, that is characterized by appraisals of certainty, has been shown to increase heuristic information processing and to decrease depth of thought (Tiedens and Linton, 2001), and the absence of happiness during certain periods of unemployment might therefore promote excessive rumination.

Taken together, and although the detrimental consequences of unemployment clearly seem to prevail, our results on differences between affective well-being and life satisfaction based on a representative longitudinal survey concur with the overall assessment of Knabe et al. (2010) that the unemployed may in fact be "dissatisfied with life but having a good day."

References

Allison, P. D. (1994). Using Panel Data to Estimate the Effects of Events. *Sociological Methods & Research*, 23, 174–199.

Allison, P. D. (2009). *Fixed effects regression models*. Thousand Oaks, CA: Sage.

Andreß, H.-J., Golsch, K., & Schmidt, A. W. (2013). *Applied Panel Data Analysis for Economic and Social Surveys*. Berlin: Springer.

Boarini, R., Comola, M., Smith, C., Manchin, R., & De Keulenaer, F. (2012). What Makes For A Better Life? The Determinants of Subjective Well-Being in OECD Countries: Evidence From the Gallup World Poll. Ressource document. *OECD Statistics Working Papers,* 2012/03. http://dx.doi.org/10.1787/5k9b9ltjm937-en. Accessed 21 May 2012.

Boyce, C. J., Wood, A. M., Daly, M, & Sedikides, C. (2015). Personality change following unemployment. *Journal of Applied Psychology*, 100(4), 991-1011.

Brand, J.E. (2015). The Far-Reaching Impact of Job Loss and Unemployment. *Annual Review of Sociology,* 41, 1.1-1.17.

Brickman, P., & Campbell, D. T. (1971). Hedonic relativism and planning the good society. In M. H. Appley (Ed.), *Adaptation level theory. A symposium* (pp. 287–302). New York: Academic Press.

Brickman, P., Coates, D., & Janoff-Bulman, R. (1978). Lottery Winners and Accident Victims: Is Happiness Relative? *Journal of Personality and Social Psychology*, 36(8), 917–927.

Bruni, L., & Porta, P. L. (2007). Introduction. In L. Bruni & P. L. Porta (Eds). *Handbook on the Economics of Happiness* (pp. xi-xxxvii). Cheltenham, UK: Elgar.

Catalano, R. (1991). The Health Effects of Economic Insecurity. *American Journal of Public Health*, 81(9), 1148–1152.

Chen, H.-T., Marks, M. R., & Bersani. C. A. (1994). Unemployment Classifications and Subjective Well-being. *The Sociological Review*, 42(1), 62–78.

Clark, A. E. (2003). Unemployment as a Social Norm: Psychological Evidence from Panel Data. *Journal of Labor Economics*, 21(2), 323-351.

Clark, A. E., Diener, E., Georgellis, Y., & Lucas, R. E. (2008). Lags And Leads in Life Satisfaction: a Test of the Baseline Hypothesis. *The Economic Journal*, 118(529), F222–F243.

Clark, A. E., Georgellis, Y. (2013). Back to Baseline in Britain: Adaptation in the British Household Panel Survey. *Economica*, 80, 496-512.

Clark, A. E., Georgellis, Y., & Sanfey, P. (2001). Scarring: The Psychological Impact of Past Unemployment. *Economica*, 68, 221–241.

Clark, A. E., & Oswald, A. J. (1994). Unhappiness and Unemployment. *The Economic Journal*, 104, 648–659.

Costa, P. T., & McCrae, R. R. (1980). Influence of Extraversion and Neuroticism on Subjective Well-Being: Happy and Unhappy People. *Journal of Personality and Social Psychology*, 38, 668–678.

Daly, M., & Delaney, L. (2013). The scarring effect of unemployment throughout adulthood on psychological distress at age of 50: Estimates controlling for early adulthood distress and childhood psychological factors. *Social Science & Medicine*, 80, 19-23.

Davern, M. T., Cummins, R. A., & Stokes, M. A. (2007). Subjective Wellbeing as an Affective-Cognitive Construct. *Journal of Happiness Studies*, 8(4), 429–449.

DeFrank, R. S., & Ivancevich, J. M. (1986). Job loss: An individual level review and model. *Journal of Vocational Behavior*, 28(1), 1–20.

Destatis (2015). Arbeitsmarktstatistik der Bundesagentur für Arbeit (Code 13211-0012). https://www-genesis.destatis.de. Accessed 11 November 2015.

Diener, E. (1984). Subjective Well-Being. *Psychological Bulletin,* 95(3), 542-575.

Diener, E. (1994). Assessing Subjective Well-Being: Progress and Opportunities. *Social Indicators Research*, 31, 103–157.

Diener, E. (2006). Guidelines for National Indicators of Subjective Well-Being and Ill-Being. *Journal of Happiness Studies*, 7(4), 397–404.

Diener, E., Lucas, R. E., & Scollon, C. N. (2006). Beyond the Hedonic Treadmill: Revising the Adaptation Theory of Well-Being. *American Psychologist*, 61, 305–314.

Diener, E., Scollon, C. N., & Lucas, R. E. (2004). The evolving concept of subjective well-being: The multifaceted nature of happiness. *Advances in Cell Aging and Gerontology*, 15, 187-219.

Diener, E., Oishi, S., & Lucas, R.E. (2015). National Accounts of Subjective Well-Being. American Psychologist 70(3):234-242.

Dooley, D., Fielding, J., & Levi, L. (1996). Health and unemployment. *Annual Review of Public Health*, 17, 449–465.

Easterlin, R. (2004). The Economics of Happiness. *Daedalus,* 133(2), 26-33.

Ferrer-i-Carbonell, A., & Frijters, P. (2004). How Important is Methodology for the Estimates of the Determinants of Happiness? *The Economic Journal*, 114(497), 641–659.

Fischer, J. (2009). *Subjective Well-Being as Welfare Measure: Concepts and Methodology*. University Library of Munich, MPRA Paper 16619.

Frey, B.S. (2008). Happiness: A Revolution in Economics. Cambridge: The MIT Press.

Frijters, P., Johnston, D.W. &Shields, M.A. (2011). Life Satisfaction Dynamics with Quarterly Life Event Data. *Journal of Economics*, 113(1), 190-211.

Fujita, F., & Diener, E. (2005). Life Satisfaction Set Point: Stability and Change. *Journal of Personality and Social Psychology*, 88, 158–164.

Gerlach, K., & Stephan, G. (1996). A paper on unhappiness and unemployment in Germany. *Economics Letter*, 52, 325–330.

Goebel, J. (2015). SOEP 2013 – Documentation on Biography and Life History Data for SOEP v30. SOEP Survey Papers 266: Series D. Berlin: DIW/SOEP

Headey, B. (2010). The Set Point Theory of Well-Being Has Serious Flaws: On the Eve of a Scientific Revolution. *Social Indicators Research*, 97, 7–21.

Headey, B., Muffels, R., & Wagner, G. G. (2010). Long-running German panel survey shows that personal and economic choices, not just genes, matter for happiness. *Proceedings of the National Academy of Sciences*, 107(42), 17922–17926.

Headey, B., & Wearing, A. (1989). Personality, Life Events and Subjective Well-Being: Towards a Dynamic Equilibrium Model. *Journal of Personality and Social Psychology*, 57, 731–739.

Izard, C. E. (2007). Basic emotions, natural kinds, emotion schemas, and a new paradigm. *Perspectives on Psychological Science*, 2, 260–275.

Kahneman, D., Diener, E., & Schwarz, N. (1999). *Well-Being. The Foundations of Hedonic Psychology.* New York: Russell Sage.

Kahneman, D., Krueger, A. B., Schkade, D. A., Schwarz, N. & Stone, A. A. (2004). A Survey Method for Characterizing Daily Life Experience: The Day Reconstruction Method. *Science*, 306, 1776–780.

Kassenboehmer, S. C., & Haisken-DeNew, J. P. (2009). You're Fired! The Causal Negative Effect of Entry Unemployment on Life Satisfaction. *Economic Journal*, 119(536), 448–462.

Keltner, D., Ellsworth, P.C., & Edwards, K. (1993). Beyond simple pessimism: effects of sadness and anger on social perception. *Journal of Personality and Social Psychology*, 64, 740–52.

Knabe, A., & Rätzel, S. (2011). Scarring or Scaring? The Psychological Impact of Past Unemployment and Future Unemployment Risk. *Economica*, 78, 283–293.

Knabe, A., Rätzel, S., Schöb, R., & Weimann, J. (2010). Dissatisfied with Life but Having a Good Day: Time-Use and Well-Being of the Unemployed. *Economic Journal*, 120(547), 867–889.

Kroh, M. (2006). An Experimental Evaluation of Popular Well-Being Measures. Resource document. *DIW Diskussionspapier* Nr. 546. http://www.diw.de/documents/publikationen/73/diw_01.c.43968.de/dp546.pdf. Accessed January 2006.

Krueger, A. B., & Mueller, A. I. (2011). Job Search, Emotional Well-Being, and Job Finding in a Period of Mass Unemployment Evidence from High-Frequency Longitudinal Data. *Brookings Papers on Economic Activity*, 42, 1–70.

Krueger, A. B., & Mueller, A. I. (2012). Time Use, Emotional Well-Being, and Unemployment: Evidence from Longitudinal Data. *American Economic Review*, 102(3), 594–599.

Lerner J. S., Li Y., Valdesolo P., & Kassam K. (2015). Emotion and decision making. *Annual Review of Psychology*, 66, 799-823.

Lindenberg, S. (1996). Continuities in the theory of social production functions. In H. B. G. Ganzeboom & S. Lindenberg (Eds.), *Verklarende sociologie* (pp. 169–184). Amsterdam: Thesis Publishers.

Lucas, R. E. (2007). Adaptation and the Set-Point Model of Subjective Well-Being. Does Happiness Change After Major Life Events? *Current Directions in Psychological Science*, 16, 75–79.

Lucas, R. E., Clark, A. E., Georgellis, Y., & Diener, E. (2003). Re-examining Adaptation and the Setpoint Model of Happiness: Reactions to Changes in Marital Status. *Journal of Personality and Social Psychology*, 84, 527–539.

Lucas, R. E., Clark, A. E., Georgellis, Y., & Diener, E. (2004). Unemployment Alters the Set-Point for Life Satisfaction. *Psychological Science*, 15, 8–13.

Lucas, R. E., Diener, E., & Suh, E. (1996). Discriminant Validity of Well-Being Measures. *Journal of Personality and Social Psychology*, 71, 616–628.

McGillivray, M. (2006). Human Well-being: Issues, Concepts and Measures. In McGillivray, M., & Clarke, M. (Eds). *Understanding Human Well-Being* (pp. 1-22). Basingstoke: Palgrave MacMillan.

McKee-Ryan, F., Song, Z., Wanberg, C. R., & Kinicki, A. J. (2005). Psychological and physical well-being during unemployment: A meta-analytic study. *Journal of Applied Psychology*, 90(1), 53–76.

Nordenmark, M., & Strandh, M. (1999). Towards a Sociological Understanding of Mental Well-Being among the Unemployed: The Role of Economic and Psychosocial Factors. *Sociology*, 33(3), 577–597.

OECD (2013). *OECD Guidelines on Measuring SubjectiveWell-being*. Paris: OECD Publishing.

Oesch, D., & Lipps, O. (2013). Does Unemployment Hurt Less if There is More of it Around? A Panel Analysis of Life Satisfaction in Germany and Switzerland. *European Sociological Review*, 29(5), 955–967.

Ormel, J., Lindenberg, S., Steverink, N., & Verbrugge, L. M. (1999). Subjective Well-Being and Social Production Function Theroy. *Social Indicators Research*, 46, 61–90.

Ormel, J., Lindenberg, S., Steverink, N., & Vonkorff, M. (1997). Quality of life and social production functions: a framework for understanding health effects. *Social Science & Medicine*, 45, 1051–1063.

Rackow, K., Schupp, J., & von Scheve, C. (2012). Angst und Ärger: Zur Relevanz emotionaler Dimensionen sozialer Ungleichheit. *Zeitschrift für Soziologie*, 41(5), 392–409.

Raghunathan, R., & Pham, M.T. (1999). All negative moods are not equal: motivational influences of anxiety and sadness on decision making. *Organizational Behavior and Human Decision Processes*, 79, 56–77.

Ross, C. E., & Mirowsky, J. (1995). Does employment affect health? *Journal of Health and Social Behavior*, 36, 230–243.

Ryan, R.M., & Deci, E.L. (2001). On happiness and human potentials: A review of research on hedonic and eudaimonic well-being. *Annual Review of Psychology*, 52, 141-166.

Schimmack, U. (2003). Affect measurement in Experience Sampling research. *Journal of Happiness Studies*, 4(1), 79–106.

Schimmack, U., Schupp, J., & Wagner, G. G. (2008). The Influence of Environment and Personality on the Affective and Cognitive Component on Subjective Well-being. *Social Indicators Research*, 89, 41–60.

Schwarz, N., & Strack, F. (1999). Reports of Subjective Well-Being: Judgemental Processes and Their Methodological Implications. In D. Kahnemann, E. Diener, & N. Schwarz (Eds.), *Well-Being: The Foundations of Hedonic Psychology* (pp. 61–84). New York: Russell Sage.

Stone, A. A., & Mackie, C. (Eds.). (2013). *Subjective well-being: measuring happiness, suffering, and other directions of experience*. Washington, DC: National Research Council.

Tiedens, L.Z., & Linton, S. (2001). Judgment under emotional certainty and uncertainty: the effects of specific emotions on information processing. *Journal of Personality and Social Psychology*, 81, 973–988.

Uglanova, E. A., & Staudinger, U. M. (2013). Zooming in on Life Events: Is Hedonic Adaptation Sensitive to the Temporal Distance from the Event? *Social Indicators Research*, 111, 265–286.

Veenhoven, R. (2000). The four qualities of life: Ordering concepts and measures of the good life. *Journal of Happiness Studies,* 1, 1-39.

Wagner, G. G., Frick, J. R., & Schupp, J. (2007). The German Socio-Economic Panel Study (SOEP) – Scope, Evolution and Enhancements. *Schmollers Jahrbuch*, 127, 161–191.

Wanberg, C. R. (2012). The Individual Experience of Unemployment. *Annual Review of Psychology*, 63, 369–396.

Winkelmann, R. (2008). Unemployment, Social Capital, and Subjective Well-Being. *Journal of Happiness Studies*, 10(4), 421–430.

Winkelmann, L., & Winkelmann, R. (1998). Why Are the Unemployed So Unhappy? Evidence from Panel Data. *Economica*, 65, 1–15.

Wooldridge, J. M. (2006). *Introductory econometrics. A modern approach*. Cincinnati, OH: South-Western College.

Young, C. (2012). Losing a Job: The Nonpecuniary Cost of Unemployment in the United States. *Social Forces*, 91(2), 609–634.

Table 1: Fixed Effects Regression: Reaction and Adaptation of Affective and Cognitive Well-Being to Unemployment.

	Anxiety	Anger	Sadness	Happiness	LS	Anxiety	Anger	Sadness	Happiness	LS
Reaction										
unemployed 0-3 months						0.148*	0.024	0.103	-0.084	-0.287***
						(0.060)	(0.064)	(0.063)	(0.060)	(0.053)
unemployed 4-5 months						0.052	-0.024	0.241*	-0.095	-0.437***
						(0.091)	(0.095)	(0.094)	(0.089)	(0.079)
unemployed 7-9 months						0.168+	-0.070	0.200*	-0.255**	-0.438***
						(0.096)	(0.101)	(0.100)	(0.095)	(0.083)
unemployed 10-12 months						-0.070	-0.061	0.323**	-0.019	-0.459***
						(0.116)	(0.122)	(0.121)	(0.115)	(0.101)
unemployed since 0-1 years	0.106*	-0.013	0.176***	-0.110*	-0.366***					
	(0.045)	(0.047)	(0.047)	(0.045)	(0.039)					
Adaptation										
unemployed since 1-2 years	0.050	-0.045	0.152+	-0.131+	-0.452***	0.046	-0.048	0.157+	-0.132+	-0.457***
	(0.079)	(0.084)	(0.083)	(0.078)	(0.069)	(0.079)	(0.084)	(0.083)	(0.079)	(0.069)
unemployed since 2-6 years	0.090	-0.055	0.083	-0.208	-0.564***	0.089	-0.060	0.088	-0.214	-0.572***
	(0.133)	(0.140)	(0.141)	(0.133)	(0.116)	(0.133)	(0.140)	(0.141)	(0.133)	(0.116)
Controls										
re-employed	-0.154**	-0.206***	-0.071	0.100+	0.095+	-0.152**	-0.204***	-0.075	0.102+	0.099*
	(0.056)	(0.059)	(0.059)	(0.056)	(0.049)	(0.056)	(0.059)	(0.059)	(0.056)	(0.049)
regional unemployment rate	0.015*	0.016*	0.014*	0.003	-0.014**	0.015*	0.016*	0.014*	0.003	-0.014**
	(0.006)	(0.006)	(0.006)	(0.006)	(0.005)	(0.006)	(0.006)	(0.006)	(0.006)	(0.005)
partnership status *(ref.: married)*										
steady partnership	0.017	0.008	0.080**	0.073**	0.003	0.017	0.008	0.080**	0.073**	0.003
	(0.028)	(0.029)	(0.029)	(0.027)	(0.024)	(0.028)	(0.029)	(0.029)	(0.027)	(0.024)
single	0.120***	0.032	0.418***	-0.399***	-0.271***	0.120***	0.032	0.418***	-0.399***	-0.271***
	(0.032)	(0.034)	(0.034)	(0.032)	(0.028)	(0.032)	(0.034)	(0.034)	(0.032)	(0.028)
number of children in HH *(ref.: none)*	-0.027+	-0.007	-0.025	-0.037**	-0.005	-0.027+	-0.007	-0.025	-0.037**	-0.005
	(0.014)	(0.015)	(0.015)	(0.014)	(0.013)	(0.014)	(0.015)	(0.015)	(0.014)	(0.013)
wave dummies *(ref.: 2007)*	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
constant	-0.167**	-0.037	-0.217**	0.064	0.192***	-0.166**	-0.037	-0.218**	0.064	0.193***
	(0.064)	(0.067)	(0.067)	(0.063)	(0.056)	(0.064)	(0.067)	(0.067)	(0.063)	(0.056)
No. of observations	39,964	40,002	39,980	39,986	40,009	39,964	40,002	39,980	39,986	40,009
R^2 - within	0.005	0.008	0.011	0.015	0.014	0.005	0.008	0.011	0.015	0.014

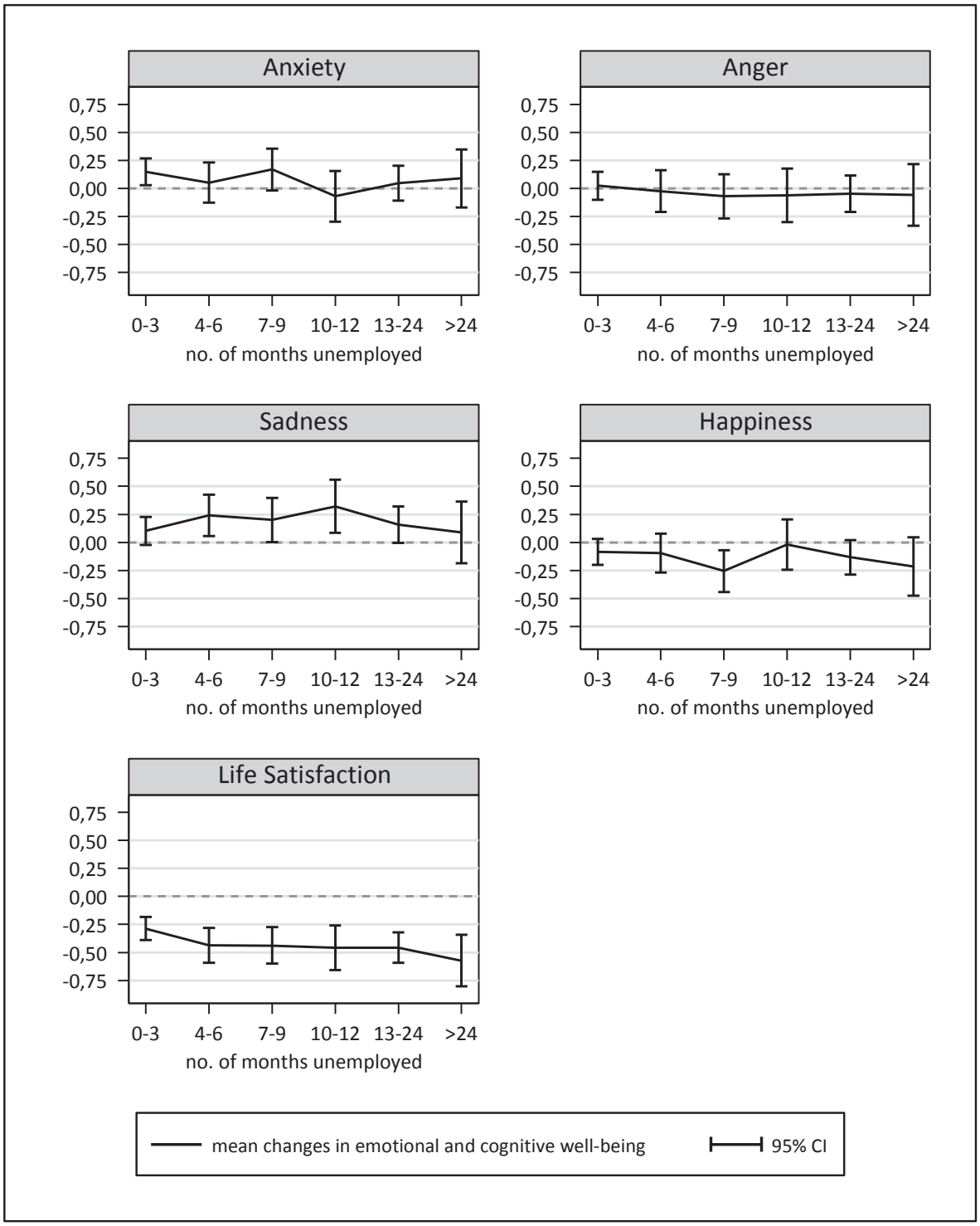
Note: Standard errors in parentheses; $^{+}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$; dependent variables are standardized for comparison reasons. Reference group: employed, married, no children, year dummy 2007
Source: SOEP.V31

Table 2: Fixed Effects Regression: Anticipation and Reaction of Affective and Cognitive Well-Being to Unemployment.

	Anxiety	Anger	Sadness	Happiness	LS
Anticipation					
unemployment in 1-2 years	0.092	0.024	0.196*	-0.044	0.106
	(0.075)	(0.079)	(0.078)	(0.074)	(0.065)
unemployment within next year	0.082	0.074	0.211**	-0.154*	0.048
	(0.075)	(0.079)	(0.078)	(0.074)	(0.065)
Reaction					
unemployed since 0-1 years	0.161*	-0.193*	0.240**	-0.179*	-0.282***
	(0.075)	(0.079)	(0.078)	(0.074)	(0.065)
Controls					
partner status *(ref.: married*					
steady partnership	0.015	0.008	0.079**	0.071*	0.008
	(0.028)	(0.029)	(0.029)	(0.028)	(0.024)
single	0.109***	0.018	0.408***	-0.391***	-0.251***
	(0.033)	(0.034)	(0.034)	(0.032)	(0.028)
number of children in HH *(ref.: none)*	-0.031*	-0.001	-0.025+	-0.033*	-0.003
	(0.015)	(0.015)	(0.015)	(0.014)	(0.013)
regional unemployment rate	0.016**	0.018**	0.017**	0.003	-0.016**
	(0.006)	(0.006)	(0.006)	(0.006)	(0.005)
wave dummies *(ref.: 2007)*	yes	yes	yes	yes	yes
constant	-0.175**	-0.059	-0.246***	0.068	0.213***
	(0.064)	(0.068)	(0.067)	(0.064)	(0.056)
No. of observations	38,994	39,031	39,010	39,019	39,038
R^2 - within	0.004	0.008	0.011	0.014	0.010

Note: Standard errors in parentheses; $^{+}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$; dependent variables are standardized for comparison reasons. Reference group: 3-4 years prior to job loss, married, no children, year dummy 2007.
Source: SOEP.V31

Figure 1: Mean Changes in Affective and Cognitive Well-being during Unemployment.



Note: Fixed effects estimates from Table 1, columns 6-10

Appendix

Table A1: Sample description

	Never unemployed	Unemployed	
	(N=8,758)	Full sample (N=539)	Subsample (N=190)
Sex			
male	4,307 (49.2 %)	298 (55.3 %)	92 (48.4 %)
female	4,451 (50.8 %)	241 (44.7 %)	98 (51.6 %)
Education (CASMIN-Scheme)			
low	2,530 (29.6 %)	240 (46.7 %)	79 (42.5 %)
medium	4,041 (47.3 %)	215 (41.8 %)	82 (44.1 %)
high	1,966 (23.0 %)	59 (11.5%)	25 (13.4 %)
ø Age	**45**	**46**	**47**
Number of observations before and after job loss			
2-3 years before	-	-	190
1-2 years before	-	-	190
within the next year	-	539	190
within the last 12 months	-	539	190
1-2 years ago	-	309 (136)[1]	-
2-3 years ago	-	168 (30)[1]	-
3-4 years ago	-	114 (15)[1]	-
4-5 years ago	-	69 (10)[1]	-
5-6 years ago	-	22 (5)[1]	-
No. of observations	38,968	1,760	760

[1] Numbers in brackets indicate number of respondents who are still unemployed in the respective year, e.g., there are 309 respondents who are also observed one year after becoming unemployed, of which 136 were still unemployed.
Source: SOEP.V31

Table A2: Fixed Effects Regression: Adaptation of Affective and Cognitive Well-Being to Unemployment.

	Anxiety	Anger	Sadness	Happiness	LS
Pre-unemployment	-0.148*	-0.024	-0.103	0.084	0.287***
	(0.060)	(0.064)	(0.063)	(0.060)	(0.053)
unemployed 4-5 months	-0.097	-0.048	0.139	-0.011	-0.150+
	(0.105)	(0.110)	(0.109)	(0.103)	(0.091)
unemployed 7-9 months	0.020	-0.094	0.097	-0.170	-0.151
	(0.109)	(0.115)	(0.115)	(0.108)	(0.095)
unemployed 10-12 months	-0.218+	-0.085	0.220+	0.065	-0.172
	(0.127)	(0.135)	(0.133)	(0.126)	(0.111)
unemployed since 1-2 years	-0.103	-0.072	0.054	-0.048	-0.171*
	(0.090)	(0.095)	(0.094)	(0.089)	(0.079)
unemployed since 2-6 years	-0.060	-0.083	-0.014	-0.130	-0.285*
	(0.140)	(0.148)	(0.148)	(0.140)	(0.123)
Controls					
re-employed	-0.301***	-0.227**	-0.178*	0.186**	0.386***
	(0.068)	(0.072)	(0.071)	(0.068)	(0.059)
regional unemployment rate	0.015*	0.016*	0.014*	0.003	-0.014**
	(0.006)	(0.006)	(0.006)	(0.006)	(0.005)
partnership status *(ref.: married)*					
steady partnership	0.017	0.008	0.080**	0.073**	0.003
	(0.028)	(0.029)	(0.029)	(0.027)	(0.024)
single	0.120***	0.032	0.418***	-0.399***	-0.271***
	(0.032)	(0.034)	(0.034)	(0.032)	(0.028)
number of children in *HH (ref.: none)*	-0.027+	-0.007	-0.025	-0.037**	-0.005
	(0.014)	(0.015)	(0.015)	(0.014)	(0.013)
wave dummies *(ref.: 2007)*	yes	yes	yes	yes	yes
constant	-0.160*	-0.036	-0.213**	0.060	0.181**
	(0.064)	(0.067)	(0.067)	(0.063)	(0.056)
No. of observations	39,964	40,002	39,980	39,986	40,009
R2 - within	0.005	0.008	0.011	0.015	0.014

Note: Standard errors in parentheses; $^{+}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$; dependent variables are standardized for comparison reasons. Reference group: unemployed for 1-3 months, married, no children, year dummy 2007. Please note that models are identical to those presented in Table 1 (columns 6-10), but instead of referring to pre-unemployment levels as the reference group, models now use unemployed 1-3 months as the reference group
Source: SOEP.V31