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Maintaining Perceived Control with Unemployment Facilitates Future Adjustment

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Abstract

Unemployment is a major challenge to individuals' development. An important personal resource to ameliorate the negative impact of unemployment may be perceived control, a general-purpose belief system. Little is known, however, about how perceived control itself changes with the experience of unemployment and what the antecedents, correlates, and consequences of such change in perceived control are in different ages. We use data from the German Socio-Economic Panel Study ($N = 413$ who experienced unemployment and $N = 413$ case-matched controls; time period of data collection: 1994 – 1996) to examine whether perceived control changes with unemployment, explore the role of socio-demographic, psychosocial and health factors in moderating such change, and investigate whether levels of perceived control prior to unemployment and unemployment-related change in perceived control predict unemployment-related outcomes up to five years following. Results indicated that, on average, perceived control remained relatively stable with unemployment, and that younger and older workers did not differ in this regard. However, there were sizeable individual differences in change in perceived control, with women and those with fewer years of education experiencing greater unemployment-related declines in perceived control. Lower levels of perceived control prior to unemployment and steeper unemployment-related decrements in perceived control were each associated with a higher risk of remaining unemployed in the 12 months immediately following unemployment. Steeper

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unemployment-related declines in perceived control also predicted lower life satisfaction up to five years following. We discuss possible pathways by which perceived control may facilitate adjustment to unemployment, consider the role of perceived control for better understanding the dynamics of unemployment, and suggest routes for further more process-oriented inquiry.

Keywords

Control Beliefs; Unemployment; Major Life Events; Self-Regulation; Life Satisfaction; German Socio-Economic Panel Study; SOEP

Major life events such as job loss or severe illness are among those experiences that challenge people's psychological functioning and have consequences for later developmental outcomes (Baltes & Nesselroade, 1979; Birren & Cunningham, 1985; Diener et al., 2006; Gerstorf & Ram, 2012; Hultsch & Plemons, 1979; Infurna & Luthar, in press). For example, unemployment typically results in loss of earnings and long-term difficulties of finding work as well as declines and sustained lower levels of life satisfaction and physical functioning (Dooley, Fielding, & Levi, 1996; Lucas, Clark, Georgellis, & Diener, 2004; McArdle, Waters, Briscoe, & Hall, 2007; McKee-Ryan, Song, Wanberg, & Kinicki, 2005; Paul & Moser, 2009). Our objective is to examine how a key psychological resource, perceived control, changes in relation to unemployment and whether greater perceived control facilitates adjustment in the years following unemployment. Examining perceived control in the context of unemployment will help us better understand possible antecedents of stability and change in perceived control and how perceived control helps individuals to seek out opportunities that facilitate adjustment to and overcoming of unemployment. We use prospective longitudinal data from the widely used German Socio-Economic Panel Study (SOEP) to (a) examine whether perceived control changes as an outcome of unemployment, (b) explore the role of socio-demographic, psychosocial, and health factors in moderating changes in perceived control, and (c) investigate whether levels of perceived control prior to unemployment and changes in perceived control are predictive of future re-employment and well-being.

Perceived Control (Change) as an Outcome of Unemployment

Perceived control, as a psychological construct, has a long history (for discussion, see Skinner, 1995) and refers to an individual's belief about his or her capability to exert influence over and shape his or her life circumstances (Pearlin & Schooler, 1978; Skinner, 1995). It is a widely used construct across behavioral and social science disciplines, including psychology, sociology, and economics. Higher levels of perceived control and more positive rates of change over time have been linked to better cognitive, mental, and physical health across the lifespan (Gale et al., 2008; Infurna & Okun, 2015; Infurna, Ram, & Gerstorf, 2013; Lachman, 2006; Moffitt et al., 2011). In the economics literature, perceived control has similarly been linked to economic outcomes of better job performance and increased wages (Almlund et al., 2001; Heckman et al., 2006; Judge, 2009; Stajkovic & Luthans, 1998). However, much of the research on perceived control has focused on its effects on aging-related outcomes and in the context of career choice and career decision making (Taylor & Popma, 1990; Gianokos, 1999). Although studies examining change in

perceived control over the adult lifespan (i.e., chronological age) provide insights on the long-term pattern of change (e.g., increases in young adulthood, stability in midlife, and declines in older ages; Cobb-Clark & Schurer, 2011; Gerstorf et al., 2013; Heckhausen & Baltes, 1991; Lachman, Röcke, & Rosnick, 2009; Specht, Egloff, & Schmukle, 2013), there are typically large between-person differences. What is largely lacking from the literature is a focus on outcomes of perceived control or put differently, what contributes to (short-term) changes in perceptions of control, with an emphasis on the role of life events.

The Motivational Theory of Lifespan Development proposes that changes in biological and societal/social opportunities and constraints across the lifespan shape the overall trajectory of control capacity (e.g., inverted U-shape; Heckhausen et al., 2010). These time-organized opportunity structures present significant regulatory challenges to the individual who must respond in a time- or age-sensitive way (see also Brandtstädter & Greve, 1994). For example, the data we use was collected during a special historical time in Germany (i.e., 1990s), where there were major historical issues and changes relating to work. During this time period, there was historical issues and major changes relating to employment trends, financial issues, and changes in government as a result of German reunification. German reunification led to sweeping economic changes, such as average wage growth increased in East Germany, but the payoff to education decreased slightly (Krueger & Pischke, 1992). There was higher unemployment rates in East Germany and trouble finding jobs (see Diewald et al., 2006; Solga & Diewald, 2001).

Age-related changes in societal opportunities and biological constraints may be pertinent antecedents of between-person differences in changes in perceived control. We argue that such changes could be the result of life events that occur across the adult lifespan, such as our focus, unemployment. Studies on unemployment have helped us better understand how unemployment relates to various individual difference characteristics, including personality (Hoye & Lootens, 2013), mental health (Paul & Moser, 2009), gender (Leana & Feldman, 1991), and family support (Huffman et al., 2015). Unemployment is a life event that has the potential for having different objective and subjective consequences in young adulthood and midlife. Objective consequences of unemployment involve the loss of financial security and an urgent struggle to find re-employment, whereas subjective consequences include declines in well-being and challenges to psychosocial development, in particular, perceptions of control. We view job loss as a major life event that can be a setback with potential long-term implications for the development and maintenance of perceptions of control during the course of people's lives.

Employment is one of the central pillars of adult life in modern society, providing essential materials resources to other domains of life (e.g., family, health), and has been conceptualized as an important source of perceived control (Bandura, 1997; Lachman & Weaver, 1998; Marmot, 2006). Work transitions, such as unemployment can result in changes to one's time structure, social contact, collective purpose, status, and activity (see Jahoda, 1981, 1982) that can potentially have consequences for psychological well-being and in our interest, be one potential source of between-person differences in changes in perceived control. The work context in young adulthood may provide opportunities to aspire for, plan, and attempt actions that lead to desired outcomes, thereby reinforcing and leading

to increases in perceptions of control (Mirowsky & Ross, 2007; Schieman, 2001). Entering the workforce in young adulthood comes with increases in effective control of one's own life and financial autonomy and often relates to changes in psychological and personality characteristics (Roberts, Wood, & Smith, 2005; Robins & Trzesniewski, 2005). Therefore, unemployment in young adulthood may be more likely to have subjective consequences for development due to the developmental importance of the transition to the workforce. For example, experiencing unemployment in young adulthood can be especially detrimental to perceptions of control because people may have not yet developed the interpretive resilience of using self-protective strategies to maintain perceived control (Heckhausen et al., 2010). The loss of social relationships associated with co-workers and possible other relational sources, such as mentoring and coaching likely reduce opportunities for mastery experiences (Lent et al., 1994). Moreover, employment defines aspects of personal status and identity, which individuals are deprived of when they are unemployed (Jahoda, 1981). However, the objective consequences of unemployment may be less severe in young adulthood, because individuals have the time and opportunity to re-train to attain re-employment. The transition into the work force is an important developmental milestone because it signifies financial autonomy and increasing independence from parental supervision, likely resulting in increases in perceived control. Constructs such as perceived control and more broadly, agency have important consequences for well-being, mental health, and career success (Galambos & Krahn, 2008; Haase et al., 2012) and unemployment at this critical stage of the lifespan may hinder or lead to a poorer trajectory of perceived control and well-being.

In midlife, unemployment could be more detrimental for objective outcomes, such as the ability to find re-employment in the midst of physical and psychological changes and multiple roles of family, work, and social relationships (Lachman, 2004; Schmitz, 2011). For example, unemployment leads to the addition of numerous disruptive stressors such as having difficulty supporting one's family and needing to find new employment with possibly outdated skill sets (McArdle et al., 2007; McKee et al., 2005; Pearlin, 2010). Furthermore, unemployment can negatively impact a person's sense of accomplishment regarding major developmental goals and could set in motion declines in perceived control that could increase one's likelihood of encountering health declines (Schmitz, 2011). However, people in midlife may have a better opportunity to recover from job loss due to having developed better emotion-regulation and self-protective capacities through a lifetime of honing strategies to protect oneself against potential declines in perceived control and subjective well-being.

Psychological research on unemployment has primarily focused on changes in well-being and health (Dooley et al., 1996; Lucas et al., 2004; Paul & Moser, 2009; Winkelmann & Winkelmann, 1998). We know surprisingly little about how perceptions of control change with job loss. The findings to date are mixed. In a study that compared employed individuals to people who experienced unemployment and involuntary lay-offs, the latter group typically reported lower levels of control (Moore et al., 2007; Winefield et al., 1991). Diewald (2007) showed following German reunification, individuals in the years after unemployment were more likely to show a decrease in perceptions of internal control and an increase in external control perceptions. Legerski and colleagues (2006) examined two-wave changes in three facets of perceived control taken from Levenson's (1981) locus of control

scale (i.e., powerful others, chance, internal control) in a sample of laid-off steel workers whose plant had a forced shut down. The authors found that beliefs about the influence of powerful others and of chance remained relatively stable, whereas perceptions of internal control increased in the one year following forced plant shut-down (Legerski et al., 2006). This counter-intuitive finding could be due to the assessments of control being after plant shut down; individuals could have experienced declines in internal control prior to and with job loss, but then after shut down they may have been surprised to deal with it better than expected. Moreover, a planned shut-down of a plant affects all employees and does not single out individuals to be laid off, thus not inviting self-blame and decline in personal control beliefs. In the present study, we have data on perceived control both prior to and following unemployment, allowing us to extend previous research by prospectively examining perceived control changes in relation to unemployment in a nation-wide longitudinal survey.

Moderators of Unemployment-related Change in Perceived Control

Personal and social factors are resources that individuals may draw upon to protect against potential declines in perceived control as a result of unemployment (Fugate, Kinicki, & Ashforth, 2004; McKee et al., 2005; Paul & Moser, 2009). Older persons may experience strong unemployment-related declines in perceived control due to the prospect of facing job discrimination or possessing outdated skills for future job prospects (Hanisch, 1999). Previous research suggests that women show increases in psychological and behavioral distress symptoms with job loss (McKee-Ryan et al., 2005; Paul & Moser, 2009). Individuals with higher socio-economic status are expected to be in a better position to be protected against unemployment-related declines in control because higher SES often comes with access to material resources (e.g., savings) to compensate for the income loss. In addition, there is initial evidence that more educated individuals in professional careers exhibit more adequate coping strategies that may buffer the effects of unemployment-induced stressors (McKee-Ryan & Kinicki, 2002; Turner, 1995). Robust health can also be seen as a resource for a challenging life situation (Infurna et al., 2011). Social resources in the form of social participation and family life can be utilized in the context of unemployment to help protect against its potential detrimental effects on perceived control (Antonucci, 2001; Bandura, 1997). Social support provides individuals with access to help with daily activities and emotional comforting that buffer the detrimental effects of stress (Cohen & Wills, 1985) and can thus also be expected to protect against declines in perceived control with unemployment (Fugate et al., 2004; Viswesvaran, Sanchez, & Fisher, 1999). Lastly, the data we use for this study were collected in 1994-1996 and on a sample of people in East and West Germany. During the mid-1990s, Germany was going through numerous historical issues that we described above. Therefore, the regional context provides opportunities (or constraints) for psychological change with unemployment (Kattenbach et al., 2014). Living in a high unemployment-rate region, may result in stronger declines in perceived control with unemployment due to decreased opportunities for attaining re-employment (Diewald, 2007; Solga & Diewald, 2001; Solga et al., 2002).

Perceived Control as a Moderator of the link between Unemployment and Psychological Adjustment

Unemployment is known to have long-term disruptive effects on several areas of life, including difficulties to attain re-employment, reduced income, impoverished well-being, and declines in health (Bartley, 1994; Diewald, 2007; Haushofer & Fehr, 2014; Nickell, 1997; Paul & Moser, 2009). However, not all individuals show similar declines as a function of unemployment, suggesting that while most succumb to its detrimental consequences, others are resilient and able to bounce from this significant life adversity (Infurna & Luthar, in press; Zautra et al., 2008). Perceived control is a general-purpose belief system and vital resource that people can draw upon to facilitate adjustment to major life events over the life course (Heckhausen et al., 2010; Pearlin et al., 1981). We examine whether levels of perceived control prior to unemployment and unemployment-related changes in perceived control are related to individual's ability to find re-employment and the course of well-being change in relation to unemployment. Moreover, we distinguish between mean level of perceived control and change in perceived control because changes in perceived control in relation to unemployment may have meaningful implications for facilitating adjustment in the years following. For example, Infurna and colleagues (2013) report from the Americans' Changing Lives study that more positive rates of change in perceived control over time were predictive of lower mortality hazards, over and above the predictive effects of levels of perceived control. These findings indicate that changes in perceived control, over and above that of levels of perceived control, have implications for developmental outcomes (see also Infurna & Okun, 2015).

Re-employment

Unemployment not only results in initial job loss, but can also result in long-term unemployment as well as transitioning in and out of the workforce (Diewald, 2007; Dooley et al., 1996; Hetschko, Knabe, & Schöb, 2014). According to data from the Organisation for Economic Co-operation and Development (OECD, 1998), the average duration of unemployment for every second person can last for more than one year (see also Steiner, 2001). Difficulty finding re-employment may be the result of one's individual skills, such as perceived control, job training, and educational qualifications (Becker, 1964/1993), which strongly influence employability (McArdle et al., 2007). Levels of perceived control prior to unemployment and unemployment-related change in control may help facilitate re-employment through behavior and social support pathways. For example, perceiving more control over one's life circumstances facilitates job search behaviors and actions such as seeking community resources, sending out more job applications, and better goal setting (Caliendo, Cobb-Clark, & Uhlendorff, 2010; Fugate et al., 2004; Zikic & Klehe 2006). Maintenance of perceived control despite unemployment may help with mobilizing an individuals' social network to attain re-employment through accessing career-related networks and informational resources during the job search process (McArdle et al., 2007; Seibert et al., 2001).

Unemployment-related change in well-being

The hedonic treadmill model and empirical evidence suggests that change in well-being with unemployment may proceed in two stages: reaction and adaptation (see Diener et al., 2006; Frederick & Loewenstein, 1999; Lucas, 2007). The year surrounding job loss constitutes the reaction period and beginning with the first year following unemployment and beyond is referred to as the adaptation stage where individuals' well-being returns to previous levels (or not). Research focusing on change in well-being with unemployment illustrates that individuals typically exhibit sharp declines in well-being and do not adapt, with the typical person still reporting low levels of well-being even three years following their job loss (Infurna & Luthar, in press; Lucas et al., 2004; Luhmann & Eid, 2009; McKee et al., 2005).

Perceived control may play a central role in moderating unemployment-related changes in well-being (reaction and adaptation) via stress-buffering and emotion regulation pathways. First, perceived control is known to buffer the impact of stressors on physiological reactivity and helps down-regulate negative emotions (Hay & Diehl, 2010; Neupert et al., 2007), which may operate through the use of problem-focused coping (Skinner, 1995) or primary control strategies (Heckhausen, Wrosch, & Schulz, 2010). Second, individuals who perceive more control over their lives are typically more embedded within their social network (Gerstorf et al., 2011; Infurna et al., 2011), so it may be easier to recruit informational, instrumental, or emotional support that can buffer against well-being decrements (Antonucci, 2001; Cohen & Wills, 1985).

The Present Study

Our goal is to examine unemployment as an antecedent of perceived control, moderators of changes in perceived control and the role of perceived control in moderating adjustment following unemployment. In a first step, we hypothesize that perceived control, on average, declines with unemployment, but also that considerable between-person differences in change will be found. Second, we expect that participants with more years of education and those who report better health – due to their better “human capital” – will be (partially) protected against unemployment-related declines in perceived control. Finally, we hypothesize that higher levels of perceived control and maintenance of perceived control through job loss will be linked to higher re-employment rates and more favorable life satisfaction changes in the years following unemployment. To address our research questions, we use prospective longitudinal data from the nation-wide German Socio-Economic Panel Study (SOEP; Headey, Muffels, & Wagner, 2010). Annual assessments of perceived control were embedded in the SOEP's longitudinal time series allowing for examining unemployment-related change in perceived control. Moreover, this data set allows tracking whether perceived control facilitates adaptation in the years following unemployment.

Method

We examined our research questions using data from SOEP. Comprehensive information about the design, participants, variables, and assessment procedures is reported in Wagner,

Frick, & Schupp (2007). A brief overview of details relevant to the present analysis is given below.

Participants and Procedure

The SOEP is an ongoing nationally representative annual panel study of private households initiated in 1984 that covers in course of time ~50,000 residents, including immigrants and resident foreigners, of former West and East Germany. Potential participants were randomly selected from a set of randomly selected geographic locations in Germany. Within each household, all family members older than 16 years of age were eligible for participation. Relatively high initial response rates (between 60% and 70%) and low longitudinal attrition (about 15% to 20% for second waves and less than 5% yearly attrition across various subsamples) provide for an overall sample that is representative of the population living in private households (Kroh et al., 2008). Data are primarily collected via face-to-face interviews, with the exception that about 10% of individuals who already participated several times provided data via self-administered mail questionnaires.

Reports of perceived control were gathered annually from 1994-1996. For the purposes of the present study, we used data collected from 413 participants who were working in gainful employment and (a) experienced unemployment in either 1995 or 1996, and (b) provided perceived control observations both the year prior to and the year of their reported unemployment. Participants were, on average, 41 years of age at the time of unemployment ($SD = 12.97$, range 19 – 64), 48% were women, had attained, on average, 11 years of education ($SD = 2.16$), 63% experienced involuntary job loss, and 53% were living in East Germany at the time of unemployment. As we noted above, the time when data was collected provides for a “natural experiment” of examining changes/trends in unemployment as a function of historical context. In addition to data on perceived control from 1994 – 1996, our analyses focusing on outcomes of unemployment use data spanning 1991 – 2001. More specifically, when examining the course of changes in life satisfaction before and after unemployment, we use data in the five years prior to unemployment and five years following unemployment. Focusing on re-employment following job loss, we utilize data up to 2001 to examine predictors of re-employment. By utilizing the strengths of the longitudinal nature of this dataset, we ensure for striving towards a more comprehensive understanding of not only the effect of unemployment on perceived control, but its long-term effects through the adaptation process.

Relative to those who were assessed in the 1994 SOEP interview, but were not included in our analyses because they did not experience unemployment in 1995 or 1996, our participants were more likely to be younger ($M = 39.08$, $SD = 12.98$ vs. $M = 43.15$, $SD = 17.34$; $F [1, 12,408] = 22.35$, $p < .05$) and reported lower perceived control ($M = 2.71$, $SD = 0.45$ vs. $M = 2.77$, $SD = 0.46$; $F [1, 12,408] = 6.77$, $p < .05$), but did not differ in gender proportion, years of education, self-rated health, and number of dependents (*all ps* > .05). The effect size of the differences found was relatively small ($r^2 < .01$ for all comparisons) suggesting that the study sample is roughly comparable to the study population from which they were drawn.

Measures

Perceived control—Perceived control was assessed in 1994, 1995, and 1996 using an 8-item scale assessing the degree to which individuals feel their life is under their control (e.g., “I determine most of what happens to me in life.”; Cronbach's α above .70 at each wave; see Infurna et al., 2011 for specific items; see also Infurna & Mayer, 2015; Lachman & Weaver, 1998; Specht et al., 2011). This measure of perceived control consists of both internal and external components (see Rotter, 1966). Participants were asked to indicate their agreement with each of the items on a scale ranging from 1 (*applies completely*) to 4 (*does not apply*). Items were averaged, with positive valenced items reverse coded to create an index with higher scores indicating greater perceived control. For people who became unemployed in 1995, we used perceived control data from 1994 and 1995 to examine unemployment related changes. Similarly, for people who became unemployed in 1996, we used perceived control data from 1995 and 1996.

Timing of unemployment—At each wave, participants reported their labor force status. Unemployment onset was defined as the wave at which participants who in the previous wave reported being fully or partly employed and in the following wave reported being registered as unemployed. We only included those participants for whom this was their first reported unemployment over the course of SOEP. Repeated unemployment episodes may result in sustained lower levels of psychological functioning (e.g., well-being; Luhmann & Eid, 2009) and were thus not included in our design. Future research with data in which perceived control has been assessed for many years, similar to life satisfaction (see Lucas et al., 2004; Luhmann & Eid, 2009), will be able to examine how perceived control changes across repeated unemployment episodes.

Correlates—In addition to socio-demographic factors (i.e., age, gender, and education), we examined how psychosocial, and health factors from the year prior to unemployment were related to unemployment-related change in control (see Table 1). *Self-rated health* was assessed using a single item, “How would you rate your health at the present time?”, answered using a 1 = *bad* to 5 = *very good* Likert scale that has been widely used in the social and behavioral sciences (for overview, see Idler & Benyamini, 1997). *Number of household dependents* was quantified as number of children under the age of 16 living in the household. *Social participation* was measured using 4-items assessing participants' frequency of involvement in or attendance at social networking and community activities (see Infurna et al., 2011). Items such as “how often do you practice active sport participation,” were answered on a 4-point Likert scale: 1 (*each week*), 2 (*each month*), 3 (*less often*) to 4 (*never*), reverse coded, and averaged so that higher composite scores indicate greater social participation.

Outcomes following unemployment—*Timing of re-employment* was calculated as the year in which participants first reported being fully or partly employed following unemployment. Of the 413 participants who experienced unemployment, 264 (64%) experienced re-employment within five years of unemployment (for those unemployed in 1995 and 1996, data were used up to 2000 and 2001, respectively). On average, these participants reported re-employment 1.88 years later ($SD = 1.17$ range = 1–5). To account

for retirement confounding these analyses, if a participant reported retirement in the years following unemployment, we included them in these analyses up to the point they transitioned out of the work-force.

On an annual basis, SOEP participants have indicated their *life satisfaction* using a single item, “How satisfied are you concurrently with your life, all things considered?”, answered on a scale from 0 = *totally unsatisfied* to 10 = *completely satisfied* scale (see e.g., Gerstorf, Ram et al., 2008). During the 10-year window surrounding unemployment that we examine here, participants provided an average of 9.27 reports ($SD = 2.08$, range = 2 – 11).

Statistical Analyses

Unemployment-related Change in Perceived Control—We examined whether perceived control changed in relation to unemployment using a regression model where the outcome was the change in perceived control (i.e., perceived control at the wave of reported unemployment minus perceived control at the wave prior to unemployment). All predictors were grand-mean centered so that the intercept refers to the average amount of change for a prototype person with average age, length of education, male gender, and average levels of self-rated health, number of dependents, social participation, and living in West Germany.

Matched Control Group—To bolster the potential for causal inference, we also examined how changes in perceived control differed between the sample of persons who became unemployed ($N = 413$) and a case-matched control group that had not experienced unemployment. Propensity score matching procedures (e.g., Coffman, 2011) were used to identify the matched control group (see similar applications in see Infurna et al., 2013; Jackson et al., 2012; Yap et al., 2012). Specifically, using 1:1 matching methods (for discussion, see Foster, 2010; Stuart, 2010) we identified, for each individual in the unemployment subsample, a ‘twin’ in the larger SOEP who had provided data on perceived control but had not experienced unemployment in the same calendar year when the treatment group faced unemployment. Matching factors, which included prior to unemployment, gender, education, self-rated health, number of dependents, social participation, region (East/West Germany), and perceived control in $t-1$, were used in a logistic regression to estimate propensity scores. Then, using a between-group distance matrix based on the sum of the absolute differences on the propensity scores, individuals in the unemployment group were caliper matched with the subset of employed individuals that minimized distance between the two groups. The resulting 2-group data was then used to examine potential differences in change in perceived control using standard regression analysis.

Re-employment—To describe how levels and unemployment related changes in perceived control related to duration of unemployment (i.e., time to re-employment) we used discrete-time event history (survival) analysis (Singer & Willett, 2003). Specifically, perceived control, change in perceived control, and self-rated health scores were normalized ($M = 0$, $SD = 1$) and used as predictors in a Cox-regression of the form,

$$\begin{aligned}
 \text{logit}_e(h_{it}) = & [\beta_{0t} + \beta_1(\text{Year}_{2i}) + \beta_2(\text{Year}_{3i}) + \beta_3(\text{Year}_{4i}) + \beta_4(\text{Year}_{5i}) + \beta_5(\text{Pre-unemployment control}_i) + \\
 & \beta_6(\text{Unemployment-related control change}_i) + \beta_7(\text{Pre-unemployment control}_i \times \\
 & \text{Unemployment-related control change}_i) + \beta_8(\text{Pre-unemployment control}_i \times \text{Year}_{2i}) + \\
 & \beta_9(\text{Pre-unemployment control}_i \times \text{Year}_{3i}) + \\
 & \beta_{10}(\text{Pre-unemployment control}_i \times \text{Year}_{4i}) + \\
 & \beta_{11}(\text{Pre-unemployment control}_i \times \text{Year}_{5i}) + \\
 & \beta_{12}(\text{Unemployment-related control change}_i \times \text{Year}_{2i}) + \\
 & \beta_{13}(\text{Unemployment-related control change}_i \times \text{Year}_{3i}) + \\
 & \beta_{14}(\text{Unemployment-related control change}_i \times \text{Year}_{4i}) + \\
 & \beta_{15}(\text{Unemployment-related control change}_i \times \text{Year}_{5i})]
 \end{aligned}
 \tag{1}$$

In equation 1, logite (h_{it}) is the log of individual i 's likelihood of becoming re-employed (or log hazard: $\log h$) at time t . β_{0t} is the general baseline log hazard function, which is the likelihood of becoming re-employed one year following unemployment. β_1 through β_4 indicate the likelihood of re-employment years 2 through 5 following unemployment; β_5 and β_6 indicate the independent effects of pre-unemployment levels of perceived control and unemployment-related change in perceived control predicting re-employment one-year following unemployment; β_7 indicate whether the effect of pre-unemployment levels of perceived control differs by one's unemployment-related change in perceived control and vice versa; β_8 through β_{11} indicate the effect of pre-unemployment levels of perceived control on re-employment years 2 through 5 following unemployment; and β_{12} through β_{15} indicate the effect of unemployment-related change in perceived control on re-employment on years 2 through 5 following unemployment. Of note, discrete time (vs. continuous) event history analysis was used because re-employment time was only available in years, resulting in substantial "ties" (see Singer & Willett, 2003). Normalization of predictors facilitated interpretation of the hazard ratios reported in Table 4 in effect-size units (i.e., with respect to 1 *SD* difference).

Unemployment-related change in well-being: Multi-phase growth model—We used a multi-phase growth curve model (McArdle & Nesselroade, 2003; Ram & Grimm, 2007; Singer & Willett, 2003) to examine moderators of change in life satisfaction in the year surrounding (year 0; reaction) and following (years 1 to 5; adaptation) unemployment. Based on previous research on unemployment (Lucas et al., 2004) the course of changes in life satisfaction following unemployment spans several years, beyond that of the immediate year following unemployment. By examining changes up to five years following unemployment, this puts us in the position to examining moderators of changes in life satisfaction at the immediate time of unemployment and its course of changes, not only levels), following unemployment.

In a first step, we operationally defined one time-varying variable that would isolate the reaction phase to experiencing unemployment (see Infurna, Gerstorf, & Zarit, 2013; Lucas et al., 2004). The time-varying variable, which we call *post-unemployment*, designates the transition from employment to unemployment and was coded as 0 for all years prior to unemployment (years -5 to -1) and a 1 for all observations following unemployment (i.e.,

years 0 to 5). The *post-unemployment* time-varying variable operates similarly to a contrast that is typically done in an ANOVA setting, where we are contrasting whether levels of life satisfaction differ or change from the year prior to the years following unemployment. The model was specified as

$$\begin{aligned} \text{life satisfaction}_{ti} = & \beta_{0i} + \beta_{1i}(\text{time-to/from-unemployment}_{ti}) \\ & + \beta_{2i}(\text{post-unemployment}_{ti}) \\ & + \beta_{3i}(\text{time-to/from-unemployment}_{ti} \times \text{post-unemployment}_{ti}) + e_{ti} \end{aligned} \quad (2)$$

where person i 's level of life satisfaction at time t , $\text{life satisfaction}_{ti}$, is a function of an individual-specific intercept parameter that represents levels one year prior to unemployment, β_{0i} ; an individual-specific slope parameter, β_{1i} , that captures rates of linear change prior to unemployment and is coded the year of reported unemployment, = -1 one year before unemployment, etc.; an individual-specific parameter, β_{2i} , that represents the change in life satisfaction within one year of unemployment – *reaction*; an individual-specific interaction between linear rate of change and post-unemployment period, β_{3i} , that examines whether the rate of change in life satisfaction differs post unemployment as compared to the years preceding unemployment – *adaptation*; and residual error, e_{ti} . Individual-specific intercepts and slopes (β s from the Level 1 model given in Equation 1) were modeled as

$$\begin{aligned} \beta_{0i} &= \gamma_{00} + u_{0i}, \\ \beta_{1i} &= \gamma_{10} + u_{1i}, \\ \beta_{2i} &= \gamma_{20} + u_{2i}, \\ \beta_{3i} &= \gamma_{30} + u_{3i}, \end{aligned} \quad (3)$$

(i.e., Level 2 model) where γ_{00} , γ_{10} , γ_{20} , and γ_{30} are the sample means and between-person differences, u_{0i} , u_{1i} , u_{2i} , and u_{3i} are assumed to be normally distributed, correlated with each other, and uncorrelated with the residual errors, e_{ti} .

Subsequently, pre-unemployment levels of perceived control, unemployment-related change in perceived control, as well as socio-demographic, psychosocial, and health factors were added as predictors of β_{0i} , β_{2i} , and β_{3i} . Of particular interest was whether these variables were related to individuals' reaction (β_{2i}) and adaptation (β_{3i}) to unemployment.

The multi-phase growth curve model was estimated using SAS 9.2 (PROC MIXED; see Littell et al., 2006), with incomplete data accommodated under missing at random assumptions at the within-person level, and, to retain longitudinal data, missing completely at random at the between-person level (Little & Rubin, 1987).

Results

Perceived Control (Change) as an Outcome of Unemployment

Table 2 shows results from our analyses examining unemployment-related change in perceived control. In Model 1, we observed that perceived control remained stable with

unemployment ($\beta_0 = -0.02, p > .05$) and that higher levels of perceived control prior to unemployment was associated with declines in perceived control with unemployment ($\beta_1 = -0.44, p < .05$). For example, individuals with perceived control that was 1 unit higher than average in perceived control prior to unemployment (3.74) would be expected to have perceived control of 3.30 after unemployment. In complement, individuals with perceived control that was 1 unit below the average in perceived control prior to unemployment (1.74), would be expected to have perceived control of 2.18 following unemployment.

To complement Model 1, we used the control group (found by propensity score matching) to further examine whether unemployment resulted in changes in perceived control. Results are shown in Table 3. We found that there were no group differences in (1) year-to-year change in perceived control ($\beta_2 = -0.02, p > .05$; i.e., no main effect for group), or (2) the process of change ($\beta_3 = -0.05, p > .05$), suggesting that the changes in perceived control cannot be attributed to change in employment status. Put differently, year-to-year change in perceived control proceeded in the same way for people who experienced and the “twin participant” who did not experience unemployment. Also, higher levels of perceived control prior to unemployment were associated with stronger declines in perceived control, which suggests regression to the mean.

Figure 1 illustrates that despite average stability, there were sizeable between-person differences in how perceived control changed among the sample of individual who became unemployed. The data are displayed over chronological age (rather than time in study as used in our models) to allow for differences in change to be better observed.

Moderators of Unemployment-related Change in Perceived Control

Models 2 and 3 targeted these between-person differences. We found that women and people who had fewer years of education and who were living in East Germany ($p = .06$) at the time of unemployment were more likely to experience declines in perceived control. Of note, age and involuntary job loss was not associated with the degree to which perceived control changed among a sample of individuals who became unemployed. In follow-up analyses, we tested interactions between age and involuntary job loss with each of the predictors and found that older women, older individuals in better health and individuals who experienced involuntary job loss and attained more years of education were more likely to report stability in perceived control.

Perceived Control as a Moderator of the link between Unemployment and Psychological Adjustment

Re-employment—Results from our discrete time-survival analyses predicting probability of re-employment are shown in Table 4. Levels of perceived control prior to unemployment and change in perceived control were each associated with the likelihood for re-employment one-year (and up to two years) following unemployment. An individual who experienced an increase in perceived control that were one *SD* (0.44 raw units per year) above the average ($M = 0.01$ raw units per year) had a 34% greater likelihood of becoming re-employed the first year following unemployment. For levels of perceived control, one *SD* higher levels of perceived control were associated with a 42% increased likelihood of finding re-

employment the first year following unemployment, but a reduced likelihood at year 2. Younger age was additionally linked to the increased likelihood of re-employment one year following unemployment. Follow-up analyses testing interactions of the correlates revealed that none moderated the association between levels of and change in perceived control with re-employment.

Unemployment-related change in well-being—Table 5 shows results from our multiphase growth curve model examining whether socio-demographic, psychosocial, and health factors were associated with reaction and adaptation in life satisfaction with unemployment. Similar to previous research (e.g., Lucas et al., 2004), we found that, on average, life satisfaction substantially dropped within one year of unemployment ($\gamma_{20} = -0.48, p < .05$) and, on average, showed gradual increases in the years following unemployment ($\gamma_{10} + \gamma_{30} = -0.06 + 0.17 = 0.11$) compared to average declines in the years preceding unemployment ($\gamma_{10} = -0.06, p < .05$). Higher levels of perceived control prior to unemployment were associated with higher levels of life satisfaction throughout the study period ($\gamma_{01} = 0.77, p < .05$). Individuals reporting less negative change (more stable) in perceived control with unemployment were more likely to report a less steep decline in life satisfaction with unemployment (less reactive declines). Figure 2 illustrates that people reporting less negative unemployment-related change in perceived control (solid line; +1 *SD*) were more likely to report less steep declines in life satisfaction with unemployment and maintain higher levels of life satisfaction in the years following unemployment. Interestingly, levels of perceived control prior to unemployment and unemployment-related change in perceived control were not associated with adaptation. Younger age was additionally associated with reporting steeper declines in life satisfaction with unemployment and attaining more years of education were associated with better adaptation following unemployment.

Discussion

This report examined unemployment as an antecedent of between-person differences in changes in perceived control and the role of perceived control as a facilitator of adjustment to unemployment. On average, perceived control was relatively stable with unemployment, but there were sizeable between-person differences in change (see Figure 1). Women and individuals with fewer years of education experienced stronger declines. Higher pre-unemployment levels of and stability in perceived control were associated with increased likelihood of re-employment one year following unemployment. Furthermore, maintenance of perceived control with unemployment was protective against declines in life satisfaction surrounding unemployment. Our findings illustrate that control beliefs are influenced by unemployment and more importantly, facilitate adjustment after unemployment. Our discussion focuses on the malleability of control beliefs and how perceived control facilitates positive developmental and aging-related outcomes.

Perceived Control (Change) as an Outcome of Unemployment

In line with the Motivational Theory of Lifespan Development (Heckhausen et al., 2010), we expected that societal/social resources and biological constraints associated with one's

stage in the adult lifespan would result in unemployment having differential objective and subjective consequences. Our study provided for examining further how historical issues in the context of societal/social resources could effect changes in perceived control as a result of unemployment. This was due to data used for this study were collected in the mid-1990s, when Germany was going through historical changes as a result of reunification and this generation of participants is now retiring from the workforce. Future research is needed to examine whether similar findings to those that we report are found in newer cohorts of individuals. More specifically, we speculate as to whether or not the effects would be the same nowadays or in which direction they could be different. For example, recent research has found that 75-year olds nowadays perceive their life to be less determined by others than 75-year olds 20 years ago (see Hülür et al., 2015). Although we do not see a similar pattern for internal control, we could assume that these effects would probably be similar for people in the work force. Under this assumption, we would expect that cohort differences would also be relevant for the research we find here.

We observed a great deal of heterogeneity in how perceived control changed with unemployment, indicating that for some people unemployment resulted in increased control over life, whereas for others unemployment preceded decreased control. On the one hand, experiencing year-to-year declines in perceived control can be suggestive of losses in one's motivational resources and viewing the world as being more fatalistically ruled and less determined by one's own actions, efforts, and behaviors. As Frankl (1984) wrote, negative life events and circumstances, such as unemployment may leave people with a feeling of "provisional existence," unable to live for the future and aim for a goal. Similarly, unemployment can alter one's access to social resources due to a change in one's work context (Jahoda, 1981) and thus undermine perceived control in reality. On the other hand, experiencing increases in perceived control with unemployment may reflect resilience in the face of a major life event. Unemployment typically results in changes across a myriad of domains of functioning (Paul & Moser, 2009) and resilience could be reflective of a process of relief when individuals feel liberated from a work environment that is crippling due to poor work conditions, severely constrained work autonomy and impoverished stimulation in work-related activities. People in midlife who were women and in better health were protected against year-to-year changes in perceived control – whether or not they became unemployed. Women are typically more integrated within their social networks and have better coping strategies, particularly in midlife, to be protected against potential declines in perceived control (Antonucci, 2001). Being in a better state of health may result in individuals having more resources available to combat against the detrimental effects of unemployment or more broadly, events that could potentially constrain perceived control. We also found that individuals who were older at the time of unemployment, on average, experienced less steep declines in life satisfaction with unemployment (reaction). Focusing on objective consequences of unemployment, age did not play a large role in moderating the degree to which an individual was able to find re-employment.

Our findings showing population-level stability in perceived control are somewhat in contrast to research reporting that perceived control declines with experiencing other major life events, including disease incidence (Ranchor et al., 2010) and caregiving duration (Infurna et al., 2013b; Skaff et al., 1996). Such differences could be due to the nature of the

events. For example, processes surrounding unemployment, such as job lay-offs or termination due to poor performance may unfold within one to two years (Arulampalam, Booth, & Taylor, 2000). Conversely, processes surrounding disease incidence, such as behavioral risk factors of smoking, excessive alcohol use, and physical inactivity that lead to increased susceptibility to disease may unfold over a longer time period of years and decades (Spiro & Brady, 2011).

Thus, it would be instrumental for future research to examine whether perceived control changes in relation to life events relevant for one's important life domains. For example, perceived control typically declines in old age, and possibly retirement initiates the onset of such declines (Calvo et al., 2013). Additionally, in young adulthood, the typical pattern of change for perceived control is characterized by an increase, which could be attributable to several major positive life events that are likely to occur during this stage of the lifespan (e.g., marriage, childbirth, and transition to the workforce; see Cobb-Clark & Schurer, 2011; Kattenbach et al., 2014).

Moderators of Unemployment-related Change in Perceived Control

Among those who became unemployed, women and individuals with fewer years of education were more likely to experience declines in perceived control. Our findings are in accordance with previous research that shows women and those with fewer years of education, on average, report lower levels of perceived control (Ross & Mirowsky, 2002). Disadvantages in work and economic conditions as well as fewer employment and educational opportunities may leave women more vulnerable (Ross & Mirowsky, 2002). In contrast to our expectations, despite women being more integrated within their social network, these additional resources may not be sufficient to buffer declines in control. Attaining more years of education may provide people with resources and adaptive strategies to draw upon to mitigate burdens associated with experiencing unemployment. From our results, it can be taken that women and individuals with fewer years of education are most vulnerable to unemployment-related declines in perceived control and should be the focus of interventions to maintain and enhance perceived control. Empirical evidence suggests that declines in perceived control and financial strain are mediating mechanisms linking adversity following job loss to poorer mental and physical health (see Price, Choi, & Vinokur, 2002), suggesting that interventions that focus on perceived control can be a way to protect individuals from psychological burdens caused by unemployment (Dooley et al., 1996; Vinokur, Price, & Schul, 1995). In particular, interventions could work best for those who experienced the strongest declines in perceived control. For example, interventions that focus on learning to present marketable skills to employers, getting job leads through networking, engaging community and social network resources for job attainment, and to anticipate barriers to the job-search efforts could lead to enhancing participants' confidence in their ability to successfully search for a job and can be especially beneficial for individuals with lower levels of perceived control (Vinokur & Schul, 1997; Vinokur, Schul, Vuori, & Price, 2000).

We additionally observed that individuals who reported lower levels of perceived control prior to unemployment were more likely to experience increases in perceived control with

unemployment. A reason could be regression to the mean; to examine this further, we included a control group who did not experience unemployment and found that perceived control changes similarly in this group. This analysis points to the fact that year-to-year change in perceived control and the processes governing that change does not differ between the sample of individuals who became employed and those that did not; thus, the changes in perceived control cannot be attributed to unemployment. An optimistic interpretation is that year-to-year changes in perceived control are mostly similar for everyone, whether a change in employment is involved or all the other things that happen in life during the year. Furthermore, our findings are analogous to Ranchor et al. (2010) who found that higher levels of control prior to cancer diagnosis was associated with stronger declines in perceived control in the years thereafter. Our findings suggest that extreme perceptions of control (i.e., too high or too low) could be dysfunctional (unrealistic) and inappropriate to guide behavior. One interpretation of this finding is that unemployment may result in declines in perceived control for someone who is in a job characterized by independence and determining one's own schedule and daily tasks. They may have more reason to believe that their personal characteristics were responsible for unemployment and have reason to be in doubt about their perceived control over their working life, resulting in unemployment-related declines in perceived control.

We also observed that, among those individuals who had experienced unemployment, change in perceived control did not differ by type of unemployment (e.g., voluntary versus involuntary). This can be interpreted in two ways. First, the circumstances surrounding job loss may not have implications for how perceived control may or may not change in relation to unemployment. Second, our null findings could be the result of our small sample and limited number of observations leading up to and following unemployment. In follow-up analyses, we found that involuntary job loss was most detrimental (with respect to perceived control) for individuals' who had attained fewer years of education. This could be due to having fewer options and a limited skill set for attaining re-employment, whereas having a college education permits for a wide range of careers both within and outside of their area of expertise.

Perceived Control as a Moderator of the link between Unemployment and Psychological Adjustment

Re-employment—There are several pathways through which perceived control may operate to facilitate re-employment, including motivation, emotion, social support, and behavior. First, individuals who perceive more control are frequently characterized as being more persistent in the face of challenging tasks (Skinner, 1995), which could help with seeking out community resources to decrease the likelihood of sustained periods of unemployment. In a similar vein, the loss of perceived control may affect one's self-awareness and the impression someone makes in a job interview, which can lead to attaining re-employment more quickly (Barrick, Shaffer, & DeGrassi, 2009; Castro et al., 2003). Second, perceived control and well-being are closely interrelated across adulthood and old age (Cheng, Cheung, Chio, & Chan, 2013; Peterson & Seligman, 1984). Experiencing declines in perceived control may result in feelings of helplessness that are strongly linked to negative emotional states (e.g., anxiety, stress, depression; for reviews, see Seligman,

1975) and when prolonged can have detrimental consequences for job seeking behavior, career identity, exploration, and goal setting (Lent et al., 1994; Taris, 2002; Wanberg et al., 2005). Conversely, increasing control may invigorate people to exert control over their life circumstances, including mobilizing new job search intentions behaviors (Caliendo et al., 2010; Offerhaus, 2012). Third, lower levels and declines in control as a result of unemployment may deplete not only one's human capital (skills), but also one's social capital that could be utilized to help seek out re-employment (Fugate et al., 2004).

Unemployment-related change in well-being—Similar to previous research, we observed between-person differences in a multi-phase pattern of change in life satisfaction with unemployment (e.g., Infurna & Luthar, in press; Lucas et al., 2004). Year-to-year change in perceived control had a prominent role and likely operated to protect against declines in life satisfaction through stress-buffering, coping strategies, and social support. First, individuals who are able to maintain their perceptions of control are likely to have the self-regulatory strategies needed to buffer stressors induced by unemployment that can lead to negative emotional states (Hay & Diehl, 2010; Neupert et al., 2007). Second, stability or increases in perceived control may be related to maintenance of one's social capital that can be utilized to buffer against stressors induced by unemployment (Antonucci, 2001; Cohen & Wills, 1985). Third, declines in perceived control that may accompany unemployment may compromise the use of effective coping strategies, thereby resulting in decrements in well-being and increases in anxiety (Grossi, Ahs, & Lundberg, 1998; Viinamäki, Koshela, & Niskanen, 1993). Interestingly, we found that levels of perceived control prior to unemployment and unemployment-related change in perceived control were not associated with adaptation in life satisfaction. It could be that the effects of perceived control are more short-term rather than long-term in the context of unemployment.

Limitations

We note several limitations in our study. First, our measure of perceived control focused on general beliefs over one's life circumstances that encompass both internal and external components of control. It is largely an open question whether unemployment would have similar effects on related constructs, such as domain-general or domain-specific goal (dis)engagement strategies. For example, unemployment may result in declines in goal engagement strategies due to no longer having the resources available to attain desired outcomes. Second, we were limited in the potential moderators of unemployment-related change in control due to data availability, such as self-reported personal and social resources. For example, strong goal engagement orientations may lead to more favorable control change with unemployment, and strong goal disengagement orientations may facilitate goal adjustment and adaptation following unemployment (Haase, Heckhausen, & Silbereisen, 2012; Tomasik, Silbereisen, & Heckhausen, 2010). Similarly, other psychological processes likely impact unemployment-related change in perceived control, such as personality factors like neuroticism and conscientiousness, which could affect self-regulation strategies and action-plans for attaining a new job. Third, we are only at the beginning of understanding how it is that perceived control facilitates adjustment to unemployment. Our study focused on perceived control assessed within a longitudinal survey design and we do not yet know about the daily processes involved in the role that

perceived control has for re-employment and well-being. For example, higher levels of and less variability in perceived control from day-to-day may lead to more consistent job search behaviors of sending in applications and utilizing social network and community resources to find job leads, resulting in an increased likelihood of re-employment. One way to examine the processes involved in pathways through which perceived control facilitates adjustment to unemployment, would be more closely spaced observations (e.g., measurement-burst designs; Nesselrode, 1991; Ram & Gerstorf, 2009). Furthermore, this would allow for examining which strategies individuals use to attain re-employment and which strategies work best for individuals at different stages of the lifespan. For example, individuals in midlife who experience unemployment may utilize their social network and group of colleagues that they have amassed during their career to find re-employment. Additionally, as noted above, our study needs to be interpreted in the context of the historical changes occurring in Germany during the 1990s. It is unclear as to whether our findings would be the same nowadays or are specific to historical periods undergoing drastic societal changes. Given recent research finding the lack of cohort differences in control over the past 20 years in Germany (see Hülür et al., 2015, we would assume to see a similar pattern in our findings.

Lastly, we note that the conceptualization of unemployment and its multi-directional and dynamic influence on various areas of functioning needs to be ironed out in future research. The systems involved with unemployment, perceived control, life satisfaction, and multiple other domains of functioning were not assessed in a multi-directional process. We conceptualized unemployment as the central “causal” agent for influencing changes in both perceived control and life satisfaction by re-arranging the time metric from time-in-study to time-to/from-unemployment and how those changes in perceived control also moderate the effect of unemployment on life satisfaction. Perceived control was implicitly treated in multiple ways simultaneously by being the outcome and the predictor, but yet may also play a role as a mediator as suggested in previous studies (see Price et al., 2002). Job loss may lead to downstream declines in mental and physical health through changes in perceived control. It is also important to consider how various areas of functioning, including life satisfaction and perceived control, may have a predictive role for life events, such as job loss (e.g., Luhmann, Lucas, Eid, & Diener, 2013).

Conclusion

Our findings demonstrate that there are large between-person differences in how people's perceptions of control change across adulthood as a result of unemployment, a highly challenging life event like. However, perceived control is not only an outcome but also a major resource for rebounding after a control-threatening life event such as job loss. Individuals vary in their capacity to utilize this resource and as a consequence are more or less successful in finding new employment and also suffer more or less decline in life satisfaction. Women and less educated population segments are disadvantaged in this regard. Our study adds to extant reports showing that perceived control functions as a general-purpose belief system promoting adaptation (Bandura, 1997; Heckhausen et al., 2010; Heckman et al., 2006; Lachman, 2006). Perceived control is a psychological resource people draw upon in the face of challenges in the life course.

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Highlights

- We examine antecedents and outcomes of perceived by focusing on unemployment.
- Women and those with fewer years of education showed greater declines in control.
- Perceived control was associated with becoming re-employed following unemployment.
- Maintenance of perceived control predicted higher life satisfaction in the years to follow.
- Findings show that perceived control facilitates adjustment to unemployment.

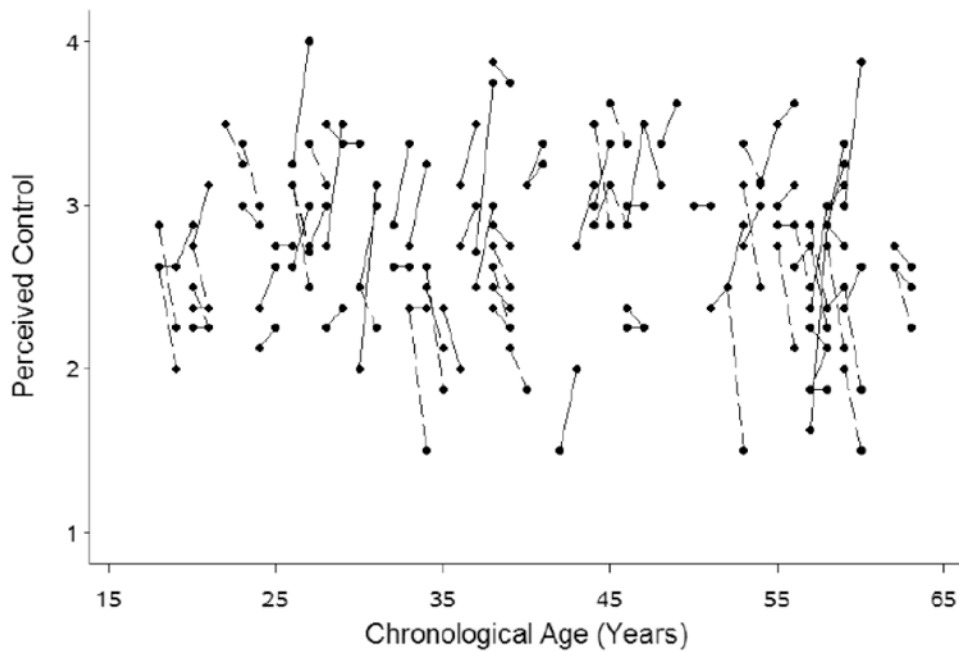


Figure 1.

Graphical representation of between-person differences in unemployment-related change in control (in the context of stability; see Table 2). Raw data is shown for a subsample of 100 participants from the nationwide representative German Socio-Economic Panel Study (SOEP) who experienced unemployment in either 1995 or 1996. The data are displayed over chronological age to allow for differences in change to be better observed. Based on response on a 5-point Likert scale, 168 (41%) participants declined in perceived control, 58 (14%) participants' perceived control remained stable, and 187 (45%) participants showed increases in perceived control as a function of unemployment. The average level of perceived control in the SOEP sample in 1994 was 2.77 (SD 0.46). The solid black lines are individuals who reported stability or increases in perceived control with unemployment and the dotted black lines are individuals who reported declines in perceived control with unemployment.

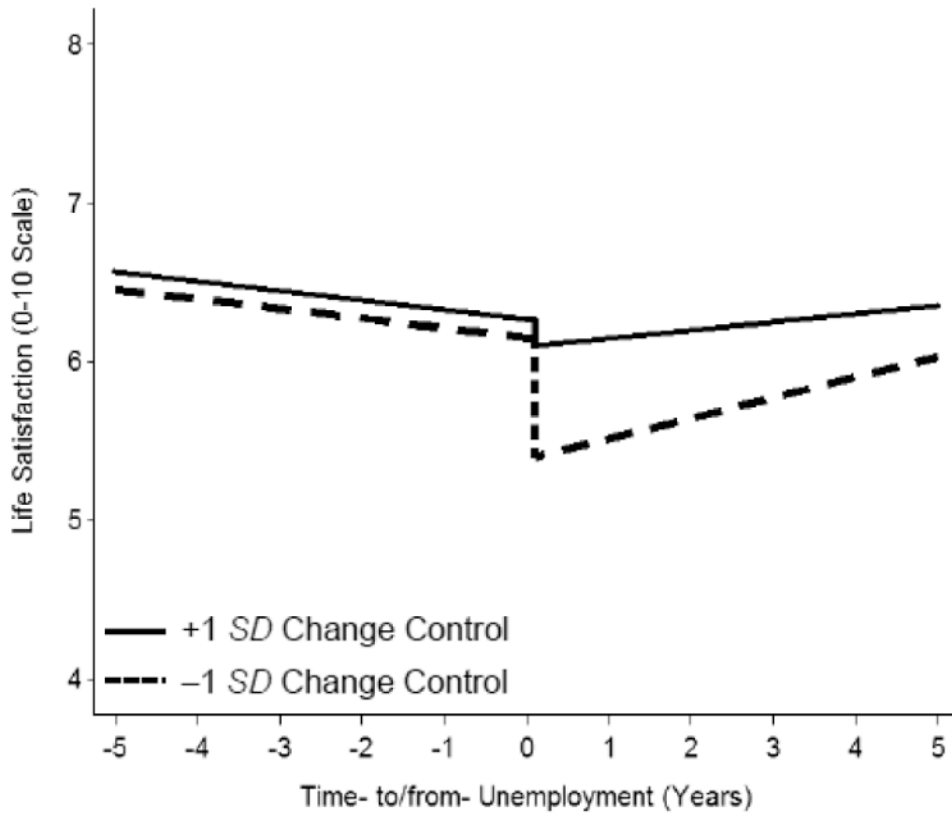


Figure 2. Illustrating the predictive effects of unemployment-related change in perceived control for reaction and adaptation in life satisfaction in relation to unemployment. Participants who reported less steep unemployment-related declines in perceived control (solid line; +1 *SD* change in control) showed fewer declines in life satisfaction with unemployment and reported higher levels of life satisfaction in the years following unemployment than those who reported steeper unemployment-related declines in perceived control (dashed line; -1 *SD* change in control). We note that the depicted difference between the post-unemployment slopes is not significant.

Table 1
Means, Standard Deviations, and Intercorrelations Among the Constructs Included in the Present Study

Construct	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10
1. Level perceived control in the year prior to job loss (1 – 4)	2.73	0.45	–									
2. Unemployment-related control change (–1.25 – 1.50)	0.01	0.44	–.45*	–								
3. Age (19 – 64)	40.62	12.97	–.01	–.02	–							
	%											
4. Women	48		–.03	–.07	–.09	–						
5. Education (7 – 18)	11.45	2.16	.31*	.05	.004	.03	–					
6. Self-rated health (1 – 5)	3.31	0.95	.15*	–.09	–.35*	–.05	.01	–				
	%											
7. Involuntary job loss	63		–.01	.03	–.12*	.04	.14*	.08	–			
8. Number of dependents (0 – 5)	0.62	0.92	–.04	.09	–.29*	–.03	.01	.04	.07	–		
9. Social participation (1 – 4)	1.42	0.45	.23*	.01	–.14*	–.01	.31*	.06	.05	–.06	–	
	%											
10. Living in East Germany	53		–.01	–.05	.10*	.05	.15*	–.09	.07	.08	–.08	–

Note. *N* = 413. Level control refers to levels of perceived control in the year prior to job loss. Gender: Men, *n* = 216; Women, *n* = 197.

* *p* < .05

Table 2

Change in Perceived Control in Relation to Unemployment

Variable	Model 1		Model 2		Model 3	
	Parameter Estimates (SE)	Std. β	Parameter Estimates (SE)	Std. β	Parameter Estimates (SE)	Std. β
Fixed effect						
Unemployment-related control change, β_0	-0.02 (0.02)		0.04 (0.03)		0.03 (0.03)	
Correlates						
Pre-unemployment control, β_1	-0.44* (0.04)	-.45	-0.51* (0.04)	-.52	-0.52* (0.05)	-.53
Age, β_2			-0.001 (0.001)	-.03	-0.0002 (0.002)	-.01
Age squared, β_3			0.000 (0.000)	-.08	-0.0002 (0.0002)	-.07
Women, β_4			-0.09* (0.04)	-.10	-0.08* (0.04)	-.09
Education, β_5			0.04* (0.01)	.20	0.04* (0.01)	.19
Self-rated health, β_6					-0.01 (0.02)	-.03
Involuntary job loss, β_7					0.003 (0.05)	.003
Number of dependents, β_8					0.02 (0.02)	.05
Social participation, β_9					0.06 (0.05)	.06
Living in East Germany, β_{10}					-0.08 [^] (0.04)	-.08
R ²			.055		.012	
R ²		.201	.256		.268	

Note. N = 413. Correlates were centered, such that the intercept or unemployment-related control change reflects the average amount of change for people with average age, length of education, self-rated health, number of dependents, social participation, male gender, and living in East Germany. Std. β = Standardized betas. SE = Standard Errors.

* $p < .05$,

[^] $p = .06$.

Table 3
Examining Change in Perceived Control Between Participants Who Experienced Unemployment and a Matched Group With No History of Unemployment

Variable	Parameter Estimates (SE)	Std. β
Fixed effect		
Unemployment-related control change, β_0	0.003 (0.01)	
Correlates		
Pre-unemployment control, β_1	-0.42* (0.03)	-.44
Unemployment group, β_2	-0.02 (0.03)	-.02
Pre-unemployment control \times unemployment group, β_3	-0.05 (0.06)	-.02
R ²	.193	

Note. $N = 826$. 413 participants experienced unemployment and 413 participants were a control group who were matched based on age, gender, education, self-rated health, number of dependents, social participation, and region of living (East Germany versus West Germany).

* $p < .05$.

Table 4
Likelihood of Re-employment as a Function of Pre-unemployment Level and Unemployment-related Change in Perceived Control

	HR	[95% CI]
Year 2	0.66*	[0.45, 0.98]
Year 3	0.41*	[0.25, 0.67]
Year 4	0.50*	[0.30, 0.84]
Year 5	0.25*	[0.12, 0.49]
Pre-unemployment control	1.38*	[1.06, 1.80]
Pre-unemployment control × year 2	0.46*	[0.30, 0.71]
Pre-unemployment control × year 3	0.60	[0.34, 1.06]
Pre-unemployment control × year 4	0.57	[0.32, 1.01]
Pre-unemployment control × year 5	0.58	[0.26, 1.25]
Unemployment-related change in perceived control	1.33*	[1.03, 1.71]
Pre-unemployment control × unemployment-related change in perceived control	1.07	[0.93, 1.22]
Unemployment-related change in perceived control × year 2	0.72	[0.47, 1.12]
Unemployment-related change in perceived control × year 3	0.86	[0.49, 1.51]
Unemployment-related change in perceived control × year 4	0.98	[0.55, 1.75]
Unemployment-related change in perceived control × year 5	0.63	[0.29, 1.36]
Age	0.94*	[0.93, 0.96]
Age squared	0.997*	[0.995, 0.998]
Women	0.86	[0.63, 1.18]
Education	0.98	[0.90, 1.07]
Self-rated health	1.03	[0.88, 1.20]
Involuntary job loss	1.20	[0.86, 1.66]
Number of dependents	1.08	[0.90, 1.28]
Social participation	1.18	[0.99, 1.40]
East Germany	1.31	[0.95, 1.81]
Model Fit Statistics		
	<i>df</i>	24
	χ^2	141.85

Note. Re-employment analyses: $N = 413$; $n = 264$ participants experienced re-employment within five years following unemployment. Correlates were centered. The HR of interaction terms with years (e.g., pre-unemployment control × year 2) are not interpreted relative to the main effect, but reflect likelihood of re-employment during the given year following unemployment. Hazard ratios (HR) that are below 1 reflect negative associations or decreased likelihood of re-employment, whereas HR that are above 1 reflect positive associations or increased likelihood of re-employment. HR is non-significant if 1 is included in the confidence interval (CI). HR = Hazard Ratio. CI = Confidence Interval.

* $p < .05$.

Table 5
Multi-Phase Growth Curve Model for Examining Change in Life Satisfaction to/from Unemployment

	Life Satisfaction	
	Parameter Estimate	Standard Error
Fixed effects		
Intercept, γ_{00}	6.21*	0.13
Pre-unemployment control, γ_{01}	0.65*	0.17
Unemployment-related control change, γ_{02}	0.13	0.16
Pre-unemployment control \times unemployment-related control change, γ_{03}	0.14	0.27
Age, γ_{04}	0.004	0.01
Age squared, γ_{05}	0.001	0.001
Women, γ_{06}	0.25	0.13
Education, γ_{07}	-0.07*	0.03
Self-rated health, γ_{08}	0.52*	0.07
Involuntary job loss, γ_{09}	-0.05	0.13
Number of dependents, γ_{10}	-0.08	0.08
Social participation, γ_{11}	0.22	0.16
East Germany, γ_{12}	-0.63*	0.13
Became employed, γ_{13}	-0.01	0.16
Time-to/from unemployment, γ_{10}	-0.06*	0.03
Reaction, γ_{20}	-0.47*	0.14
Pre-unemployment control, γ_{21}	0.10	0.18
Unemployment-related control change, γ_{22}	0.68*	0.17
Pre-unemployment control \times unemployment-related control change, γ_{23}	0.18	0.29
Age, γ_{24}	0.01*	0.007
Age squared, γ_{25}	0.0003	0.001
Women, γ_{26}	0.07	0.14
Education, γ_{27}	0.01	0.04
Self-rated health, γ_{28}	-0.09	0.08
Involuntary job loss, γ_{29}	-0.22	0.14
Number of dependents, γ_{210}	0.05	0.08
Social participation, γ_{211}	-0.06	0.17
East Germany, γ_{212}	0.23	0.14
Became employed, γ_{213}	0.02	0.17
Adaptation, γ_{30}	0.15*	0.05
Pre-unemployment control, γ_{31}	-0.04	0.05
Unemployment-related control change, γ_{32}	-0.09	0.05

	Life Satisfaction	
	Parameter Estimate	Standard Error
Pre-unemployment control × unemployment-related control change, γ_{33}	-0.07	0.08
Age, γ_{34}	-0.001	0.002
Age squared, γ_{35}	0.0002	0.0002
Women, γ_{36}	-0.01	0.04
Education, γ_{37}	0.02	0.01
Self-rated health, γ_{38}	-0.03	0.02
Involuntary job loss, γ_{39}	0.07	0.04
Number of dependents, γ_{310}	-0.01	0.02
Social participation, γ_{311}	-0.02	0.05
East Germany, γ_{312}	-0.02	0.04
Became employed, γ_{313}	0.07	0.05
Random effects		
Variance intercept, σ^2_{u0}	1.44*	0.28
Variance linear slope, σ^2_{u1}	0.07*	0.02
Variance reaction, σ^2_{u2}	0.31	0.27
Variance adaptation, σ^2_{u3}	0.13*	0.04
Covariance intercept, linear slope, σ_{u0u1}	0.16*	0.07
Covariance intercept, reaction, σ_{u0u2}	-0.11	0.23
Covariance intercept, adaptation, σ_{u0u3}	-0.28*	0.09
Covariance linear slope, reaction, σ_{u1u2}	-0.06	0.07
Covariance linear slope, adaptation, σ_{u1u3}	-0.09*	0.03
Covariance reaction, adaptation, σ_{u2u3}	0.10	0.07
Residual variance, σ^2_r	1.67*	0.05

Note. $N = 413$. Number of observations = 3,828. ICC = $(1.42 / 1.42 + 2.04) = .411$.

* $p < .05$.