Fachbereich Erziehungswissenschaft und Psychologie

der Freien Universität Berlin

How Does Unemployment Affect Well-Being and Chronic Stress? Investigating the Temporal Unfolding of the Effects and Sources of Interindividual Differences

Dissertation

zur Erlangung des akademischen Grades

Doktor der Philosophie (Dr. phil.)

vorgelegt von

M.Sc.

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Berlin, Oktober 2022

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Tag der Disputation: 21.12.2022

Table of Contents

Acknowledgments

First and foremost, I would like to thank Michael Eid for his exceptional commitment in supervising my dissertation. Michael's genuine scientific enthusiasm and indestructible optimism are contagious and always made me feel good about my research. I am deeply thankful for his unconditional and warm-hearted support throughout the years. Further, I would like to thank Clemens Tesch-Römer for his willingness to evaluate my dissertation and Stefan Krumm, David Richter, and Claudia Crayen for being so kind to join my doctoral committee.

I also want to express my gratitude to my co-authors Clemens Hetschko, Ronnie Schöb, and Gesine Stephan for their critical, yet always fruitful feedback in the last years. Moreover, I am grateful to all members of the International Max Planck Research School on the Life Course (LIFE). I look back with joy on the many exciting and inspiring talks, seminars, and academies that I was able to participate in as a LIFE fellow.

I also want to thank my dear colleagues for making going to work fun. Friedemann, thank you for your consistent positivity and empathy, which spills over to everybody around you. Thank you, Ana for your unlimited support and advice in the last months as well as being my most loyal mensa buddy. Thank you, Claudia, for always having an open ear (and secret chocolate hideouts) and, thank you, Georg, for patiently listening to my (often unfinished) ideas. Further, I want to thank Angela for our (mostly non-scientific) morning chats and Jana Mahlke for regularly stopping by my office to check in with me.

Finally, I am incredibly grateful to my friends and family for always being there for me. You make life fun and easy! In particular, I thank my parents, Nora and Henning, and my sister, Tabea, for their unconditional love and support, which has always been the foundation enabling me to follow my desires. Anka, I am incredibly thankful for sharing these last years with you. You make me happy and I cannot wait to see what life has to offer next!

Abstract

The goal of this dissertation is to advance our understanding of how unemployment affects well-being and chronic stress. Specifically, three empirical studies that examine the timing of and interindividual differences in the effects of unemployment on various indicators of well-being and stress were conducted based on prospective monthly panel data of initially employed German jobseekers.

Study I examined changes in facets of cognitive, affective, and eudaimonic well-being that occurred between the last month in employment and the first month in unemployment to identify the immediate effects of unemployment. A control-group design was applied to approximate these effects in a causal modeling framework. Moreover, it was explored whether the various well-being facets change within the first few months of unemployment (i.e., short-term adaptation). The results show that unemployment had an immediate negative effect on life satisfaction and income satisfaction but no effects on the other well-being facets. Moreover, there was generally no evidence for short-term adaptation to unemployment.

Study II focused on interindividual differences in unemployment-related well-being changes as well as causes thereof. In particular, it examined whether pre-unemployment levels of psychological well-being moderate the effects of unemployment on cognitive and affective well-being facets in various contexts of unemployment. The results indicate that individuals substantially differed in their unemployment-related well-being changes across all examined well-being facets. However, the six dimensions of psychological well-being did generally not moderate the effects of unemployment regardless of why individuals lost their jobs and how individuals rated their re-employment prospects. Further, unemployment had stronger detrimental effects on the examined well-being facets when re-employment expectations were low. In contrast, being unemployed with good re-employment prospects was related to increases in several well-being facets (e.g., leisure satisfaction, feeling awake).

Study III examined whether unemployment is associated with changes in hair cortisol, a reliable biomarker for chronic stress. No general effects of the current employment status on hair cortisol were found. However, differences in re-employment expectations during unemployment were associated with differential changes in hair cortisol levels. Specifically, individuals who reported low hopes for finding a new job after having been unemployed for several months showed significantly greater increases in hair cortisol levels compared to continuously employed individuals or unemployed individuals with good re-employment prospects. Moreover, unemployment was differentially related to perceived stress and hair cortisol, indicating that hair cortisol and self-reported stress capture different aspects of stress.

Taken together, the present dissertation contributes to the literature on how and in which circumstances unemployment affects well-being and chronic stress in three ways. First, it provides novel insights into the temporal unfolding of the effects of unemployment on various well-being indicators in close proximity to job loss (Study I). Second, it emphasizes that individuals differ in their reactions to unemployment and highlights that situational circumstances like the reason for job loss and re-employment expectations during unemployment are important sources of these interindividual differences. In contrast, pre-unemployment well-being levels do generally not seem to matter for how strongly unemployment affects well-being (Study II). Third, it provides first longitudinal evidence that unemployment can be harmful to the cortisol system when individuals still have poor re-employment prospects after having been unemployed for several months (Study III).

Zusammenfassung

Die vorliegende Dissertation hat zum Ziel, neue Erkenntnisse darüber zu gewinnen, wie sich Arbeitslosigkeit auf verschiedene Wohlbefindensfacetten und chronischen Stress auswirkt. Hierfür wurden drei empirische Studien auf Basis von Daten einer monatlichen Paneluntersuchung von anfänglich beschäftigten Arbeitsuchenden in Deutschland durchgeführt.

Studie I untersuchte die unmittelbaren Effekte von Arbeitslosigkeit auf verschiedene kognitive, affektive und eudaimonische Wohlbefindensfacetten. Um die Effekte in einem kausalen Modellierungsrahmen schätzen zu können, wurde auf ein Kontrollgruppendesign zurückgegriffen. Außerdem wurde untersucht, ob sich die verschiedenen Facetten des Wohlbefindens in den ersten Monaten der Arbeitslosigkeit verändern. Die Ergebnisse zeigten, dass Arbeitslosigkeit unmittelbare negative Effekte auf die Lebenszufriedenheit und die Zufriedenheit mit dem Haushaltseinkommen hatte. Bezüglich der weiteren untersuchten Wohlbefindensfacetten gab es hingegen keine unmittelbaren Effekte der Arbeitslosigkeit. Zudem veränderte sich das Wohlbefinden in den ersten Monaten der Arbeitslosigkeit generell nicht. Dies deutet darauf hin, dass es keine kurzfristige Adaptation an Arbeitslosigkeit gibt.

Studie II betrachtet interindividuelle Unterschiede in arbeitslosigkeitsbedingten Veränderungen des kognitiven und affektiven Wohlbefindens sowie Ursachen für diese Unterschiede. Insbesondere wurde untersucht, ob Facetten des psychologischen Wohlbefindens die negativen Auswirkungen der Arbeitslosigkeit auf kognitive und affektive Wohlbefindensfacetten in verschiedenen Kontexten der Arbeitslosigkeit abmildern. Die Ergebnisse zeigten, dass sich Personen zwar erheblich in ihren arbeitslosigkeitsbedingten Wohlbefindensveränderungen unterschieden, die Dimensionen des psychologischen Wohlbefindens jedoch im Allgemeinen die Effekte der Arbeitslosigkeit nicht abmilderten. Darüber hatte Arbeitslosigkeit stärkere negative Auswirkungen auf das Wohlbefinden, wenn Personen geringe Wiederbeschäftigungserwartungen hatten. Allerdings war Arbeitslosigkeit

im Mittel mit positiven Effekten in Bezug auf mehrere Facetten des Wohlbefindens (z. B. Zufriedenheit mit der Freizeit, Wachheit) verbunden, wenn arbeitslose Personen gute Aussichten auf eine Wiederbeschäftigung hatten.

Studie III untersuchte, ob Arbeitslosigkeit mit Veränderungen im Haarcortisol, einem reliablen Biomarker für chronischen Stress, verbunden ist. Hier zeigten die Ergebnisse, dass sich die mittleren Veränderungen im Haarcortisol nicht zwischen arbeitslos gewordenen Personen und dauerhaft Beschäftigten unterschieden. Allerdings stiegen die mittleren Haarcortisolwerte von arbeitslos gewordenen Personen, die geringe Wiederbeschäftigungserwartungen hatten, signifikant stärker an als die von dauerhaft Beschäftigten. Darüber hinaus zeigte sich, dass sich Arbeitslosigkeit unterschiedlich auf empfundenem Stress und auf Haarcortisol auswirkte. Dieses Ergebnis unterstreicht, dass Haarcortisol und selbstberichteter Stress unterschiedliche Aspekte von Stress erfassen.

Insgesamt trägt diese Dissertation in dreierlei Hinsicht zu einem besseren Verständnis der Zusammenhänge von Arbeitslosigkeit, Wohlbefinden und chronischen Stress bei. Erstens liefert sie neue Einblicke in die zeitliche Abfolge der Arbeitslosigkeitseffekte kurz vor und nach dem Arbeitsplatzverlust (Studie I). Zweitens hebt sie hervor, dass Personen unterschiedlich auf Arbeitslosigkeit reagieren und dass der Grund des Arbeitsplatzverlustes und die Wiederbeschäftigungserwartungen während der Arbeitslosigkeit zentrale Ursachen für diese Unterschiede sind. Das Wohlbefinden vor der Arbeitslosigkeit scheint hingegen die Effekte von Arbeitslosigkeit nicht zu moderieren (Studie II). Drittens liefert sie erste längsschnittliche Hinweise darauf, dass Arbeitslosigkeit dem physiologischen Stresssystem schaden kann, wenn Personen auch nach mehreren Monaten Arbeitslosigkeit noch schlechte Aussichten auf eine Wiederbeschäftigung haben (Studie III).

Chapter 1

Introduction

1. Introduction

Unemployment is a mass phenomenon around the globe. Even in countries with comparably low unemployment rates like Germany (3.6% in 2021) or the United States (5.4% in 2021), millions of people are unemployed each year (OECD, 2022). Particularly in times of economic crisis like the COVID-19 pandemic, the labor market is volatile and many individuals are confronted with unemployment (OECD, 2021). Consequently, many of today's working-age people are likely to face an involuntary job loss at least once during their careers. Thus, a comprehensive understanding of how and in which circumstances unemployment affects the lives of individuals is crucial. A large body of literature has underlined that unemployment detrimentally affects well-being and physical health (for meta-analyses see Luhmann, Hofmann, et al., 2012; McKee-Ryan et al., 2005; Paul & Moser, 2009). The impact of unemployment on well-being was found to be comparable to the effects of losing a spouse (Luhmann, Hofmann, et al., 2012) and research suggested that individuals might not return to their pre-unemployment well-being levels even after regaining employment (Clark et al., 2001; Lucas et al., 2004; Reitz et al., 2022). Thus, the effects of unemployment on well-being can be severe and long-lasting, making losing one's job a highly critical yet rather frequent life event.

Several theories have aimed to explain these negative effects of unemployment with Marie Jahoda's (1982) latent deprivation model being the most prominent one. Jahoda's theory posits that unemployed individuals do not primarily suffer due to financial strain but due to non-monetary effects of unemployment. Particularly, she theorized that the following six psychological needs, which she calls *latent* functions of employment, cannot be fully satisfied without paid employment: *the imposition of a time structure*, *social activities outside of the close family circle*, *participation in a collective purpose*, *status*, *identity* and *regular activity* (Jahoda, 1982, p. 59). While Jahoda's model is mainly concerned with situational features, Fryer's (1997) agency restriction theory follows a more person-centered approach

(Paul & Moser, 2006). In particular, Fryer's model posits that humans are "agents actively striving for purposeful self-determination, attempting to make sense of, initiate, influence, and cope with events in line with personal values, goals, and expectations of the future" (Fryer, 1997, p. 12). According to the agency restriction model, these human agentic features are severely deterred during unemployment due to potential poverty and insecurity about one's future, which results in low well-being. Together these exemplary theoretical accounts emphasize the central role of work for the well-being and psychological functioning of individuals (see also Blustein, 2008; Paul & Moser, 2006; Warr, 1987).

Even though our understanding of how unemployment affects people's lives has grown considerably over the last decades, many fundamental questions remain unanswered (Reitz et al., 2022; Wanberg, 2012; Zechmann & Paul, 2019): *What are critical periods in which the effects of unemployment unfold? Why do individuals differ in their reactions to unemployment? Are there contexts in which unemployment is particularly harmful? How is unemployment related to stress and health?* Within this dissertation, three empirical studies based on novel prospective monthly panel data of initially employed German jobseekers were conducted to provide some answers to these questions. Specifically, Study I examines the immediate effects of unemployment on various facets of well-being and explores patterns of short-term adaptation. Study II explores interindividual differences in the effects of unemployment on various cognitive and affective well-being facets and examined whether psychological well-being facets buffers the negative effects of unemployment in different contexts. Lastly, Study III uses hair cortisol as a biomarker for chronic stress to examine whether unemployment is related to changes in the physiological stress system.

In the remainder of this introduction, I will define the well-being and stress concepts that are examined as outcomes in this dissertation and will summarize the extant literature on how unemployment affects these. Further, I will present the existing research interindividual differences in unemployment-related well-being changes as well as situational and personal

sources thereof. I will end this chapter by outlining the research objectives of the three research papers of this dissertation.

1.1. Well-Being and Stress Concepts of this Dissertation

While pursuing happiness is a universal goal of most humans, how individuals try to achieve happiness and what they define as happiness can widely differ across people and situations (Heintzelman, 2018). Thus, unsurprisingly, many different conceptualizations of *happiness* or *well-being* have been proposed in the scientific literature. To avoid confusion, I will thus describe the well-being concepts used in this dissertation in the following section. The first central well-being concept of this dissertation is *subjective well-being*, which resembles hedonic features of well-being and consists of *cognitive well-being* and *affective well-being* (Diener, 1984). Cognitive well-being captures how people evaluate their life overall (i.e., life satisfaction) as well as certain aspects of it (e.g., job satisfaction), whereas affective well-being is defined as experiencing positive feelings frequently and negative feelings infrequently (Diener, 1984; Larsen & Eid, 2008). For many people, however, there is more to happiness than merely being satisfied with one's life and experiencing pleasure. For example, contributing to society, engaging in meaningful tasks, living in concordance with one's virtues as well as fulfilling one's potential can also be defining features of a happy life (Deci & Ryan, 2008; Heintzelman, 2018; OECD, 2013; Ryff, 1989). This conceptualization of well-being is rooted in the eudaimonic perspective on well-being, which goes back to Aristotle's Nicomachean Ethics (Aristotle, 2001) and constitutes the second central well-being concept of this dissertation. By the Aristotelian definition, people achieve eudaimonia by living up to their fullest potential while being in accordance with their virtues as well as bringing the resulting excellence into action (Disabato et al., 2016; Kashdan et al., 2008). In the psychological literature, many different definitions and conceptualizations of eudaimonic well-being have been proposed over the last decades (for an overview see Heintzelman, 2018; for a critique see Kashdan et al., 2008). The present dissertation mainly focuses on a

taxonomy proposed by Carol Ryff (1989). Ryff's model of *psychological well-being* is a broad theory of eudaimonic well-being that is based on various concepts from developmental, clinical, existential, and humanistic psychology. It defines well-being using the following six dimensions: *Autonomy*, *environmental mastery*, *personal growth*, *positive relations with others*, *purpose in life*, and *self-acceptance* (Ryff, 1989; Ryff et al., 2015). Specifically, individuals scoring high on *autonomy* evaluate themselves by their own personal standards, resist social pressures and are self-determined (Ryff, 2013, p. 12). *Environmental mastery* is defined as being competent in managing one's environment and effectively using the surrounding opportunities to create contexts that are suitable for one's needs and values (Ryff, 2013, p. 12). *Personal growth* is characterized by having a feeling of continued development, being open for new experiences and changing in ways that reflect more self-knowledge, and *positive relations with others* comprises having warm, satisfying and trusting relationships with others, while also being interested in the welfare of others and being capable of empathy, affection and intimacy (Ryff, 2013, p. 12). *Purpose in life* describes having goals in life and the feeling that there is meaning to present and past life, and, lastly, *self-acceptance* refers to having a positive attitude toward the self and accepting multiple aspects of one's self including the bad qualities (Ryff, 2013, p. 12). Throughout this dissertation, the general term *well-being* will refer to subjective and eudaimonic well-being as a whole.

Affective, cognitive, and eudaimonic well-being facets are positively correlated with each other but capture distinct aspects of well-being (OECD, 2013; Tov, 2018). In particular, past research showed that affective, cognitive, and eudaimonic well-being differ in their temporal stability (Eid & Diener, 2004; Ryff et al., 2015), their relations with other variables (Lucas et al., 1996; Ryff, 1989) as well as their sensitivity towards life events (Luhmann, Hofmann, et al., 2012; Schimmack et al., 2008).

Besides these (subjectively rated) well-being measures, physical health also plays a central role in one's quality of life (OECD, 2013). Unlike well-being facets, physical health is

characterized by objective conditions that can be confirmed by medical procedures (Cross et al., 2018). Even though the effects of unemployment on physical health will not be the direct focus of this dissertation, Study III examines the associations between unemployment and (chronic) stress, which is an important risk factor for poor physical health (Russell et al., 2012; Stalder et al., 2017). *Stress* can be defined as the "physiological or psychological response to internal or external stressors" (American Psychological Association, n.d.). The psychological stress response is broad and generally associated with feelings of overload, worry, tension, lack of joy, and fatigue (Levenstein et al., 1993). Importantly, however, stress also has a strong physiological component. Specifically, whenever a person is confronted with a stressor (i.e., an actual or perceived condition that causes stress), a well-orchestrated physiological reaction is initiated, which unfolds within two interacting systems.

The first stress system is the sympathetic-adrenal-medullary (SAM) axis, which responds rapidly to stressors in order to enable individuals to confront the initial challenges of stressors (Godoy et al., 2018; Murison, 2016). In particular, the sympathetic nervous system is activated and the adrenal medulla releases (nor)adrenaline, which increases alertness, vigilance and responsivity to stressors (Sharpley, 2009). This process leads to elevated blood pressure and heart rate as well as a re-allocation of energy resources to the musculature and away from vegetative functions (Murison, 2016). The stress response stimulated by the SAM axis is thus highly similar to the fight-or-flight response, which was first described by Cannon (1939).

The second stress system is the hypothalamo-pituitary–adrenocortical (HPA) axis, which is responsible for a lasting stress response. In particular, the HPA axis connects the central nervous system with the hormonal system and supports the organism in maintaining homeostasis after the confrontation with a stressor (Kudielka & Kirschbaum, 2005). The main effector of the HPA axis is the "stress hormone" cortisol, which has widespread effects within the body. For instance, it mobilizes resources to overcome the increased bodily demands

resulting from stressors and modulates critical physiological systems (e.g., the immune system) (Kudielka & Kirschbaum, 2005). Crucially, cortisol is also responsible for terminating the physiological stress response as part of a negative feedback-loop (Godoy et al., 2018). Thus, under normal circumstances the described physiological stress reaction is limited in time and adaptive as it promotes homeostasis despite the presence of stressors. However, a sustained stress response due to chronic stress leads to lastingly increased cortisol levels, which in turn are associated with numerous negative health outcomes (Russell et al., 2012; Stalder et al., 2017). For example, chronic stress was found to be related to cardiovascular disease (Dimsdale, 2008), hypertension (Esler et al., 2008), obesity (Vicennati et al., 2009), type 2 diabetes (Pouwer et al., 2010), reduced fertility (Ebbesen et al., 2009) as well as mental disorders (e.g., Brady & Sinha, 2005; Kim et al., 2007; Lee et al., 2010). Due to its strong negative link to health, the present dissertation will therefore focus on the effects of unemployment on chronic stress. In particular, changes in hair cortisol concentration, which is considered the gold standard method for obtaining a reliable biomarker for chronic stress (Kirschbaum et al., 1990, 2009), as well as changes in self-reported chronic stress, will be examined.

1.2. Unemployment and Subjective Well-Being

The vast majority of studies on the effects of unemployment on well-being have focused on cognitive well-being facets. Research based on nationally representative panel data has found that entering unemployment is associated with mean-level decreases in life satisfaction from the last year in employment to the first year in unemployment (e.g., Clark et al., 2008; Gerlach & Stephan, 1996; Hofmann et al., 2014; Kassenboehmer & Haisken-DeNew, 2009; Lucas et al., 2004; Luhmann & Eid, 2009; L. Winkelmann & Winkelmann, 1998). The detrimental effects of unemployment on life satisfaction were found to be long-lasting and individuals did generally not return to their pre-unemployment levels of life satisfaction even when they regained employment (“scarring effect”, see Clark et al., 2001;

Eberl et al., 2022; Hetschko et al., 2019; in contrast to Zhou et al., 2019). Moreover, the repeated experience of unemployment was found to be associated with greater average decreases in life satisfaction from unemployment spell to unemployment spell ("sensitization effect"; Luhmann & Eid, 2009). In terms of domain satisfaction, research indicated that unemployment is associated with decreased satisfaction with one's job, finances, and social life (Chadi & Hetschko, 2017; Powdthavee, 2012) but increased satisfaction with one's family life and leisure time (Chadi & Hetschko, 2017).

Interestingly, average life satisfaction levels of individuals who enter unemployment were further found to be already decreased years before their job loss (Clark et al., 2008; Luhmann et al., 2013). These prospective effects of unemployment can be attributed to selection effects and anticipation effects. Selection effects occur when pre-unemployment levels of well-being are related to the likelihood of experiencing unemployment. For example, as low well-being can be related to lower productivity (DiMaria et al., 2020; Oswald et al., 2015) companies might lay off dissatisfied (and thus less productive) workers first. Moreover, dissatisfied workers might actively quit their jobs because they want to change their unsatisfying life circumstances (Luhmann & Hennecke, 2017). In contrast, anticipatory effects occur when pre-unemployment well-being levels of individuals are altered because individuals anticipate the negative consequences of unemployment (e.g., financial strain).

Several studies have also examined the effects of unemployment on affective well-being facets. However, they found largely differing results with some studies reported strong increases in affective well-being following unemployment and others steep decreases (Luhmann, Hofmann, et al., 2012). One reason for these divergent results is the large variety of different assessment methods that were used to measure affective well-being. More recent panel studies utilizing retrospective assessments of affective well-being indicated that unemployment has negative effects on sadness, happiness, and anxiety (von Scheve et al., 2017) as well as one's mood (Hentschel et al., 2017). These retrospective assessments of

affective well-being offer important insights into the individual reconstruction of affective experiences; however, they are also prone to recall biases. Thus, the gold standard method to measure affective well-being has become the experience sampling method (Hektner et al., 2007; OECD, 2013), in which individuals are repeatedly asked to indicate their momentary affective states throughout the day via pagers or smartphones. Unfortunately, the experience sampling method is rather difficult to implement so that no longitudinal studies have yet utilized it to investigate the effects of unemployment on affective well-being. As a viable alternative, Kahneman et al. (2004) developed the day reconstruction method, in which respondents are asked to define distinct activity episodes of the past day and to rate their affective states during each episode. In a cross-sectional study applying the day reconstruction method, Knabe et al. (2010) found that average levels of time-weighted measures of affective well-being did not differ between unemployed and employed individuals. Interestingly, however, unemployed individuals experienced more negative relative to positive emotions compared to employed individuals during the same activities (i.e., *saddening effect*). At the same time, unemployed individuals spent more time engaging in generally pleasant activities than employed individuals (i.e., *time composition effect*). The interplay between these two effects has often been cited as the main reason why there are no clear mean-level differences between unemployed and employed individuals in terms of their affective well-being (Dolan et al., 2017; Knabe et al., 2010). In contrast, some studies utilizing the day reconstruction method also suggest that unemployed individuals are indeed significantly sadder and more often in pain compared to employed individuals (Hoang & Knabe, 2021b; Krueger & Mueller, 2012) but also experience higher levels of enjoyment (Hoang & Knabe, 2021a; Wolf et al., 2022).

In sum, it is well documented that unemployment has long-lasting detrimental effects on life satisfaction, the central facet of cognitive well-being. In contrast, unemployment does not seem to robustly affect facets of affective well-being (Dolan et al., 2017; Knabe et al.,

2010, 2017; Schimmack et al., 2008; von Scheve et al., 2017). This phenomenon has been repeatedly explained by stating that unemployment primarily leads to a loss of identity as unemployed individuals do not comply with the social norm of being employed, which is theorized to negatively affect how individuals evaluate their lives but not necessarily how they feel throughout the day (Hetschko et al., 2021; Schöb, 2012; Synard & Gazzola, 2019). Empirical studies supported this idea by showing that average life satisfaction levels increased when unemployed individuals retired (Hetschko et al., 2014) or took up subsidized jobs (Hetschko, Schöb, et al., 2020). Thus, both of these work-rated transitions thus seem to restore the sense of identity. Importantly, this line of thought is also in line with Jahoda's deprivation model (Jahoda, 1982), which posits that a loss of social status and personal identity contributes to the negative effects of unemployment on well-being.

1.3. Unemployment and Eudaimonic Well-Being

Eudaimonic concepts are defining features of several influential theories on unemployment and well-being. For instance, multiple factors described in Jahoda's latent deprivation theory are closely related to eudaimonic constructs. As an example, the latent functions *social activities* and *imposition of a time structure* are closely linked to the dimensions *positive relations with others* and *environmental mastery* of Ryff's model of psychological well-being. Further, Fryer's (1986) agency restriction model postulates that unemployment hinders central agentic features of humans which are closely related to a number of eudaimonic concepts like *sense of purpose*, *personal values*, and *self-determination*. Even though these theoretical accounts underline that eudaimonic well-being is a highly relevant construct in the context of unemployment, empirical evidence for how unemployment affects eudaimonia is largely lacking. Some evidence comes from a longitudinal study by Zechmann et al. (2019) testing an augmented version of Jahoda's latent deprivation model. In this study, unemployed individuals who regained employment showed average increases in *time structure*, *social contact*, *status*, *activity*, *collective purpose*, and

competence but – surprisingly – average decreases in *autonomy*. More evidence highlighting that the transition into unemployment can negatively impact eudaimonic well-being came from an extensive qualitative study of 20 Canadians who had involuntarily lost their jobs in the technology sector between 2000 and 2006 (Synard & Gazzola, 2017). The authors of this study identified six well-being themes that were perceived as being important during a job loss. Three of these themes were closely linked to cognitive well-being (*life evaluation*), affective well-being (*transitory experiencing*), and mental health (*mental ill-being/ill-health*), whereas the remaining three themes termed *growth and grounding*, *environmental mastery and stability,* and *motivational mindsets and conditions* resemble eudaimonic well-being facets.

Interestingly, some cross-sectional studies further showed that life satisfaction of unemployed individuals was higher when they were able to efficiently structure their time and fill their days with purpose (Feather & Bond, 1983; Martella & Maass, 2000; Pavlova & Silbereisen, 2012) indicating that facets of eudaimonic well-being might also buffer the negative effects of unemployment on subjective well-being.

In sum, even though eudaimonic concepts are highly relevant in the domain of work and unemployment from a theoretical perspective, rigorous longitudinal studies examining how unemployment affects eudaimonic well-being facets or whether eudaimonic well-being facets buffer the effects of unemployment on subjective well-being are lacking.

1.4. Unemployment and (Chronic) Stress

Unemployed individuals are confronted with a wide range of stressors like experiencing financial strain (Luo, 2020), not complying with the social norm (Hetschko et al., 2021; Jahoda, 1982), rejections during the job search (Warr, 1987) and family difficulties (Price et al., 1998). Thus, unemployment is often considered a chronic stressor (Sumner & Gallagher, 2017). Further, unemployment and chronic stress have been shown to be associated with similar negative health outcomes such as cardiovascular disease (e.g.,

Dimsdale, 2008; Dupre et al., 2012), reduced fertility (e.g., Currie & Schwandt, 2014; Ebbesen et al., 2009), as well as mental disorders (e.g., Brady & Sinha, 2005; Jefferis et al., 2011). Based on this striking similarity, several authors have suggested that chronic stress might be a pathway through which unemployment affects health (Sumner & Gallagher, 2017). This hypothesis is further strengthened by the robust finding that the actual transition into unemployment and not merely selection effects (i.e., workers in poor health are more likely to become unemployed) drive the negative effects of unemployment on health (e.g., Korpi, 2001; Krug & Eberl, 2018; Norström et al., 2014; Strully, 2009; Sullivan & Wachter, 2009).

Research comparing the perceived stress levels of employed and unemployed individuals consistently found that unemployed individuals report higher average levels of stress than employed individuals (Allott et al., 2013; Klein et al., 2016; Kocalevent et al., 2011; Mantler et al., 2005). However, due to the strong physiological component of stress, it is also important to consider biological stress markers when examining the effects of unemployment. The primary choice for such a biomarker is the hormone cortisol (Kirschbaum et al., 1990, 2009). The few studies examining the effects of unemployment on cortisol yielded highly mixed results and mostly relied on cross-sectional data (for a review see Sumner & Gallagher, 2017). Moreover, most existing studies relied on acute measures of cortisol secretion obtained from plasma, saliva, or urine samples, which are less useful for studying chronic stress exposure (Stalder et al., 2017). In particular, because cortisol levels fluctuate across the day due to a circadian rhythm (Spiga et al., 2014) and situational influences (e.g., food intake or physical activity; see Gibson et al., 1999; Jacks et al., 2002), cortisol levels in plasma, saliva, or urine samples are strongly affected by situation-specific influences (Stalder & Kirschbaum, 2012). In contrast, the analysis of hair cortisol concentration has become a highly reliable and valid method of obtaining a meaningful measure of chronic stress (Kirschbaum et al., 2009). As human hair grows at a fairly predictable rate of 1cm per month, aggregated cortisol levels over multiple months can be

retrospectively examined. The accumulated cortisol secretion in hair over 1 month was shown to be highly correlated with the 30-day average across three daily saliva probes within the same period (Short et al., 2016).

Among those studies utilizing measures of acute cortisol secretion (i.e., plasma and saliva), some found higher cortisol levels in unemployed individuals compared to employed individuals (Arnetz et al., 1991), whereas others found no differences between these groups (Claussen, 1994; Ockenfels et al., 1995). A recent study by Gallagher et al. (2016) even found higher cortisol levels in saliva among employed in comparison to unemployed individuals. The only study examining hair cortisol levels as a measure of chronic stress in the context of unemployment reported that long-term unemployed individuals (i.e., > 12 months of unemployment) had significantly higher hair cortisol levels compared to employed individuals (Dettenborn et al., 2010). Yet, this study was based on cross-sectional data as well as a rather small and selective sample so that more research on the association between unemployment and hair cortisol is needed.

In sum, unemployment has been discussed to cause chronic stress, which in turn is an important risk factor for poor health. However, rigorous longitudinal studies examining whether unemployment has prolonged effects on the physiological stress system are currently lacking.

1.5. Interindividual Differences in the Effects of Unemployment on Well-Being and Stress

Unemployment does not affect everyone alike but there are strong interindividual differences in the reactions to unemployment (e.g., Doré & Bolger, 2018; Reitz et al., 2022). For example, Gielen and Van Ours (2014) reported that only about 50% of individuals actually experienced a decrease in life satisfaction following a transition into unemployment whereas about 25% experienced increases in life satisfaction. However, most of the previous research on interindividual differences in the effects of unemployment was based on life

satisfaction. Longitudinal studies examining a wider range of well-being facets as well as chronic stress are currently lacking.

Still, several studies explored *why* individuals differentially react to unemployment. McKee-Ryan et al. (2005) introduced a helpful taxonomy to structure the various research efforts that aim at exploring sources of interindividual differences in unemployment-related well-being changes. In particular, they proposed the following five categories of well-being correlates during unemployment: *work-role centrality, human capital and demographics*, *cognitive appraisal*, *coping strategies,* and *coping resources*. In the following, this taxonomy will be adapted to summarize the current state of the literature on this topic.

Work-Role Centrality. Individuals strongly differ in their perceptions of how important their work is for their lives (Kanungo, 1982). In line with identity theory (Burke & Stets, 2009), a longitudinal study by Jackson and colleagues (1983) showed that individuals with a high work-role centrality experienced stronger increases in psychological distress after entering unemployment compared to individuals with low work-role centrality. However, modern longitudinal studies that rigorously examine whether work-role centrality moderates the effects of unemployment on well-being are currently lacking even though work-role centrality has been repeatedly discussed as a central moderator in the context of unemployment (see e.g., Lodi-Smith & Roberts, 2007; Reitz et al., 2022).

Human Capital and Demographics. Human capital refers to the economic value of individuals that stems from their knowledge, skills, and abilities (Coff, 2002; Crook et al., 2011). In the context of unemployment, higher human capital (e.g., indicated by higher education) was found to be positively related to re-employment chances, which are in turn related to less negative effects of unemployment on subjective well-being (Clark et al., 2010; Kanfer et al., 2001; McKee-Ryan et al., 2005; Paul & Moser, 2009). Moreover, being married and having a small number of dependents have been discussed as potential protective factors during unemployment; however, the available empirical studies yielded mixed results

(McKee-Ryan et al., 2005; in contrast to Paul & Moser, 2009). Interestingly, males have been consistently shown to have stronger declines in life satisfaction after becoming unemployed than females (e.g., Clark et al., 2008; Kassenboehmer & Haisken-DeNew, 2009), which has been explained by the fact that the social norm to work is less strong for women compared to men (van der Meer, 2014). Regarding age, no clear associations between how unemployment affects well-being have been found (McKee-Ryan et al., 2005; Paul & Moser, 2009).

Cognitive Appraisal. Some individuals perceive unemployment as harmful and threatening, whereas others see it as a challenge or an opportunity to promote their careers (e.g., by finding a better job). Crucially, these individual appraisals are often linked to how individuals react to unemployment and how they cope with it (McKee-Ryan & Kinicki, 2002). When individuals externally attribute their job loss (e.g., to the general economic situation), becoming unemployed was shown to have smaller negative effects on well-being than when individuals blame themselves for their job loss (McKee-Ryan et al., 2005). Moreover, positive re-employment expectations during unemployment were found to be related to less detrimental effects of unemployment on life satisfaction (Clark et al., 2010; Knabe & Rätzel, 2010). In a similar vein, longer unemployment spells have been shown to be associated with stronger negative effects of unemployment on well-being (Hahn et al., 2015; McKee-Ryan et al., 2005; Paul & Moser, 2009). Interestingly, uncertainty about one's (economic) future was also shown to be the main driver of why unemployed individuals feel more stressed than employed individuals (Mantler et al., 2005).

Coping Strategies. To cope with the external and internal demands of unemployment, individuals employ different problem-focused and emotion-focused coping strategies (Lazarus & Folkman, 1984). A central form of problem-focused coping in the context of unemployment is job search. Actively engaging in job search is a strong predictor of re-employment and is thus generally positively correlated with well-being during unemployment (Kanfer et al., 2001; McKee-Ryan et al., 2005; Wanberg, Ali, et al., 2020). However,

intensive job search can also have negative effects on well-being when individuals experience rejections and discouragements (Wanberg, 1997; Warr, 1987). Thus, it is unsurprising that the meta-analysis by McKee-Ryan and colleagues (2005) found no associations between job-search effort and life satisfaction. Interestingly, other forms of problem-focused coping (e.g., enrolling in training programs), as well as emotion-focused coping strategies (e.g., positive reframing), were also not found to moderate the effects of unemployment on well-being (McKee-Ryan et al., 2005).

Coping Resources. Besides differences in the strategies individuals employ to cope with unemployment, individuals also differ in the resources they can draw from in order to effectively cope with unemployment. These coping resources can either be internal (i.e., optimism) or external (i.e., financial savings). In terms of external resources, the availability of financial resources (e.g., alternative income or savings) is one of the main protective factors during unemployment because the experience of financial strain is strongly associated with decreased levels of life satisfaction during unemployment (Luo, 2020; McKee-Ryan et al., 2005; Zechmann & Paul, 2019). Accordingly, unemployment was also found to have stronger detrimental effects in terms of life satisfaction in countries with less generous unemployment benefits (Kamerāde & Bennett, 2018; O'Campo et al., 2015; Voßemer et al., 2018; Wanberg, van Hooft, et al., 2020). Further, experiencing social support has been shown to be positively related to life satisfaction during unemployment (McKee-Ryan et al., 2005). However, social capital (e.g., attending cultural events, engaging in sports, visiting friends) was not found to buffer the effects of unemployment on life satisfaction (R. Winkelmann, 2009). Lastly, even though voluntary work during unemployment does not seem to buffer the negative effects of unemployment on life satisfaction (Griep et al., 2015), maintaining a structured routine and engaging in purposeful activities despite being unemployed has been proposed as an important coping resource in the context of unemployment (Feather & Bond, 1983). Still, comprehensive longitudinal studies on the relationship are lacking.

Considerably less is known about the role of internal coping resources in the context of unemployment. In their meta-analysis, McKee-Ryan et al. (2005) found positive core self-evaluations to be positively related to life satisfaction during unemployment. Core self-evaluations refer to fundamental conclusions individuals have about themselves and are characterized by high self-esteem, generalized self-efficacy, perceived control over one's life, and emotional stability (Judge et al., 1997; Judge & Bono, 2001). However, apart from this broadly defined construct, there are no conclusive findings on specific personal resources that act as protective factors during unemployment. The largest body of research in this regard has examined the role of personality and yielded highly mixed results. Based on German panel data, higher levels of extraversion (Hahn et al., 2015) and lower levels of conscientiousness (Boyce et al., 2010; Hahn et al., 2015) were found to be related to less detrimental effects of unemployment on life satisfaction. Contrarily, analyses based on British panel data indicated that high agreeableness was related to smaller declines in life satisfaction following unemployment (Yap et al., 2012) and none of the Big 5 personality traits were found to moderate the effects of unemployment on positive and negative affect in Australian panel data (Anusic et al., 2014). Besides personality, higher overall subjective well-being levels were found to be related to less pronounced subjective well-being changes following unemployment (Binder & Coad, 2015b, 2015a). This finding suggests that high levels of subjective well-being might be an important resilience factor that enables individuals to better cope with unemployment. Moreover, spirituality and religious attendance were found to buffer the negative impact of unemployment on life satisfaction (Kuhn & Brulé, 2019) and happiness (Hastings & Roeser, 2020).

In sum, existing studies found pronounced interindividual differences in how strongly unemployment affects well-being. However, most studies on this topic focused on life satisfaction (i.e., a cognitive well-being facet) and not much is known about interindividual variability in the effects of unemployment in terms of other well-being facets. Moreover,

research on sources of interindividual differences is still in its infancy so that we are far away from a comprehensive understanding of how situational and personal characteristics shape the way individuals experience unemployment.

1.6. Interim Conclusion and Objectives of Empirical Studies

The above summary of the literature highlights three central findings. First, unemployment differentially affects various dimensions of well-being and stress. Second, the effects of unemployment occur at different stages before and after the job loss. Third, there are large interindividual differences in how individuals react to unemployment. Crucially, however, the summary also indicates that central aspects of how, when, and why unemployment affects well-being and chronic stress are still not well understood. For example, most existing studies solely focused on life satisfaction as their outcome so that evidence on the effects of unemployment on other well-being facets as well as measures of chronic stress is scarce. Moreover, not much is known about the timing of the effects of unemployment in close proximity to a job loss. Lastly, a comprehensive understanding of situational and personal characteristics that moderate the effects of unemployment on well-being and stress is missing. This dissertation aims at addressing these issues in three empirical studies using monthly panel data of initially employed German jobseekers. Before the basic features of the data set are introduced in the next chapter, the objectives of the three empirical studies will be specified below.

1.7. Objectives of Study I

Study I of this dissertation (chapter 3) aims at providing novel insights into the temporal unfolding of the effects of unemployment on various aspects of well-being. The temporal resolution of existing longitudinal studies has generally not been high enough to disentangle anticipatory effects occurring in the months before a job loss from effects occurring immediately after becoming unemployed. Thus, a detailed conception of the effects

of unemployment on well-being occurring in close proximity to a job loss is largely missing. Study I addresses this issue by examining the following two research questions:

1. *Does unemployment have an immediate causal effect on cognitive, affective, and eudaimonic well-being facets from the last month in employment to the first month in unemployment?*
2. *Do individuals' well-being levels adapt to unemployment within the first months of unemployment?*

Specifically, Study I compares individuals who entered unemployment (i.e., event group) to highly similar individuals who remained employed (i.e., control group) in order to approximate the immediate effects of unemployment on cognitive, affective, and eudaimonic well-being facets in a causal framework. This approach makes it possible to isolate the immediate effects of entering unemployment from (a) anticipatory effects occurring before the job loss as well as (b) medium- to long-term effects occurring in the months and years after the job loss. Moreover, by focusing the causal analyses on jobseekers from mass layoffs and plant closures (i.e., external reasons for the job loss) the influence of selection effects is minimized. However, to provide a comprehensive perspective on the immediate effects of unemployment, results are also presented for individuals who lost their jobs due to other reasons. To address the second research questions, mean-level changes of the various well-being facets within the first months of unemployment are determined using a latent variable multilevel model.

1.8. Objectives of Study II

Study II of this dissertation (chapter 4) aims at exploring interindividual differences in unemployment-related well-being changes. The main goal of Study II is to examine whether pre-unemployment levels of psychological well-being buffer the negative effects of unemployment on cognitive and affective well-being in different contexts of unemployment. In particular, existing studies indicated that how individuals attribute and appraise their job

loss is a central predictor for how they react to unemployment (Clark, 2003; Knabe & Rätzel, 2010; McKee-Ryan et al., 2005). Following up on this finding, Study II considers the reason for the job loss and re-employment expectations during unemployment as important contextual characteristics. Specifically, Study II addresses the following two research questions:

1. *Do dimensions of psychological well-being (e.g., personal growth, self-acceptance) moderate the effects of unemployment on cognitive and affective well-being facets?*
2. *Do the associations examined in research question 1 vary depending on why individuals lost their jobs and how they rate their re-employment prospects?*

To answer these research questions, the true (i.e., free of measurement error) unemployment-related changes in the cognitive and affective well-being facets were analyzed in a latent variable multilevel model. All analyses were run separately for individuals who registered as jobseekers due to (a) mass layoffs or plant closures and (b) other reasons. Moreover, re-employment expectations during unemployment were considered.

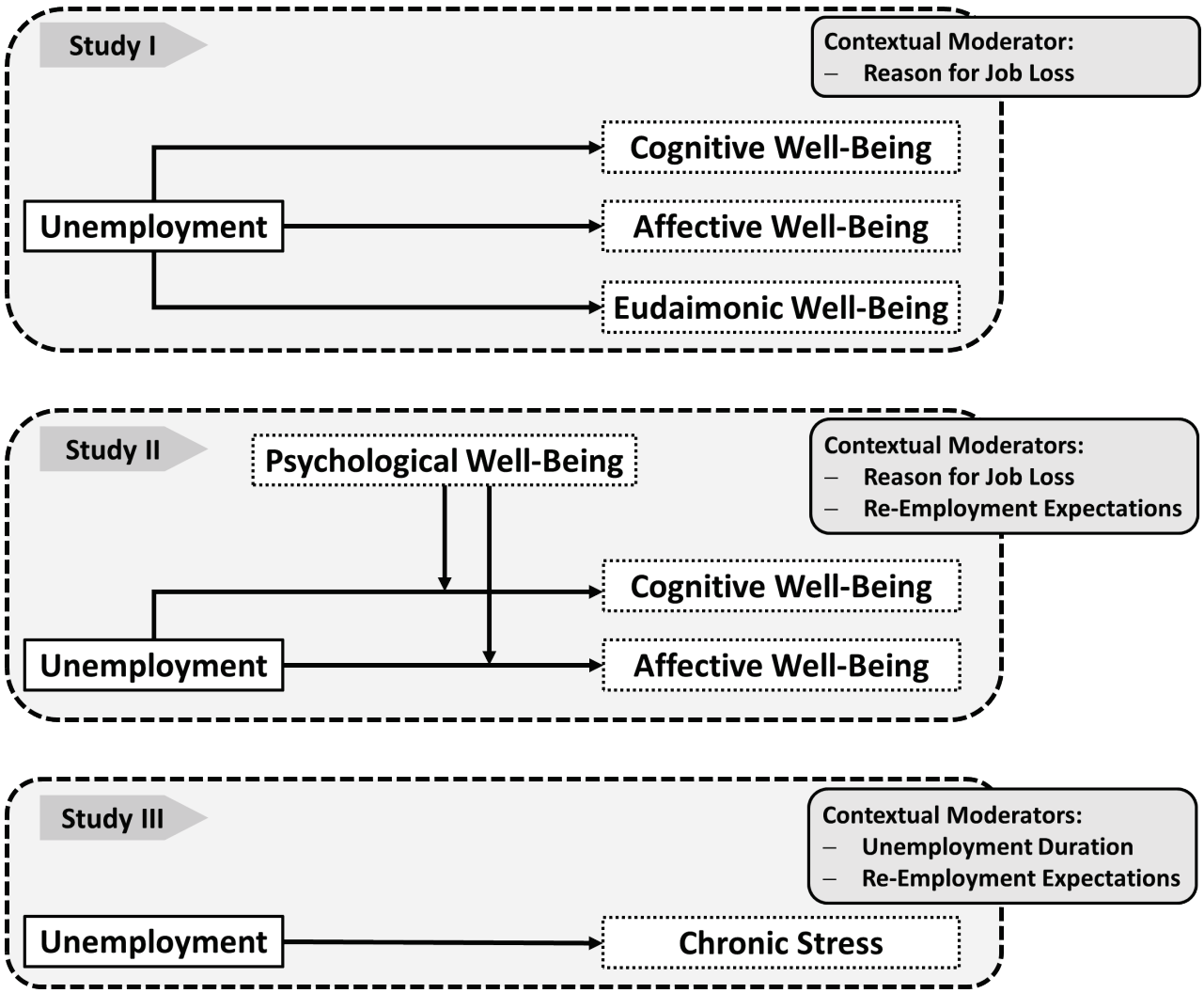
1.9. Objectives of Study III

Study III of the present dissertation (chapter 5) aims at examining how unemployment relates to chronic stress. Specifically, it investigates the associations between unemployment and hair cortisol, a reliable measure of chronic stress, as well as perceived stress. Because the uncertainty about one's (economic) future was shown to be the main driver of why unemployed individuals feel more stressed than employed individuals (Mantler et al., 2005), the unemployment length and re-employment prospects during unemployment are considered as central contextual moderators. Study III examines the following three research question:

1. *Is unemployment associated with changes in hair cortisol levels?*
2. *Do unemployment length (short- vs. medium-term) and re-employment expectations during unemployment moderate the associations examined in research question 1?*
3. *Are hair cortisol and self-rated stress similarly affected by unemployment?*

Unlike existing studies on hair cortisol and unemployment, Study III controls for pre-existing differences in hair cortisol levels and self-reported stress in its analyses. Moreover, by comparing the mean changes in hair cortisol levels of individuals who entered unemployment to comparable individuals who remained employed, it disentangles the changes in hair cortisol that are related to unemployment from general changes occurring over the course of the study. Lastly, changes in hair cortisol are contrasted with changes in perceived stress to examine how these two stress measures are related to each as well as the experience of unemployment.

Figure 1. ***Overview of Studies***



Chapter 2

The German Job Search Panel

2. The German Job Search Panel

All three empirical studies of this dissertation are based on data from the German Job Search Panel (GJSP; Hetschko, Eid, et al., 2020), a monthly smartphone-based panel study of initially employed German jobseekers. In order to provide the necessary context of how the data was gathered I will present a brief overview of the background, recruitment process, included measures, and sample characteristics of the GJSP. Detailed information on the GJSP can be found in Hetschko, Eid, et al. (2020).

2.1. Study Background

The GJSP was carried out within the interdisciplinary research project "The impact of unemployment on various indicators of well-being. An interdisciplinary study of time-varying effects, adaptation and coping strategies based on real-time data", which runs from 2017 to 2023 and is funded by the German Research Foundation (grant numbers: EI 379/11-1, EI 379/11-2, SCHO 1270/5-1, SCHO 1270/5-2, STE 1424/4-1, and STE 1424/4-2). The project is directed by Prof. Michael Eid, Prof. Ronnie Schöb, and Prof. Gesine Stephan and aims at examining the impact of unemployment on various well-being facets in an interdisciplinary setting. The study protocol of the GJSP was approved by the ethics committee of the Department of Education and Psychology at Freie Universität Berlin on Dec 13, 2017.

2.2. Data

2.2.1. Recruitment

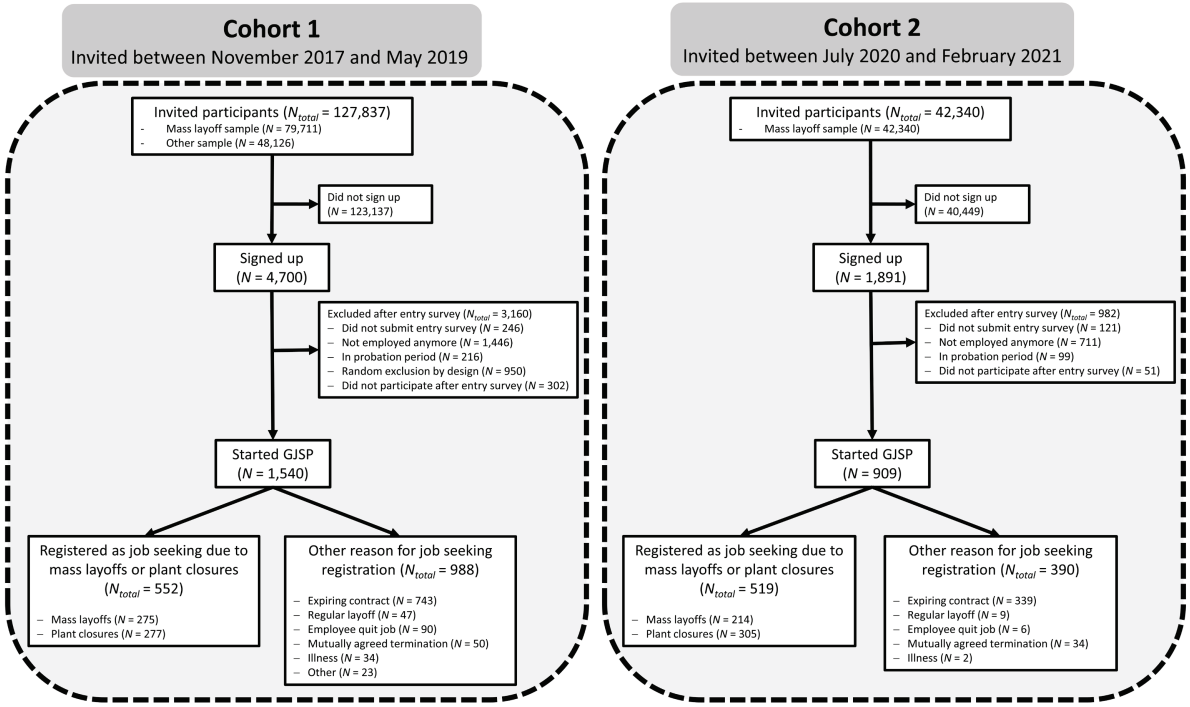
In Germany, employees are required to register as jobseekers at least three months before their expected job loss in order to be eligible for unemployment benefits. If they learn about the termination of their employment at a later point in time, they have 3 days to notify the employment agency. Crucially, only around 60% of individuals who register as jobseekers actually enter unemployment later on (Stephan, 2016). The other individuals either manage to keep their jobs or immediately start a new job without entering unemployment.

The GJSP exploited this job search registration process to recruit initially employed jobseekers who were at high risk of losing their jobs. Specifically, on a monthly basis between November 2017 and May 2019 (i.e., cohort 1) and July 2020 and February 2021 (i.e., cohort 2), workers who registered as jobseekers in the German unemployment insurance system were identified by the Data and IT Management (DIM) unit of the Institute for Employment Research (IAB). Because the GJSP particularly focuses on involuntary job loss, the whole population of jobseekers who were likely to be affected by mass layoffs were identified and contacted within the recruitment periods of the GJSP ($N_{cohort1}$ = 79,711, $N_{cohort2}$ = 42,340). Moreover, between August 2018 and May 2019 random samples (equal in size to the mass layoff samples) of recently registered jobseekers who did not fulfill the requirements of a mass layoff were additionally drawn (N = 48,126) in order to speed up the recruitment process (for details see Hetschko, Eid, et al., 2020). Identified jobseekers were then invited via mail or email to participate in the GJSP (Lawes, Hetschko, Sakshaug, & Grießemer, 2022).

A total of 6,591 individuals (3.87 % of invited individuals) started filling out the online entry survey of the GJSP, which was used to determine whether individuals were eligible to participate in the GJSP. Specifically, individuals had to be still employed in the job out of which they registered as jobseekers and their current employment needed to have lasted for at least 6 months. This procedure ensured (a) at least one measurement occasion before respondents potentially entered unemployment and (b) that participants passed their probation. In addition, 33% of all individuals of the first cohort were randomly excluded after the entry survey to investigate the effects of survey participation on employment-related outcomes (i.e., Hawthorne experiment). After these exclusions, 2,449 individuals ($N_{cohort1}$ = 1,540; $N_{cohort2}$ = 909) eventually started participating in the GJSP (see Figure 2 for flowchart). In the entry survey, individuals were also asked about the reason why they registered as

jobseekers. Based on this information, the sample can be divided into individuals who registered as jobseekers due to (a) mass layoffs or plant closures and (b) other reasons.

Figure 2. ***Participant Flowchart***



2.2.2. Procedure

On a monthly basis, participants received questionnaires via a smartphone app, which ran on Android and iOS (for details see Ludwigs & Erdtmann, 2019). Questionnaires were presented on up to eight consecutive days each survey month to reduce participants' burden and to keep the length of the daily surveys below five minutes. The first cohort was surveyed over 25 months and the second cohort over 13 months. To ensure continuous participation, respondents received 10 euros for each month within the first year of participation if they submitted at least 80% of all monthly survey items. Two additional payments of 40 euros were made after individuals participated for 6 and 12 months. The payment was carried out via a cash transfer or Amazon vouchers. Instead of receiving the cash incentives, respondents could also borrow a smartphone from the study team that was of similar monetary value as the sum of the incentives. Participants could keep the smartphone after actively participating in

the study for at least 1 year. Thus, study participation was also possible for people who had not owned a smartphone before.

2.3. Measures

The GJSP assessed a wide range of well-being and health indicators, numerous psychological constructs, detailed work-related information and socio-economic variables. The survey modules were partly based on the German Socio-Economic Panel (SOEP; Wagner et al., 2007), on the German Ageing Survey (DEAS; Engstler et al., 2013) and on the survey 'The Value of Work' (Knabe et al., 2010). The well-being measures were designed in accordance with the guidelines for measuring subjective well-being provided by the OECD (2013). A detailed list of all questionnaires and their assessment frequencies can be found in Hetschko, Eid, et al. (2020).

2.3.1. Well-Being Facets

Cognitive well-being was assessed using the Satisfaction With Life Scale (Diener et al., 1985) and single-item questions on people's satisfaction with various life domains. Moreover, Cantril's (1965) ladder was presented every three months as general measure of cognitive well-being, which was, however, not used in the present dissertation.

To measure affective well-being, the experience sampling method (Hektner et al., 2007; Larson & Csikszentmihalyi, 1983) was used. In particular, on the last day of each monthly survey wave, participants received six short questionnaires at randomly chosen times throughout the day between 8 a.m. and 9 p.m. During each of these experience sampling episodes, individuals were presented six items from the Multidimensional Mood State Questionnaire (Steyer et al., 1994; Steyer, Schwenkmezger, et al., 1997) for the assessment of momentary affect. If respondents completed less than three ESM episodes, the ESM module was repeated 2 days later. In addition, respondents received a German version of the Center for Epidemiological Studies Depression Scale (Hautzinger, 1988; Hautzinger et al., 2012; Radloff, 1977), which assesses depressive symptoms within the past week. Lastly, every three

months an electronic version of the day reconstruction method (Kahneman et al., 2004) was used to measure affective well-being. Specifically, respondents were asked to split up their previous day into distinct episodes and to rate how *happy*, *nervous*, *sad*, *worried*, *enthusiastic*, *bored*, *lonely*, and *stressed* they felt during each episode. Data gathered with the day reconstruction method is, however, not considered in this dissertation.

Eudaimonic well-being was assessed with an adapted 24-item version of a German translation of the Ryff-Scale for Psychological Well-Being (Risch et al., 2005; Ryff, 1989). The short form was obtained by applying a confirmatory factor analysis in combination with an ant algorithm in a large sample of individuals who responded online to the 54-item version of the Ryff-Scale (Schultze, 2017). As a second measure of eudaimonic well-being, individuals indicated during each experience sampling episode if their current activity had a deeper meaning based on two items.

2.3.2. Stress

Self-reported stress was assessed by asking respondents to indicate how often they felt 'overburdened' and 'stressed' within the last week. Moreover, five hair samples were collected on a quarterly basis from willing and eligible respondents within the first 13 survey months of the GJSP (for details see Lawes, Hetschko, Sakshaug, & Eid, 2022). Based on these hair samples, the Dresden Lab Service determined the cortisol concentration in the 3 cm hair segment closest to the skull using immunoassays to obtain a measure of the cumulated cortisol exposure over the last three months (Kirschbaum et al., 2009).

2.3.3. Further Psychological Constructs

Besides the previously mentioned measures, several other questionnaires were part of the GJSP. For example, selected items of the Proactive Coping Inventory (Schwarzer et al., 2000), the Work-Related Patterns of Behavior and Experience Questionnaire ("Arbeitsbezogene Verhaltens- und Erlebensmuster", AVEM; Schaarschmidt & Fischer, 2008), the Berlin Social Support Scales (Schulz & Schwarzer, 2003), and a questionnaire on

mood regulation (Lischetzke & Eid, 2003) were presented. However, none of them are part of this dissertation.

2.3.4. Employment-Related Questions

To obtain detailed insights into the employment situation of individuals, respondents were asked monthly about their employment status and their employment-related expectations for the future. Moreover, employed individuals received detailed questions about their job characteristics and unemployed individuals were asked about their job search efforts and their reemployment planning.

2.3.5. Administrative Data

A central feature of the GJSP is that its survey data can be linked to the administrative records of the German Federal Employment Agency (if respondents have given their consent). The administrative records contain detailed additional information such as individuals' employment history or participation in labor market policy schemes.

2.4. Sample Characteristics, Selective Participation, and Panel Attrition

The administrative data collected during the job seeking registration process (i.e., shortly before people received the study invitation) can be used to characterize the sample of all identified jobseekers as well as of individuals who were willing and eligible to participate in the GJSP. Table 1 presents these descriptive statistics for both cohorts. In addition, patterns of selective participation can be examined by comparing individuals who did not sign up for the GJSP ("non-participants") with individuals who were willing and eligible to participate in the GJSP ("participants"). This seems particularly relevant given the low sign-up rates. In both GJSP cohorts, participants were significantly younger, more often female, better educated and earned higher wages compared to non-participants. Further, participants had less work experience and more often a part-time job than non-participants. However, non-response analyses based on the first cohort indicated that the aggregated bias resulting from selective participation is comparably small (for details see Hetschko, Eid, et al., 2020).

Table 1

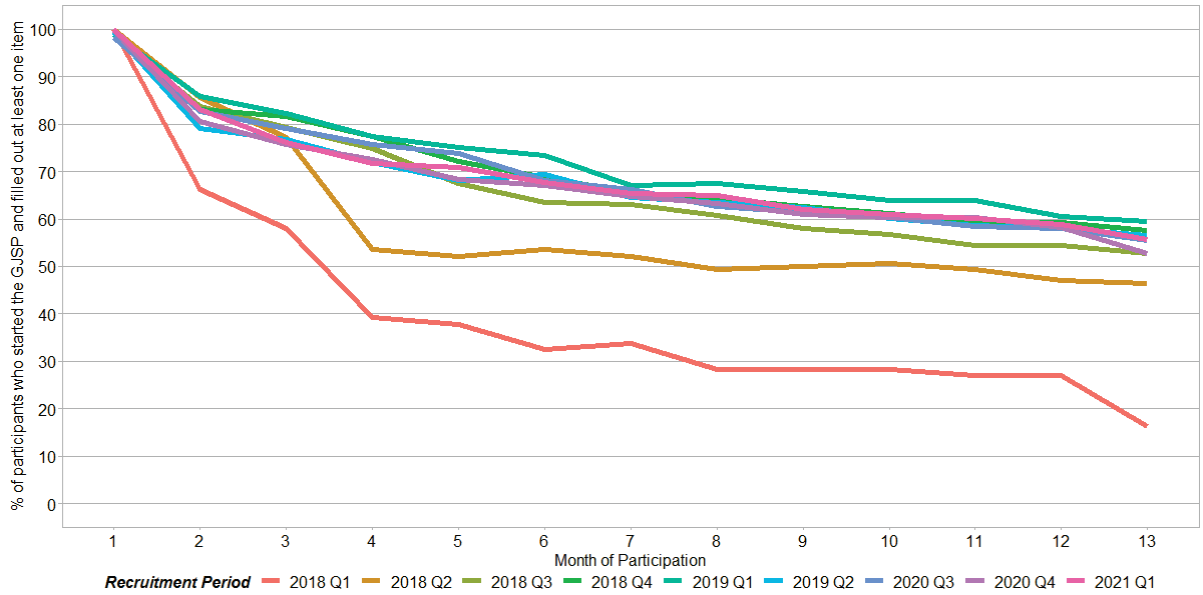
Overview of GJSP Sample

	Cohort 1				Cohort 2			
	Invited Sample		GJSP Participants		Invited Sample		GJSP Participants	
	Mean (SD)	*N*	Mean (SD)	*N*	Mean (SD)	*N*	Mean (SD)	*N*
Age in years	41.25 (11.23)	127,201	**38.62** (10.26)	1,873	41.96 (11.09)	42,294	**39.82** (10.37)	959
Employee tenure in years	3.51 (4.81)	123,095	3.47 (4.23)	1,826	5.76 (6.56)	41,346	**5.00** (5.59)	940
Employment history (over past 10 years)								
Years in regular employment	7.28 (2.56)	122,663	**6.78** (2.66)	1,824	8.04 (2.40)	41,120	**7.44** (2.61)	939
Years receiving unemployment benefits	0.49 (0.69)	122,663	**0.33** (0.55)	1,824	0.25 (0.51)	41,120	**0.17** (0.41)	939
Years receiving welfare benefits	0.70 (1.71)	122,663	**0.47** (1.34)	1,824	0.35 (1.19)	41,120	**0.25**** (1.00)	939
Years as jobseeker	1.66 (2.06)	122,663	**1.31** (1.76)	1,824	0.90 (1.57)	41,120	**0.72** (1.37)	939
Years participating in policy schemes	0.28 (0.67)	122,663	**0.19** (0.55)	1,824	0.14 (0.47)	41,120	**0.09** (0.37)	939
Female (share)	0.40 (0.49)	127,198	**0.51** (0.50)	1,873	0.34 (0.48)	42,288	**0.46** (0.50)	959
Highest level of qualification (shares)								
Missing	0.00 (0.00)	127,201	0.00 (0.00)	1,873	0.00 (0.01)	42,294	0.00 (0.00)	959
None	0.05 (0.21)	127,201	**0.02** (0.12)	1,873	0.05 (0.21)	42,294	**0.01** (0.12)	959
Vocational training	0.61 (0.49)	127,201	**0.30** (0.46)	1,873	0.56 (0.50)	42,294	**0.27** (0.45)	959
A-levels	0.01 (0.11)	127,201	0.01 (0.12)	1,873	0.01 (0.12)	42,294	0.02 (0.14)	959
A-levels and vocational training	0.14 (0.34)	127,201	**0.19** (0.39)	1,873	0.14 (0.35)	42,294	0.14 (0.35)	959
Tertiary degree	0.19 (0.39)	127,201	**0.48** (0.50)	1,873	0.24 (0.43)	42,294	**0.55** (0.50)	959
Mass layoff sample	0.62 (0.48)	127,201	0.63 (0.48)	1,873	1.00 (0.00)	42,294	1.00 (0.00)	959
Employment status (shares)								
Employed subject to social insurance contributions	0.97 (0.18)	127,201	0.97 (0.16)	1,873	0.98 (0.13)	40,930	0.98 (0.13)	917
Marginally employed	0.00 (0.04)	127,201	0.00 (0.03)	1,873	0.00 (0.03)	40,930	0.00 (0.03)	917
Other (i.e., apprenticeship)	0.03 (0.17)	127,201	0.02 (0.15)	1,873	0.02 (0.13)	40,930	0.02 (0.12)	917
Part-time job (share)	0.24 (0.43)	123,095	**0.33** (0.47)	1,826	0.20 (0.40)	41,346	**0.31** (0.46)	940
Daily wage in euro	92.99 (42.23)	120,266	**108.01** (47.75)	1,795	112.05 (47.38)	40,811	**125.87** (50.00)	933
Total Number of Individuals	127,201		1,873		42,294		959	

Note. Numbers printed in bold indicate that the sample mean of GJSP participants significantly differs from the sample mean of non-participants. Because parts of the administrative data were not yet processed, sample sizes (*N*) used to compute the means and standard deviations (SD) vary across variables. The sample sizes of the GJSP participants differ from those reported in Figure 2 because some individuals who were first considered eligible had to be excluded after further checks (e.g., individuals were initally included even though they were already unemployed during the entry survey).

Moreover, once participants started the GJSP, they generally also participated for some time. Panel attrition over the first 13 monthly survey waves is depicted in Figure 3. This figure also shows that individuals recruited early in the project (e.g., in the first two quarters of 2018) dropped out of the study quicker than individuals who were recruited later. This is likely due to the improvements made to the study invitations, the incentive scheme as well as the survey app (for details see Hetschko, Eid, et al., 2020; Lawes, Hetschko, Sakshaug, & Grießemer, 2022).

Figure 3. ***Participation of Individuals who Started the GJSP***



2.5. Summary

The German Job Search Panel is a monthly panel study on initially employed German jobseekers who are at high risk of losing their job. Monthly data was collected on various indicators of well-being and stress using state-of-the-art methods (e.g., experience sampling and hair cortisol) before and after a job loss. Further, the novel recruitment strategy of the GJSP makes it possible to compare individuals who became unemployed (i.e., event group) to individuals who stayed employed but were initially also at risk of losing their job (i.e., control group). Together these features offer unique opportunities to conduct detailed analyses on the effects of unemployment on well-being and stress

Chapter 3

The Impact of Unemployment on Cognitive, Affective, and Eudaimonic Well-Being Facets: Investigating Immediate Effects and Short-Term Adaptation (Study I)

This article was published as:

Lawes, M., Hetschko, C., Schöb, R., Stephan, G., & Eid, M. (2022). The impact of unemployment on cognitive, affective, and eudaimonic well-being facets: Investigating immediate effects and short-term adaptation. *Journal of Personality and Social Psychology*. Advance online publication. https://doi.org/10.1037/pspp0000417

The supplementary materials of this article are presented in Appendix A.

Chapter 4

Interindividual Differences in Unemployment-Related Changes in Subjective Well-Being: The Role of the Reason for the Job Loss, Re-Employment Expectations and Psychological Well-Being (Study II)

This chapter has been submitted for publication as:

Lawes, M., Hetschko, C., Schöb, R., Stephan, G., & Eid, M. (2022). *Examining interindividual differences in unemployment-related changes of subjective well-being: No moderation effects of psychological well-being across various unemployment contexts.* Manuscript submitted for publication.

The supplementary materials of this article are presented in Appendix B.

Interindividual Differences in Unemployment-Related Changes in Subjective Well-Being: The Role of the Reason for the Job Loss, Re-Employment Expectations and Psychological Well-Being

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Acknowledgements

We gratefully acknowledge financial support by the German Science Foundation (grants EI 379/11-1, SCHO 1270/5-1, and STE 1424/4-1). Mario Lawes is a pre-doctoral fellow of the International Max Planck Research School on the Life Course (LIFE, www.imprs-life.mpg.de). The authors are grateful to the Data and IT Management (DIM) unit of IAB for encompassing support in identifying and contacting the survey population. Moreover, we thank Kai Ludwigs for providing valuable feedback throughout the project and Ana Tomova and Felix Schwickert for their feedback on an earlier version of the manuscript. Mario Lawes played lead role in data curation, formal analysis, investigation, project administration, visualization and writing of original draft and equal role in methodology. Clemens Hetschko played lead role in conceptualization and equal role in funding acquisition, investigation, and project administration, as well as supporting role in reviewing and editing the draft. Ronnie Schöb played supporting role in project administration and reviewing and editing the draft and equal role in conceptualization and funding acquisition. Gesine Stephan played supporting role in project administration and reviewing and editing the draft and equal role in conceptualization and funding acquisition. Michael Eid played lead role in supervision and equal role in conceptualization, funding acquisition, methodology, project administration and reviewing and editing the draft.

Data Availability

This study's design and its analyses were not preregistered. Analysis scripts and full model results are available at https://osf.io/n6gsw/?view_only=4a0427ea78f84cb8bd33628798ad92f3.

The data that support the findings of this study are available for researchers upon reasonable request.

Abstract

Using monthly panel data of initially employed German jobseekers who are at high risk of losing their jobs, this study examined whether dimensions of psychological well-being (PWB, e.g., *autonomy*, *environmental mastery*) buffer the negative effects of unemployment on various facets of subjective well-being (SWB, i.e., *life satisfaction*, *momentarily experienced mood*). Because the context of unemployment is an important predictor of how strongly unemployment affects SWB, we distinguished between individuals who lost their jobs due to (a) mass layoffs or plant closures and (b) other reasons. Moreover, we accounted for the re-employment expectations during unemployment.

The results show that losing one's job due to a mass layoff or plant closure, as well as having low re-employment expectations during unemployment had particularly detrimental effects on life and income satisfaction. In contrast, when re-employment expectations were high, unemployment was associated with less pronounced negative effects and even several positive effects on SWB (e.g., increases in leisure satisfaction). However, dimensions of PWB did generally not moderate the effects of unemployment on SWB indicating a general absence of buffering effects of PWB in the context of unemployment. Thus, the specific circumstances surrounding unemployment warrant more attention when examining the effects of unemployment on SWB.

Keywords: subjective well-being, eudaimonia, unemployment, re-employment expectation, buffer variable

Practitioner Points

- Individuals strongly differ in how strongly unemployment affects their subjective well-being
- Dimensions of psychological well-being (e.g., autonomy, environmental mastery) do not moderate the relationship between unemployment and subjective well-being
- However, re-employment expectations during unemployment and the reason for the job loss play a central role for how severely unemployment changes subjective well-being
- Overall, the results emphasize that individual resources only play a secondary role in how individuals experience unemployment and that situational characteristics (e.g., re-employment expectations) seem to be the main predictor for how individuals react to unemployment.

Interindividual Differences in Unemployment-Related Changes in Subjective Well-Being: The Role of the Reason for the Job Loss, Re-Employment Expectations and Psychological Well-Being

On average unemployment is associated with drastic detrimental effects for subjective well-being (SWB) (for meta-analyses see Luhmann et al., 2012; McKee-Ryan et al., 2005; Paul & Moser, 2009). This is particularly true for cognitive well-being (CWB), the most commonly analyzed part of SWB, which captures how people evaluate their life overall (i.e., life satisfaction) and certain aspects of it (e.g., job satisfaction) (Diener, 1984). Still, research indicated that there are large interindividual differences in how strongly individuals CWB levels change in reaction to unemployment. For example, Winkelmann (2009) and Gielen and Van Ours (2014) reported that only about 50% of individuals in a representative German sample actually experienced a decrease in life satisfaction following a transition into unemployment. Gielen and Van Ours (2014) further reported that about 25% of the panelists even experienced increases in life satisfaction following unemployment. However, longitudinal studies examining *why* individuals differentially react to unemployment in terms various SWB facets are currently missing. The present study aims at addressing this shortcoming in the literature by investigating whether dimensions of psychological well-being (PWB) buffer the effects of unemployment on a wide range of SWB facets in various contexts. We begin this article by summarizing the extant literature on situational characteristics and personal resources that have been discussed as moderator variables in the context of unemployment. Then, we motivate why PWB facets might act as protective factors during unemployment and describe the aims and contributions of the study before presenting the study methods and results. Lastly, we discuss our findings in the context of the existing literature and derive implications for future studies.

The way how individuals attribute their job loss has been shown to be an important predictor for how strongly unemployment affects SWB (McKee-Ryan et al., 2005). In

particular, internally attributing a job loss has been shown to be negatively related to CWB outcomes (e.g., Prussia et al., 1993), whereas when individuals can attribute their job loss to external factors (e.g., general economic situation) the effects of unemployment on CWB seem to be less detrimental (e.g., Clark, 2003). The (expected) length of unemployment has been shown to be another central moderating factor in the context of unemployment (McKee-Ryan et al., 2005; Paul & Moser, 2009). Specifically, studies indicated that when individuals are or expect to be unemployed for only a short time, the harmful effects of unemployment on life satisfaction are less pronounced (Clark et al., 2010; Hahn et al., 2015; Knabe & Rätzel, 2010). In addition, several other situational characteristics have been discussed as moderator variables for the effects of unemployment on SWB. These include the experienced financial strain (e.g., Luo, 2020), the type of employment before the job loss (e.g., Hetschko, 2016), general expectations about the future (e.g., Creed & Klisch, 2005), and the availability of educational opportunities for unemployed individuals (Högberg et al., 2019). In addition, at the individual level, gender has been consistently found to moderate the effects of unemployment on CWB (Paul & Moser, 2009). Specifically, males show stronger declines in life satisfaction after becoming unemployed than females (e.g., Clark et al., 2008; Kassenboehmer & Haisken-DeNew, 2009; van der Meer, 2014).

Moreover, several studies aimed at investigating individual resources that might act as protective factors or buffer variables during unemployment. This line of research is rooted in the broader literature on resilience (Bonanno, 2004; Rutter, 1987) and psychological resources (Hobfoll, 2002; Luthans & Youssef, 2004) and is based on the idea that some individuals are equipped with certain resources that help them reduce the impact of negative life events on well-being. However, evidence for such protective individual characteristics that moderate the effects of unemployment on SWB is scarce. The largest body of research in this regard has examined the role of personality and yielded highly mixed results. Unemployment is associated with stronger decreases in life satisfaction when individuals

score high on conscientiousness (Boyce et al., 2010; Hahn et al., 2015) and low on extraversion (Hahn et al., 2015), according to analyses of German panel data. Contrarily, Yap et al. (2012) reported that individuals who score higher on agreeableness show significantly smaller declines in life satisfaction based on British panel data. Anusic et al. (2014) found that none of the personality traits moderated the effects of entering unemployment on life satisfaction, positive affect or negative affect using Australian panel data. Besides personality, higher overall life satisfaction levels have been shown to be related to less pronounced changes in life satisfaction following unemployment (e.g., Binder & Coad, 2015a). Moreover, spirituality and religious attendance were found to buffer the negative impact of unemployment on life satisfaction (Kuhn & Brulé, 2019) and happiness (Hastings & Roeser, 2020). Interestingly, several studies have also failed to find moderating effects in their investigation of individual resources in the context of unemployment. For example, Infurna et al. (2016) found that perceived control prior to unemployment did not moderate the effect of unemployment on life satisfaction. Winkelmann (2009) reported that social capital (e.g., attending cultural events, engaging in sports, visiting friends) did not buffer the effect of unemployment on life satisfaction.

Overall, the extant evidence on individual resources that buffer the negative effects of unemployment on SWB is scarce and inconsistent. This is particularly apparent when we broaden the perspective on SWB beyond CWB. Affective well-being (AWB) is the second dimension of SWB, which is defined as experiencing positive feelings frequently and negative feelings infrequently (Diener, 1984; Larsen & Eid, 2008). While the impact of unemployment on AWB has been examined, notably with much less clear results compared to CWB (Hoang & Knabe, 2021), it remains unclear which individual-level characteristics modify the sign and strength of the impact. In addition, existing studies investigating potential buffer variables during unemployment generally did not take the specific context of unemployment into account. It is, however, reasonable to believe that certain buffer variables

only start to play a role when unemployment is perceived as highly negative (e.g., involuntary unemployment with low re-employment prospects).

Psychological Well-Being as a Potential Buffer Variable

The concept of PWB was proposed by Carol Ryff (1989) and is rooted in the *eudaimonic* perspective on well-being, which goes back to Aristotle's Nicomachean Ethics (Aristotle, 2001). Ryff's PWB model defines well-being by the following six dimensions: *autonomy*, *environmental mastery*, *personal growth*, *positive relations with others*, *purpose in life*, and *self-acceptance*. PWB facets have been shown to be highly stable trait-like constructs, which differ from SWB facets in terms of their temporal stability (Ryff et al., 2015) as well as their associations with other variables (Ryff, 1989). Empirical evidence on whether PWB acts as a protective factor for individuals experiencing critical life events is scarce. Burns & Machin (2013) reported that experiencing critical life events that are perceived as impactful (e.g., close family member died) led to smaller increases in negative affect if individuals scored high on *positive relations with others*. However, no such effects were found for positive affect or for the other examined PWB facets (i.e., *autonomy* and a general PWB factor comprised of *environmental mastery*, *personal growth*, *purpose in life*, and *self-acceptance*). Moreover, *environmental mastery* was found to be related to fewer depressive symptoms for daughters who provided care for their aging parents (Li et al., 1999) as well as a better adaptation to conjugal loss (Montpetit et al., 2006). In addition, *social support*, which is a related construct to *positive relations with others*, has been extensively studied as a buffer variable during the experience of adverse life events (Alloway & Bebbington, 1987; Anusic & Lucas, 2014; Gore, 1978; Lin et al., 1985; Shams, 1993; Ullah et al., 1985; Wilcox, 1981). Longitudinal studies investigating the role of social support are missing.

In the context of unemployment, only few studies examined the role of PWB. Cross-sectional studies found that life satisfaction of unemployed individuals was higher when they

felt that they efficiently structure their time and fill their days with purpose (Feather & Bond, 1983; Martella & Maass, 2000; Pavlova & Silbereisen, 2012), which provides some evidence for the potential buffering role of *environmental mastery* and *purpose in life* during unemployment. Moreover, concepts that are closely related to PWB dimensions play a central role in influential theories aiming to explain why unemployment leads to lower well-being. For example, Jahoda's latent deprivation model (1982) posits that among other factors, the lack of *participation in a collective purpose*, *social activities*, and *imposition of a time structure* (which are closely linked to the PWB dimension *purpose in life*, *positive relations with others*, and *environmental mastery*) are the reasons why individuals suffer during unemployment. Empirical evidence for the latent deprivation model comes from multiple cross-sectional (e.g., Paul et al., 2009; Paul & Batinic, 2010) and longitudinal studies (e.g., Hoare & Machin, 2010; Zechmann & Paul, 2019). However, in a recent study Lawes et al. (2022) found that PWB dimensions were highly stable and not immediately affected by unemployment indicating that PWB dimensions do not mediate the relationship between unemployment and SWB facets. Nevertheless, due to their trait-like properties, PWB dimensions might act as buffer variables in the context of unemployment.

In sum, several studies have provided evidence for the potential protective role of PWB facets in various contexts. However, a comprehensive understanding of the role of PWB in the context of critical life events, particularly in the context of unemployment, is lacking. Accordingly, Ryff (2014, S. 24) concluded that "[m]uch future work remains to be done in probing hypotheses about how eudaimonic well-being affords protection under diverse conditions of challenge".

The Present Study

The main goal of this study is to explore whether pre-unemployment PWB levels buffer the negative effects of unemployment on SWB facets in various contexts of

unemployment. We expect that PWB dimensions are positively related to unemployment-related changes in various SWB facets.

A particular focus of our analyses is on the context of unemployment. Thus, we consider two samples in our analyses. The first sample consists of individuals who registered as jobseekers due to expected mass layoffs or plant closures. The second sample consists of individuals who registered as jobseekers due to other reasons (e.g., expiring contract). Individuals in the first sample have little control over their situation as their potential job loss is likely involuntary and heavily depends on external factors (e.g., investor saved company vs. company went bankrupt). In contrast, in the second sample, the reasons why individuals might enter unemployment are diverse. It is likely that many individuals in this second sample had more control over their situation, were better able to anticipate a potential transition into unemployment. Some individuals likely even gave up their jobs voluntarily. However, individuals in the second sample are also less able to externalize the reason for their job loss. As individuals' appraisals of their unemployment situation likely vary between the two samples, as well as within the second sample, we expect the effects of unemployment on SWB to differ between the two samples, too (see also Haehner et al., 2022; Luhmann et al., 2021). However, due to the lack of existing literature, we refrain from deriving expectations on how the two samples differ in terms of the buffering role of PWB on the unemployment-related SWB changes.

As differences in re-employment expectations have been shown to be important predictors for how unemployment affects SWB (e.g., Clark et al., 2010; Knabe & Rätzel, 2010), we will not only differentiate between episodes of employment and unemployment but also between unemployment episodes with high vs. low re-employment expectations. This way, we can examine whether the potential protective effects of the PWB dimensions vary between unemployment episodes with high re-reemployment expectations and episodes with low re-employment expectations. In particular, it could be that PWB only starts to play a

protective role when unemployment is perceived as highly adverse (i.e., being unemployed after a mass layoff with low re-employment expectations). Due to the lack of literature on this topic, we explore this issue in an exploratory fashion without deriving specific hypotheses.

In addition, this study aims at providing detailed insights into average unemployment-related SWB changes as well as interindividual differences in these changes (i.e., effect heterogeneity) across various SWB facets and the described contexts of unemployment. Based on earlier findings (Lawes et al., 2022), we hypothesize that the effects of unemployment on SWB are on average more detrimental for individuals from companies conducting mass layoffs or plant closures compared to individuals who lost their jobs due to other reasons. With regard to re-employment expectations, we expect that unemployment is associated with more detrimental average effects on SWB when re-employment expectations are low compared to when they are high.

While most existing longitudinal studies on the effects of unemployment on SWB facets relied on yearly panel data and focused on how unemployment affects life satisfaction, we base our analyses on monthly German panel data and examine a wide range of cognitive and affective well-being facets. In addition, existing studies generally applied statistical models that do not separate systematic unemployment-related SWB changes from unsystematic SWB changes due to situation-specific influences or measurement error. In the present study, we utilized a flexible latent variable multilevel model, which allows us to adequately analyze the true (i.e., free of measurement error) unemployment-related changes in the SWB facets.

Methods

Data

The analyses are based on data from the German Job Search Panel (GJSP; Hetschko et al., 2020), a monthly panel study of initially employed German jobseekers. Over up to 25 months, monthly questionnaires assessing a wide range of information were presented via a

specifically developed smartphone app, which runs on Android and iOS (for details on the survey app see Ludwigs & Erdtmann, 2019). The study was approved on Dec 13, 2017 by the ethics committee of the Department of Education and Psychology at Freie Universität Berlin

Recruitment Process

Between November 2017 and May 2019, 127,836 German employees aged 18 to 60 who registered as jobseekers with the German Employment Agency were invited via mail or e-mail to participate in the GJSP (Hetschko et al., 2020; Lawes et al., 2021). 79,710 of the identified jobseekers were likely to be affected by mass layoffs or plant closures and 48,126 registered as jobseekers from other companies (for details see Hetschko et al., 2020). To recruit its participants, the GJSP exploited the German job seeking registration process, which requires employees to register as jobseekers at least three months prior to their expected job loss. Individuals who find out later about the termination of their employment have to register as jobseekers within three days. Not registering as a jobseeker prior to becoming unemployed might lead to a cut-off period for unemployment benefits. Crucially, around 40% of individuals who register as jobseekers do not enter unemployment later on because they manage to stay in their jobs or immediately start a new job without entering unemployment (Stephan, 2016).

An online entry survey was used to determine the eligibility of interested individuals. Individuals who had already entered unemployment or who had been employed for less than six months were excluded to ensure at least one measurement occasion before respondents potentially entered unemployment as well as to ensure that participants passed their probation. Additionally, one third of all individuals were randomly excluded after the entry survey to investigate the role of survey participation on employment-related outcomes. In total, 4,700 (3.68%) individuals started the entry survey, from whom 1,540 (1.20%) were included in the GJSP sample. Although the sign-up rates seem low, the overall selection bias of the sample was small (Hetschko et al., 2020).

Samples

We ran all analyses separately for individuals who reported that they registered as jobseekers due to mass layoffs or plant closures ($N = 562$) and individuals who registered as jobseekers due to other reasons ($N = 988$). Individuals from mass layoffs or plant closures were likely to have registered as jobseekers due to external reasons (e.g., company went bankrupt). Thus, for these individuals, potential job loss was likely involuntary and unrelated to low productivity or individual characteristics (e.g., personality). Contrarily, among individuals who registered as jobseekers due to reasons other than mass layoffs or plant closures, it is more likely that some individuals voluntarily gave up their job in order to transition into a better job, enjoy a sabbatical or enter early retirement. Moreover, individual characteristics are more likely to have played a role for the likelihood of entering unemployment in this group.

In sum, at the first wave of the GJSP all individuals were employed jobseekers who were at high risk of losing their job. Some of these jobseekers actually lost their jobs in subsequent waves whereas others managed to stay employed. The longitudinal design of the GJSP allows for tracking the well-being changes of individuals over time and relating these changes to the experienced employment transitions.

Measures

The wordings of all utilized questionnaire items are presented in Materials S1 in the supplementary materials.

Employment Status

Each monthly survey wave, respondents were asked about their current employment status. Individuals were categorized as being *employed*, when they were employed or self-employed, and as *unemployed*, when they were unemployed. Moreover, individuals who took part in public subsidy programs or occupational retraining were categorized as *participants of active labor market policies (ALMPs),* and individuals who were in occupational training,

school or university, unable to work (i.e., due to illness) or retired were categorized as *individuals with other non-employment*. The same was true for individuals who chose the category "other" in the employment question.

Re-Employment Expectations

In survey waves, in which respondents indicated that they were unemployed, they were asked to respond to the question "How likely is it that you will start a paid job within the next three months?" using an 11-point rating scale ranging from 0% to 100%. Figure S1 in the supplementary materials presents the distribution of this variable across all episodes of unemployment. For the present study, we dichotomized the variable into two groups: 0% - 50% (i.e., low re-employment expectation) and 60% - 100% (i.e., high re-employment expectation). This approach allowed us to divide the unemployment episodes into two parts of similar size.

Life satisfaction

Life satisfaction was assessed with the Satisfaction With Life Scale (SWLS; Diener et al., 1985) at each monthly wave of the GJSP. Participants responded to five items using a 7-point rating scale ranging from *strongly disagree* (1) to *strongly agree* (7). Only items 1, 2 and 3 of the SWLS were used in the present study because items 4 and 5 have poorer psychometric properties (Diener et al., 1985; Kjell & Diener, 2021; Pavot & Diener, 2009) and refer to longer time periods (e.g., "If I could live my life over, I would change almost nothing."). We used item three ("I am satisfied with my life.") as the reference item.

Domain Satisfaction

Participants rated their satisfaction with their *activities in the household*, *household income, leisure time* and *family life* on an 11-point rating scale ranging from *completely dissatisfied* (0) to *completely satisfied* (10). The items were based on the items used in the SOEP (Wagner et al., 2007). Before December 2018, these items were administered quarterly, afterwards on a monthly basis.

Momentary Mood

We used the experience sampling method (ESM; Hektner et al., 2007) to assess momentary mood as a measure of AWB. At the last day of each monthly survey wave, participants received six short ESM questionnaires at randomly chosen times throughout the day between 8am and 9pm. If respondents completed less than three ESM episodes, the ESM module was repeated two days later. At each ESM episode six items from the Multidimensional Mood State Questionnaire (MDSQ, Steyer et al., 1994, 1997) were presented. The MDSQ is a three-dimensional measure of AWB and allows assessing the following mood states: *happy*, *calm* and *awake*. Each AWB dimension was assessed with one positively worded item (e.g., "In the moment I feel happy.") and one negatively worded item (e.g., "In the moment I feel unhappy."). Individuals rated each statement on a 5-point rating scale ranging from *not at all* (1) to *very much* (5). For the present analyses, the responses to each MDSQ item were averaged across the submitted ESM episodes of a given survey day. For respondents with less than three submitted ESM episodes in the initial ESM day, we averaged across the ESM measurements obtained from the day with more submitted ESM episodes. In cases where the same number of ESM episodes were submitted on both ESM days, we used the responses of the initial ESM day. In the present study, we used the positively worded items as the reference items.

Psychological Well-Being

PWB was assessed at each monthly survey wave using an adapted 24-item version of a German translation of the Ryff-Scale for Psychological Well-Being (Risch et al., 2005; Ryff, 1989). The 24-item short form was obtained by applying confirmatory factor analysis in combination with an ant algorithm in a large sample of individuals who responded online to the 54-item version of the Ryff-Scale (see Schultze, 2017). Each of the six PWB dimensions (i.e., *self-acceptance*, *positive relations with others*, *autonomy*, *environmental mastery*, *personal growth* and *purpose in life*) was assessed with four items. Individuals responded on a

4-point rating scale ranging from *completely disagree* (1) to *completely agree* (4). For the present analyses, we only used the responses from the first measurement occasion of the GJSP and averaged across the four items of a given PWB dimension to obtain a scale score for the analyses.

Analytical Strategy

We used a mixed-effects trait-state-occasion model (ME-TSO; Castro-Alvarez, Tendeiro, de Jonge, et al., 2021) to model the unemployment-related SWB changes. The ME-TSO model is rooted in latent-state-trait theory (Steyer et al., 1992, 1999, 2015), which decomposes an observed variable into (a) a latent trait variable, which represents individual differences across situations, (b) a latent occasion-specific state residual variable, which represents the influence of situations as well as the interactions between persons and situations and (c) an error variable capturing the measurement error of an observation. The ME-TSO model can be formulated as a multilevel structural equation model including autoregressive effects on the level of the occasion-specific state residual variables (Castro-Alvarez, Tendeiro, de Jonge, et al., 2021; Castro-Alvarez, Tendeiro, Meijer, et al., 2021; Eid et al., 2017). Thus, it is possible to include many measurement occasions with rather short time lags in the analyses. Specifically, the occasion-specific state residuals and the measurement error variables are modeled on the within-person level, whereas the trait variables are modeled on the between-person level (see Figure 1 and S2 for path diagrams).

The central feature of the ME-TSO model is that it allows modelling how individuals' trait levels (e.g., SWB trait levels) change between different so-called fixed situations that are known to the researcher (Castro-Alvarez, Tendeiro, de Jonge, et al., 2021; Geiser et al., 2015). For the present study, we used the employment status of an individual as the fixed situation of interest. As described before, the employment situation at a given measurement occasion was categorized using the following four categories: *being in employment*, *being unemployed*, *participating in an ALMP* and *being in other non-employment*. In a first set of analyses, we

investigated the SWB trait level changes between *all* episodes of unemployment and all episodes of employment to obtain estimates of *general* unemployment-related SWB changes. Specifically, we regressed the SWB indicators onto three dummy situation variables indicating whether an individual was *unemployed*, *participating in an ALMP* or *in other non-employment* at a given measurement occasion (see Figure 1). In a second set of analyses, we differentiated between unemployment episodes with low re-employment expectations (i.e., expectation to start a paid job within the next 3 months of 0 - 50%) and unemployment episodes with high re-employment expectations (i.e., expectation to start a paid job within the next 3 months of 60 - 100%). To allow the unemployment-related SWB trait changes to differ between unemployment episodes with low vs. high re-employment expectations, we regressed the SWB indicators onto four dummy situation variables indicating whether an individual was *unemployed with low re-employment expectation*, *unemployed with high re-employment expectation*, *participating in an ALMP* or *in other non-employment* at a given measurement occasion (see Figure S2).

In all analyses, *being in employment* is defined as the reference situation so that the intercepts of the SWB indicators correspond to the indicator-specific trait levels at the first measurement occasion (i.e., during employment). These initial trait levels were modeled as random variables at the between-person level. The regression coefficients of the dummy situation variables correspond to the differences in the SWB trait levels between being in that specific non-reference situation (e.g., being unemployed) and being in employment (i.e., the reference situation). To examine interindividual differences in these intraindividual SWB trait changes (i.e., effect heterogeneity), we modeled the unemployment-related SWB trait changes as random effects at the between-person level. Because the situations *participating in an ALMP* and *being in other non-employment* are not of substantive interest in this study and are primarily included in the model to define the reference situation as *being in employment*, the parameters of the situational dummy variables corresponding to these situations were defined

as fixed effects (i.e., set equal across individuals). Lastly, to control for general linear SWB changes occurring in the samples, we regressed the observed SWB variables onto a variable containing the measurement occasion minus 1. Importantly, the ME-TSO model yields all effects separately for each SWB indicator (i.e., item) of a given SWB facet. For single-item measures (e.g., income satisfaction) we used a structurally identical manifest version of the ME-TSO model and specified to the autoregressive effect on the level of the observed variables.

In sum, the ME-TSO model allows us to derive interindividual differences in the intraindividual SWB trait changes occurring between episodes of unemployment and episodes of employment. These interindividual differences in the unemployment-related SWB changes can then be related to other covariates at the between person level (i.e., moderator analysis). We used a stepwise approach consisting of the following three analysis models to thoroughly address our research questions (see Figure 1 and S2 for path diagrams).

Between-Person Model 1: Baseline Model (No PWB)

In a first step, we fitted the described ME-TSO model without including the PWB dimensions at the between-person level. Unemployment-related SWB trait changes were allowed to correlate with the initial pre-unemployment SWB trait levels. The goal of these analyses was to estimate the average unemployment-related SWB trait changes[1] as well as the interindividual differences in these changes. Moreover, these analyses allowed us to examine the correlations of the initial pre-unemployment SWB trait level and the unemployment-related SWB trait changes for each SWB facet. As previously described, we ran these analyses in two ways: first contrasting all unemployment episodes to episodes of employment and then differentiating between unemployment episodes with high vs. low re-employment expectations.

[1] Results on the average effects of unemployment for different unemployment durations based on the same data and a similar analytical model have been reported in Lawes et al. (2022).

Between-Person Model 2: Correlated Model

In a second step, we separately added the scale scores of the PWB dimensions to the between-person level. In this set of models, the PWB dimensions were allowed to correlate with the unemployment-related SWB trait changes as well as the initial pre-unemployment SWB trait levels. Positive correlations of PWB dimensions and unemployment-related SWB changes would indicate that individuals with high PWB levels are likely to show more positive (or less negative) unemployment-related SWB trait changes. Moreover, a positive correlation of a PWB dimension with the initial pre-unemployment SWB trait level would indicate that individuals with high PWB levels generally also have higher initial SWB trait levels. Again, we ran these models twice, once without taking the re-employment expectations into account and once with differentiating between unemployment episodes with high vs. low re-employment expectations.

Between-Person Model 3: Moderator Model

In a third step, we -- separately for each SWB indicator -- regressed the unemployment-related SWB trait changes onto the PWB dimensions and the initial SWB trait levels using different ME-TSO models for each combination of PWB and SWB facets. Again, PWB dimensions were allowed to co-vary with the initial SWB dispositions. This set of models allowed us to examine whether the PWB dimensions moderate the impact of unemployment on the SWB facets while controlling for the initial SWB trait levels. In other words, this third set of analyses allows us to investigate whether the PWB facets resemble protective factors during unemployment. Analogously to the previous steps, we ran these analyses in two ways: First by investigating unemployment-related SWB trait changes across *all* unemployment episodes and then differentiating between unemployment episodes with high vs. low re-employment expectations.

Computational Procedure

Negatively worded items were reverse coded and all continuous variables were transformed into percent of maximum possible scores (POMP; P. Cohen et al., 1999) so that they range from 0 to 100 and can be interpreted in terms of percentage points (p.p.). Because the ME-TSO models cannot handle missing values on the situational dummy variables (i.e., the employment status), we discarded observations for each individual after the first missing value on the employment status variable. For the analyses that take the re-employment expectations during unemployment into account, we further discarded observations occurring after unemployment episodes in which the re-employment expectation variable was missing. Moreover, we only included participants with three or more observations on the SWB variables in order to model the well-being changes adequately.

We fitted all ME-TSO models separately for the two samples (i.e., mass layoff vs. other reason) and applied a significance level of .05 for our statistical inferences. Due to the large number of statistical tests, we corrected the *p*-values using the Benjamini–Hochberg procedure (Benjamini & Hochberg, 1995; Benjamini & Yekutieli, 2001). The Benjamini–Hochberg procedure is based on the concept of false discovery rate and controls the family-wise-error at the same significance level as traditional multiple testing procedures (e.g., Bonferroni correction) (Raykov et al., 2018). However, it has been shown to yield more statistical power than conventional multiple testing procedures (Benjamini & Hochberg, 1995; Cribbie, 2007; Raykov et al., 2012, 2017). Specifically, we separately applied the R function "p.adjust" to the uncorrected *p*-values corresponding to each parameter of interest (e.g., correlation between PWB and unemployment-related SWB changes) for a given PWB dimension across the eight SWB facets to obtain the corrected *p*-values.

All models were fitted with the commercial software Mplus (version 8.7; Muthén & Muthén, 2017) using the dynamic structural equation modeling framework (DSEM; Asparouhov et al., 2017, 2018). DSEM relies on the Bayesian estimation procedure

implemented in Mplus (Asparouhov & Muthén, 2010). We used the default uninformative priors for all parameters and estimated the models using two Monte Carlo chains, each running for at least 400,000 iterations. We defined a seed for the Monte Carlo process to ensure reproducibility of the results. The posterior distribution of each parameter was based on every 20th iteration (i.e., thinning) of the second half of each chain (i.e., after the burn-in period). Thus, the parameter estimates were based on at least 20,000 posterior draws. In order to ensure convergence of the Monte Carlo chains, we further set the Mplus convergence criterion to a stricter value (bconvergence = 0.025) compared to the Mplus default (bconvergence = 0.05). In addition, we visually checked the Bayesian posterior parameter trace plots and the Bayesian autocorrelation plots for several randomly chosen models. We obtained point estimates for the parameters by using the median of the posterior distribution and used the posterior quantiles to derive 95% credibility intervals for each estimate. We imported the Mplus model results to R (version 4.1.1; R Core Team, 2017) using the R-package MplusAutomation (Hallquist & Wiley, 2018).

Results

Model Convergence

Almost all models converged based on the strict Mplus convergence criterion and our visual inspection of the Monte Carlo chains. The only models that did not initially converge were based on the sample of individuals who registered as jobseekers due to reasons other than mass layoffs or plant closures and examined *life satisfaction*. Specifically, the respective moderator models (i.e., between-person model 3) that do not account for re-employment expectations as well as the model without a moderator (i.e., between-person model 1) that took re-employment expectations into account did not converge according to the strict Mplus convergence criterion. However, after applying the default Mplus convergence criterion, these models reached convergence. In addition, visual inspection of the Monte Carlo chains of these models also indicated convergence. Thus, all models were deemed as having converged. The

online repository (https://osf.io/n6gsw/?view_only=4a0427ea78f84cb8bd33628798ad92f3) contains all Mplus output files.

Descriptive Analyses

Descriptive results on the sample sizes and the relative proportions of the various employment statuses across all waves based on between-person model 1 are depicted in Tables S1a and S1b in the supplementary materials. The analyses for the mass layoff sample were based on 321 (income satisfaction) to 399 (life satisfaction) individuals with an average number of measurement occasions between 14.7 and 17.1. In the mass layoff sample, individuals were employed in roughly 79.5% and unemployed in roughly 12.5% of the occasions. In about 5.8% of occasions, individuals were unemployed with low re-employment expectations and in 6.7% of occasion unemployed with high re-employment expectations. In the remaining occasions, they were in an ALMP (~4%) or were categorized as being in other non-employment (~4%). The analyses for the "other reason" sample were based on 675 (satisfaction with household activities) to 744 (life satisfaction) individuals with an average number of measurement occasions between 15.5 and 16.7. In the "other reason" sample, individuals were employed in roughly 82% and unemployed in 10.5% of the occasions. In about 4.5% of occasions, individuals were unemployed with low re-employment expectations and in 6% of occasion unemployed with high re-employment expectations. In the remaining occasions, they were in an ALMP (~2%) or were categorized as being in other non-employment (~6%).

Unemployment-Related Changes in SWB

In the following, we will only present the model results of the reference indicators. The full Mplus output files that include further results (e.g., coefficients in terms of the non-reference indicators) can be downloaded from the study repository (https://osf.io/n6gsw/?view_only=4a0427ea78f84cb8bd33628798ad92f3). Figures 2 and 3 illustrate the average unemployment-related changes in the SWB facets as well as the

variance of these unemployment-related SWB changes (see Tables S2a and S2b in the supplementary files for exact values). The parameters are based on the between-person model 1 (i.e., model without PWB) and were independently computed for the overall unemployment model and the models taking the re-employment expectations into account. We will present the results separately for individuals who registered as jobseekers (a) due to mass layoffs or plant closures and (b) other reasons.

Mass Layoff Sample

Individuals who registered as jobseekers due to mass layoffs or plant closures reported on average 4.37 p.p. (95%-CI: [2.7; 6.05], $p < .001$) less *life satisfaction*, 8.65 p.p. (95%-CI: [6.33; 11.01], $p < .001$) less *income satisfaction* and 5.18 p.p. (95%-CI: [2.77; 7.6], $p < .001$) more *leisure satisfaction* during episodes of unemployment compared to episodes of employment. Moreover, they felt 2.5 p.p. (95%-CI: [0.66; 4.33], $p = .008$) more *happy* and 3.03 p.p. (95%-CI: [1.22; 4.85], $p = .002$) more *awake* when unemployed compared to when employed. The general unemployment-related changes in terms of satisfaction with *family life* and *household activities* as well as feeling *calm* were not significantly different from zero. The analyses that take the re-employment expectation into account, further revealed that average levels of *life satisfaction* (-7.19 p.p., 95%-CI: [-10.11;-4.33], $p < .001$) and *income satisfaction* (-10.47 p.p., 95%-CI: [-13.98;-7.01], $p < .001$) were significantly lower during unemployment episodes with low re-employment expectations compared to being employed, whereas no differences were present for *family*, *household* and *leisure satisfaction* as well as feeling *happy*, *awake* and *calm*. In unemployment episodes with high re-employment expectations, average levels of *life satisfaction* (-3.24 p.p., 95%-CI: [-5.21;-1.3], $p < .001$) and *income satisfaction* (-7.85 p.p., 95%-CI: [-10.22;-5.45], $p < .001$) were lower compared to being employed, whereas average levels of *family satisfaction* (2.67 p.p., 95%-CI: [0.69;4.69], $p = .008$) and *leisure satisfaction* (7.48 p.p., 95%-CI: [4.9;10.01], $p < .001$) were higher. Moreover, during unemployment episodes with high re-employment expectations

individuals felt on average more *happy* (3.84 p.p., 95%-CI: [1.53;6.11], p = .002) and *awake* (3.24 p.p., 95%-CI: [0.9;5.48], p = .006) compared to being employed. No mean differences between unemployment episodes with low re-employment expectations and episodes of employment were found in terms of *satisfaction with household activities* and feeling *calm*. Importantly, the variances of the unemployment-related changes were significantly different from zero in all models regardless of the re-employment expectation, which indicates substantial differences in the unemployment-related SWB changes. The unemployment-related changes were generally more heterogeneous when re-employment expectations were low compared to episodes with high re-employment expectations. The highest interindividual differences in the unemployment-related SWB changes were found for *income satisfaction* and *leisure satisfaction*, the lowest for feeling *calm*.

Other Reason Sample

Among individuals who registered as jobseekers due to reasons other than mass layoffs or plant closures, the average levels of *life satisfaction* and *income satisfaction* were 2.84 p.p. (95%-CI: [1.65; 4.04], $p < .001$) and 7.86 p.p. (95%-CI: [6.46; 9.26], $p < .001$) lower during periods of unemployment compared to periods of employment. Contrarily, *leisure satisfaction* was on average 3.04 p.p. (95%-CI: [1.36; 4.72], $p < .001$) higher during episodes of unemployment compared to episodes of employment. The general average unemployment-related changes in terms of the *satisfaction with family life* and *household activities* as well as feeling *happy*, *awake* and *calm* were not significantly different from zero. The analyses that took the re-employment expectation into account, further indicate that average levels of *life satisfaction* (-4.9 p.p., 95%-CI: [-6.83;-2.94], p < .001) and *income satisfaction* (-8.83 p.p., 95%-CI: [-10.77;-6.9], p < .001) were significantly lower during unemployment episodes with low re-employment expectations compared to episodes of employment, whereas no mean differences were present for *family*, *household* and *leisure satisfaction* as well as feeling *happy*, *awake* and *calm*. In unemployment episodes with high re-employment expectations,

average levels of *life satisfaction* (-1.59 p.p., 95%-CI: [-3.11;-0.06], p = .04) and *income satisfaction* (-7.4 p.p., 95%-CI: [-9.12;-5.7], p < .001) were lower compared to episodes of employment, whereas average levels of *leisure satisfaction* (5.46 p.p., 95%-CI: [3.47;7.4], p < .001) were higher. Moreover, during unemployment episodes with high re-employment expectations individuals felt on average more *awake* (2.86 p.p., 95%-CI: [1.13;4.57], p < .001) compared to episodes of employment. No mean differences between unemployment episodes with low re-employment expectations and episodes of employment were found in terms of *satisfaction with family life*, *satisfaction with household activities* as well as feeling *happy* and *calm*. Again, there were substantial differences in the unemployment-related SWB changes in all models (i.e., effect heterogeneity). The two samples (mass layoff vs. other reason) did, however, not meaningfully differ in terms of this effect heterogeneity.

Correlations Between Pre-Unemployment SWB Trait Levels and Unemployment-Related SWB Trait Changes

Across all models that did not include the PWB dimensions (i.e., between-person models 1), the initial pre-unemployment SWB trait levels were not correlated with the unemployment related SWB trait changes after accounting for the false-discovery rate by applying the Benjamini-Hochberg procedure (see Table S3 in the supplementary materials).

Correlations Between PWB and Unemployment-Related SWB Trait Changes

The correlations of the PWB dimensions with the unemployment-related SWB trait changes are depicted in Tables S4a, S4b, S5a, and S5b in the supplementary materials. After applying the Benjamini-Hochberg procedure, the only correlations statistically different from zero were the correlations of *environmental mastery* with (a) changes in feeling *awake* (r = .47, 95%-CI: [.19; .77], p = .002) between all unemployment episodes and episodes of employment, (b) changes in feeling *awake* (r = .48, 95%-CI: [.23; .7], p < .001) between unemployment episodes with low re-employment expectations and episodes of employment and (c) changes in feeling *happy* (r = .49, 95%-CI: [.17; .78], p = .002) between

unemployment episodes with low re-employment expectations and episodes of employment in the other reason sample. For all other models, PWB dimensions were not significantly correlated with the unemployment-related SWB changes.

Moreover, based on the models examining the overall unemployment-related SWB changes, we extracted the correlations between the six PWB dimensions and the initial SWB trait levels (Tables S6a and S6b in the supplementary materials). In both samples of jobseekers, the correlations of all PWB dimensions with all initial SWB trait levels were positive and significantly different from zero. The correlations ranged from .10 (*autonomy* and *income satisfaction* in other reason sample) to .56 (*self-acceptance* and *life satisfaction* in other reason sample) with a mean of .29.

Moderator Analysis

The regression coefficients of the PWB dimensions predicting the unemployment-related SWB trait changes -- controlling for the pre-unemployment SWB trait levels -- are depicted in Tables 1 and 2. After applying the Benjamini-Hochberg procedure, the only regression coefficients statistically different from zero were the coefficients of *environmental mastery* predicting (a) changes in feeling *awake* ($b = 0.12$, 95%-CI: [0.06; 0.18], $p < .001$) between all unemployment episodes and episodes of employment, (b) changes in feeling *awake* ($b = 0.20$, 95%-CI: [.09; .30], $p < .001$) between unemployment episodes with low re-employment expectations and episodes of employment and (c) changes in feeling *happy* ($b = .16$, 95%-CI: [.06; .26], $p = .002$) between unemployment episodes with low re-employment expectations and episodes of employment in the other reason sample. Moreover, the pre-unemployment SWB trait levels did not consistently predict unemployment related trait changes in the same SWB facet across the models of the six PWB dimensions (see Tables S7a, S7b, S8a, and S8b in the supplementary files).

Discussion

This study investigated the extent to which individuals differ in how unemployment affects their subjective well-being (SWB) levels in various contexts of unemployment. In particular, it examined whether the six dimensions of psychological well-being (PWB; i.e., *autonomy*, *environmental mastery*, *personal growth*, *positive relations with others*, *purpose in life*, *self-acceptance*) moderate the effects of unemployment on various SWB facets. We based our analyses on monthly panel data of initially employed German jobseekers who were at high risk of losing their jobs. To take the context of unemployment into account, we ran all analyses separately for (a) individuals who registered as jobseekers due to mass layoffs or plant closures, and (b) individuals who registered as jobseekers due to other reasons. Moreover, we considered differences in re-employment expectations during unemployment.

On average, individuals reported lower life satisfaction and income satisfaction as well as higher leisure satisfaction during unemployment compared to episodes of employment. For individuals who registered as jobseekers due to mass layoffs or plant closures, these changes were more pronounced compared to individuals who registered as job seeking due to other reasons. Moreover, individuals from companies conducting mass layoffs or plant closures were -- on average -- happier and more awake during unemployment compared to episodes of employment, whereas individuals who registered as jobseekers due to reasons other than mass layoffs or plant closures felt equally happy and awake during episodes of employment and unemployment. Regardless of the reason for the job loss, unemployment did on not affect the average levels of satisfaction with family life or household activities as well as feeling calm. These results are nearly identical to those based on the same data when using a slightly different modeling approach (Lawes et al., 2022). Moreover, the findings are in line with studies based on nationally representative yearly panel data (e.g., Chadi & Hetschko, 2017; Powdthavee, 2012) and underline that unemployment is on average associated with declines in several CWB facets but no or positive changes in AWB facets.

As expected, when re-employment expectations were low, unemployment-related changes in life satisfaction and income satisfaction are considerably more negative compared to when re-employment expectations are high. Moreover, when re-employment expectations are low, no positive effects of unemployment are present. Contrarily, when re-employment expectations are high, individuals report significantly higher leisure satisfaction and feel more awake during unemployment compared to episodes of employment. Individuals who lost their jobs due to mass layoffs or plant closures even reported higher satisfaction with family activities and felt happier when they were unemployed but expected to start a new job soon in contrast to when they were employed. These results underline that re-employment expectations are an important situational moderator in the context of unemployment, in line with previous work (e.g., Clark et al., 2010; Hahn et al., 2015; Knabe & Rätzel, 2010).

Interestingly, individuals who lost their jobs due to mass layoffs or plant closures consistently displayed more pronounced average unemployment-related changes in SWB compared to individuals who lost their job due to other reasons. Contrary to our expectation, this was not only the case for the negative effects (e.g., decreased life satisfaction) but also for the positive effects (e.g., higher leisure satisfaction) of unemployment. This finding underlines that the reason of a job loss should be considered when studying effects of unemployment. However, more research is needed to examine why the general impact of unemployment seems to be stronger after a mass layoff or plant closure compared to losing a job due to other reasons.

We found significant interindividual differences in the intraindividual SWB changes across all examined SWB facets and contexts of unemployment (i.e., reason for the job loss and re-employment expectation). This means, for example, that even though the average effects of unemployment on a SWB facet might be negative, some individuals will still show strong increases in that SWB facet. Moreover, the present study showed that the unemployment-related changes were generally more heterogeneous for the examined CWB

facets than for the examined AWB facets. The largest interindividual differences in the unemployment effects were found for *satisfaction with income* and *satisfaction with leisure*. Further, unemployment-related changes were generally more heterogeneous when individuals expected to be re-employed soon compared to when they expected to stay unemployed for longer. This effect was particularly present in the sample of individuals who lost their jobs due to mass layoffs or plant closures (i.e., external reasons). Still, contrary to our expectation, we did not find consistent differences in terms of the effect heterogeneity between individuals who lost their jobs due to mass layoffs or plant closures and individuals who lost their jobs due to other reasons. These findings emphasize that individuals considerably differ in how unemployment affects their SWB levels across various contexts of unemployment. However, more research is needed to examine why the unemployment experience is more homogenous in some contexts and more heterogeneous in others.

Contrary to our expectations, the six dimensions of PWB did not buffer the negative effects of unemployment on the examined SWB facets. Specifically, pre-unemployment levels of PWB were typically not associated with subsequent SWB trait changes occurring between episodes of employment and episodes of unemployment regardless of the reason for the job loss and the re-employment expectations during unemployment. Only in the sample of individuals who registered as jobseekers due to reasons other than mass layoffs or plant closures, pre-unemployment levels of environmental mastery were positively associated with general unemployment-related changes in feeling awake as well as changes in feeling awake and feeling happy between unemployment episodes with low re-employment expectations and episodes of employment. This was also the case when controlling for differences in pre-unemployment SWB levels (i.e., in the moderator analysis). However, because these effects were not consistent across the two samples and clear theoretical explanations for the presence of these effects and the simultaneous absence of other moderator effects are missing, we advise to interpret these results cautiously. Moreover, in contrast to our expectations, pre-

unemployment SWB levels were also not consistently associated with unemployment-related SWB changes. This result is not in line with research showing that individuals with higher levels of life satisfaction show less declines in life satisfaction when they become unemployed (e.g., Binder & Coad, 2015a, 2015b). Still, the general lack of moderator effects of individual characteristics is in line with existing studies that also did not find consistent evidence for buffering effects of various individual characteristics like personality (e.g., contradictory findings by Anusic et al., 2014; Hahn et al., 2015; Yap et al., 2012), perceived control (Infurna et al., 2016) or social capital (Winkelmann, 2009) in the context of unemployment. Taken together, these results suggest that individual resources only play a secondary role in how individuals experience unemployment and that situational characteristics (e.g., re-employment expectations) seem to be the main predictor for how individuals react to unemployment. Thus, targeted job placement programs for individuals with low employability should be offered to promote their reintegration into the workforce.

Lastly, the PWB dimensions were positively correlated with pre-unemployment SWB trait levels. The size of the correlations strongly varied between the different SWB and PWB facets and ranged from .10 to .56. These correlations correspond to small to large effects according to the classification by Jacob Cohen (1992). The positive correlations of moderate size indicate that the PWB and SWB facets capture related, yet distinct facets of well-being. Moreover, the large differences in the magnitudes of the correlations underline the importance of analyzing the subscales of PWB and SWB separately (i.e., not collapse them into higher-order factors) in order to obtain a differentiated picture of one's well-being. Together with the finding that unemployment differentially affects SWB and PWB facets (Lawes et al., 2022), these results underline the distinctiveness of PWB and SWB facets.

Limitations and Future Directions

Data collection for this study took place during an economic boom and the vast majority of individuals were able to quickly find a new job after becoming unemployed. Thus,

it seems worthwhile to further examine the potential buffering role of PWB in samples where unemployment has a stronger impact on SWB (e.g., among long-term unemployed individuals). In addition, more research is needed on the potential buffering role of PWB in the context of other life events that are known to have a strong impact on SWB (e.g., loss of a spouse).

The goal of this study was to investigate interindividual differences in intraindividual SWB trait changes between episodes of unemployment and employment as well as their correlates. By applying a modern multilevel modeling approach, we aimed at controlling for the measurement error of the observed SWB items, random situational influences, carry-over effects of neighboring measurement occasions, as well as general SWB trait changes occurring over time when deriving the unemployment-related SWB trait changes. Still, whether the reported effects resemble causal effects of unemployment on the SWB facets is questionable.

The present study aimed at differentiating between different contexts of unemployment by taking the reason of the job loss and re-employment expectations into account. However, future studies should try to assess how individuals perceive their unemployment more directly by asking individuals about their concrete situational circumstances and appraisals. Such information could for example be gathered by adapting the Event Characteristics Questionnaire (ECQ; Luhmann et al., 2021). Embedding detailed assessments of the situational characteristics in a high-frequency prospective panel study would enable researchers to obtain a more holistic understanding of how different situational characteristics are associated with unemployment-related SWB changes.

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Table 1

Regression Coefficients of PWB Facets Predicting Unemployment-Related Changes in Cognitive Well-Being Facets

PWB Facets	Life Satisfaction			Family Satisfaction			Household Satisfaction			Income Satisfaction			Leisure Satisfaction		
	Overall	reEMP↓	reEMP↑	Overall	reEMP↓	reEMP↑	Overall	reEMP↓	reEMP↑	Overall	reEMP↓	reEMP↑	Overall	reEMP↓	reEMP↑
Mass Layoff															
SA	-0.03 [-0.15;0.09] (*p* = .658)	-0.08 [-0.27;0.12] (*p* = .44)	0.05 [-0.1;0.2] (*p* = .524)	0 [-0.12;0.11] (*p* = .994)	-0.09 [-0.26;0.09] (*p* = .35)	0.01 [-0.13;0.15] (*p* = .854)	0.02 [-0.11;0.15] (*p* = .73)	0.05 [-0.14;0.25] (*p* = .592)	-0.03 [-0.18;0.12] (*p* = .692)	0.03 [-0.13;0.18] (*p* = .764)	-0.09 [-0.34;0.16] (*p* = .482)	0.13 [-0.03;0.29] (*p* = .118)	0.11 [-0.06;0.28] (*p* = .22)	0.16 [-0.09;0.42] (*p* = .202)	0.08 [-0.1;0.26] (*p* = .398)
A	0.07 [-0.03;0.17] (*p* = .164)	0.01 [-0.15;0.17] (*p* = .93)	0.1 [-0.02;0.22] (*p* = .092)	-0.05 [-0.16;0.05] (*p* = .316)	-0.13 [-0.27;0.01] (*p* = .072)	0 [-0.12;0.12] (*p* = .954)	0 [-0.12;0.11] (*p* = .968)	-0.02 [-0.19;0.15] (*p* = .852)	0 [-0.14;0.13] (*p* = .954)	-0.09 [-0.23;0.05] (*p* = .204)	-0.2 [-0.4;0] (*p* = .048)*	0 [-0.14;0.14] (*p* = .974)	0.06 [-0.08;0.21] (*p* = .402)	-0.01 [-0.22;0.19] (*p* = .882)	0.11 [-0.04;0.26] (*p* = .156)
EM	-0.02 [-0.1;0.06] (*p* = .644)	-0.12 [-0.25;0.01] (*p* = .08)	0.02 [-0.08;0.12] (*p* = .652)	-0.07 [-0.15;0.01] (*p* = .102)	-0.1 [-0.22;0.02] (*p* = .106)	-0.04 [-0.14;0.05] (*p* = .386)	0 [-0.09;0.1] (*p* = .92)	-0.04 [-0.18;0.1] (*p* = .596)	0.03 [-0.08;0.14] (*p* = .614)	-0.05 [-0.16;0.07] (*p* = .428)	-0.13 [-0.3;0.04] (*p* = .142)	0 [-0.12;0.11] (*p* = .956)	0 [-0.12;0.12] (*p* = .962)	-0.04 [-0.21;0.13] (*p* = .606)	0 [-0.13;0.12] (*p* = 1)
PG	-0.03 [-0.13;0.07] (*p* = .592)	-0.04 [-0.2;0.11] (*p* = .598)	-0.05 [-0.18;0.08] (*p* = .442)	-0.03 [-0.13;0.07] (*p* = .526)	-0.04 [-0.18;0.09] (*p* = .506)	-0.03 [-0.16;0.11] (*p* = .656)	0.06 [-0.05;0.17] (*p* = .276)	0.05 [-0.1;0.21] (*p* = .494)	0.06 [-0.08;0.21] (*p* = .368)	-0.11 [-0.25;0.03] (*p* = .116)	-0.17 [-0.36;0.03] (*p* = .09)	-0.09 [-0.24;0.07] (*p* = .266)	0.1 [-0.05;0.24] (*p* = .196)	0.08 [-0.11;0.27] (*p* = .436)	0.09 [-0.07;0.26] (*p* = .262)
PR	0.01 [-0.06;0.07] (*p* = .846)	0 [-0.11;0.1] (*p* = .942)	0.01 [-0.08;0.09] (*p* = .86)	-0.01 [-0.08;0.06] (*p* = .806)	-0.02 [-0.12;0.08] (*p* = .684)	-0.02 [-0.1;0.07] (*p* = .714)	0.07 [0;0.14] (*p* = .05)	0.08 [-0.03;0.19] (*p* = .158)	0.06 [-0.03;0.15] (*p* = .188)	0.04 [-0.05;0.13] (*p* = .354)	0.04 [-0.1;0.17] (*p* = .622)	0.05 [-0.05;0.14] (*p* = .318)	0.01 [-0.08;0.12] (*p* = .766)	0.01 [-0.13;0.15] (*p* = .894)	0.01 [-0.1;0.12] (*p* = .872)
SP	-0.01 [-0.1;0.08] (*p* = .808)	0.01 [-0.14;0.15] (*p* = .938)	-0.01 [-0.11;0.1] (*p* = .908)	0.01 [-0.08;0.1] (*p* = .84)	0.03 [-0.09;0.15] (*p* = .612)	-0.03 [-0.14;0.08] (*p* = .564)	0.05 [-0.05;0.14] (*p* = .344)	0.06 [-0.08;0.2] (*p* = .406)	0.03 [-0.09;0.14] (*p* = .612)	0.05 [-0.07;0.17] (*p* = .388)	0.05 [-0.12;0.23] (*p* = .542)	0.03 [-0.09;0.16] (*p* = .62)	0.09 [-0.03;0.21] (*p* = .122)	0.12 [-0.05;0.28] (*p* = .17)	0.06 [-0.07;0.19] (*p* = .332)
Other Reason															
SA	-0.07 [-0.14;0.01] (*p* = .082)	-0.03 [-0.15;0.09] (*p* = .626)	-0.12 [-0.22;-0.02] (*p* = .018)*	-0.06 [-0.13;0.02] (*p* = .124)	-0.1 [-0.2;-0.01] (*p* = .036)*	-0.04 [-0.14;0.06] (*p* = .43)	-0.03 [-0.11;0.06] (*p* = .498)	-0.05 [-0.15;0.05] (*p* = .3)	0.04 [-0.07;0.14] (*p* = .494)	0 [-0.07;0.08] (*p* = .932)	0.01 [-0.09;0.12] (*p* = .82)	0.01 [-0.09;0.1] (*p* = .844)	0 [-0.1;0.09] (*p* = .944)	0.01 [-0.12;0.13] (*p* = .924)	0.02 [-0.1;0.14] (*p* = .78)
A	-0.03 [-0.09;0.04] (*p* = .438)	0 [-0.1;0.11] (*p* = .924)	-0.05 [-0.13;0.03] (*p* = .238)	0.01 [-0.05;0.08] (*p* = .692)	-0.03 [-0.12;0.06] (*p* = .572)	0.05 [-0.04;0.13] (*p* = .306)	0.01 [-0.06;0.09] (*p* = .714)	0.02 [-0.08;0.12] (*p* = .674)	0.03 [-0.07;0.12] (*p* = .578)	0.01 [-0.06;0.08] (*p* = .758)	-0.01 [-0.11;0.1] (*p* = .876)	0.03 [-0.05;0.12] (*p* = .454)	-0.01 [-0.1;0.08] (*p* = .844)	-0.06 [-0.18;0.06] (*p* = .36)	0.04 [-0.06;0.14] (*p* = .482)
EM	0 [-0.06;0.06] (*p* = .992)	-0.03 [-0.12;0.07] (*p* = .578)	0.02 [-0.06;0.09] (*p* = .648)	0 [-0.05;0.06] (*p* = .89)	-0.02 [-0.1;0.06] (*p* = .62)	0.02 [-0.06;0.1] (*p* = .614)	0.05 [-0.02;0.12] (*p* = .198)	0.04 [-0.05;0.13] (*p* = .366)	0.1 [0.02;0.19] (*p* = .018)*	0 [-0.07;0.06] (*p* = .896)	0.03 [-0.06;0.12] (*p* = .546)	-0.02 [-0.09;0.06] (*p* = .686)	0.07 [-0.01;0.15] (*p* = .108)	0.06 [-0.04;0.17] (*p* = .254)	0.1 [0.01;0.19] (*p* = .028)*
PG	0.03 [-0.05;0.11] (*p* = .448)	0.02 [-0.1;0.14] (*p* = .734)	0.01 [-0.09;0.11] (*p* = .842)	0 [-0.08;0.09] (*p* = .952)	-0.07 [-0.19;0.04] (*p* = .204)	0.03 [-0.08;0.14] (*p* = .608)	0.04 [-0.05;0.14] (*p* = .362)	0.01 [-0.11;0.13] (*p* = .834)	0.09 [-0.04;0.21] (*p* = .172)	0.02 [-0.07;0.11] (*p* = .702)	-0.03 [-0.16;0.09] (*p* = .638)	0.07 [-0.04;0.18] (*p* = .246)	0.01 [-0.1;0.12] (*p* = .854)	0.08 [-0.06;0.22] (*p* = .25)	-0.02 [-0.15;0.12] (*p* = .802)
PR	-0.01 [-0.06;0.04] (*p* = .75)	-0.03 [-0.11;0.06] (*p* = .528)	0 [-0.07;0.07] (*p* = .936)	0.01 [-0.04;0.07] (*p* = .664)	-0.02 [-0.1;0.06] (*p* = .702)	0.02 [-0.06;0.09] (*p* = .668)	0.01 [-0.05;0.07] (*p* = .81)	-0.05 [-0.13;0.03] (*p* = .23)	0.04 [-0.04;0.12] (*p* = .284)	0.03 [-0.03;0.08] (*p* = .332)	0.03 [-0.06;0.1] (*p* = .546)	0.04 [-0.03;0.11] (*p* = .268)	0.05 [-0.02;0.12] (*p* = .18)	0.07 [-0.03;0.16] (*p* = .18)	0.04 [-0.04;0.13] (*p* = .332)
SP	0.05 [-0.01;0.12] (*p* = .098)	0.03 [-0.07;0.13] (*p* = .58)	0.04 [-0.04;0.13] (*p* = .29)	0.01 [-0.06;0.08] (*p* = .75)	-0.01 [-0.11;0.07] (*p* = .748)	0.03 [-0.06;0.12] (*p* = .548)	0.08 [0;0.15] (*p* = .048)*	0.06 [-0.05;0.16] (*p* = .3)	0.11 [0.02;0.21] (*p* = .014)*	0.04 [-0.03;0.12] (*p* = .226)	0.03 [-0.08;0.13] (*p* = .65)	0.05 [-0.04;0.14] (*p* = .266)	0.04 [-0.05;0.13] (*p* = .34)	0.06 [-0.05;0.17] (*p* = .296)	0.05 [-0.05;0.15] (*p* = .326)

Notes. 95%-credibility intervals are presented in brackets, and the two-sided uncorrected p-values are depicted in parenthesis. Asterisks indicate that *p*-values were not significant after Benjamini-Hochberg correction. The "overall" column contains the coefficients for the overall model and the "reEMP↓" and "reEMP↑" columns contain the coefficients for the model that takes the re-employment expectations into account. Specifically, "reEMP↓" references the effects when re-employment expectations are low and "reEMP↑" when re-employment expectations are high. SA = self-acceptance; A = autonomy, EM = environmental mastery, PG = psychological growth, PR = positive relations with others, SP = sense of purpose

Table 2

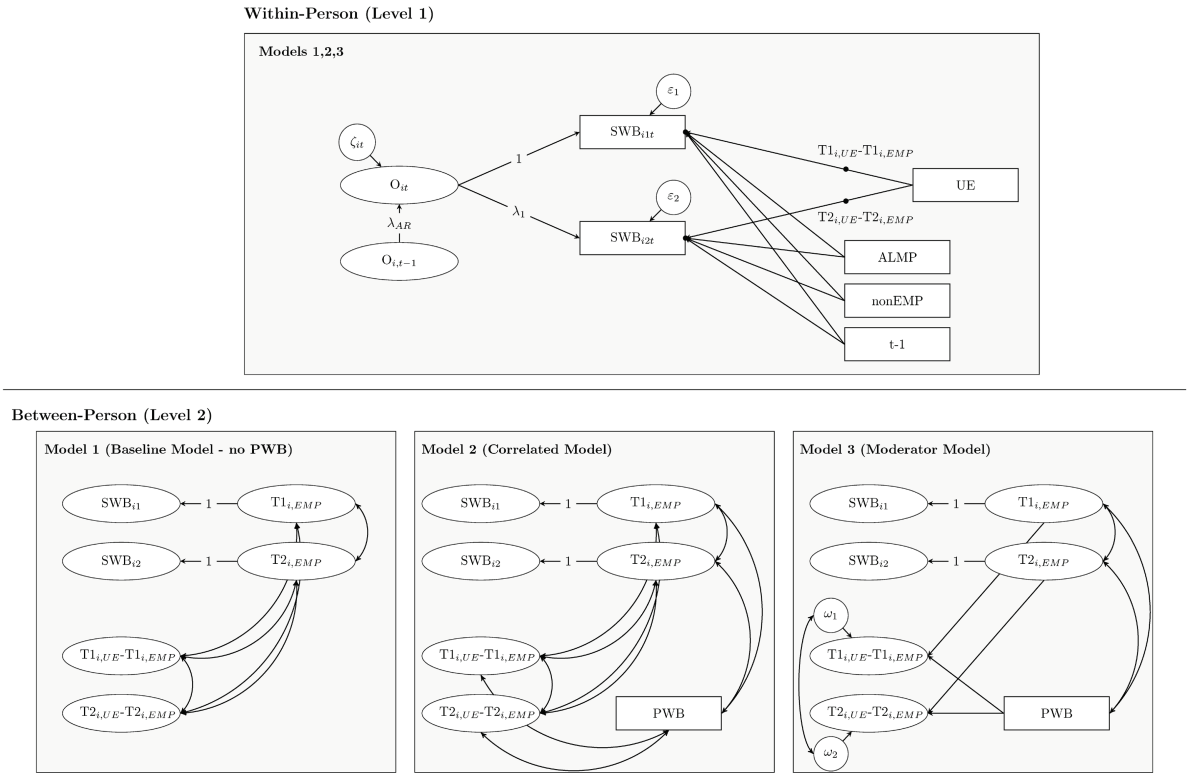
Regression Coefficients of PWB Facets Predicting Unemployment-Related Changes in Affective Well-Being Facets

PWB Facet	Happy			Awake			Calm		
	Overall	reEMP↓	reEMP↑	Overall	reEMP↓	reEMP↑	Overall	reEMP↓	reEMP↑
Mass Layoff									
SA	0.08 [-0.05;0.21] (*p* = .226)	0.1 [-0.09;0.3] (*p* = .302)	0.05 [-0.11;0.22] (*p* = .558)	-0.01 [-0.14;0.12] (*p* = .894)	-0.08 [-0.27;0.11] (*p* = .414)	0.01 [-0.16;0.17] (*p* = .932)	0.02 [-0.1;0.15] (*p* = .702)	0.01 [-0.17;0.19] (*p* = .914)	0.03 [-0.14;0.2] (*p* = .726)
A	0.08 [-0.04;0.19] (*p* = .184)	0.06 [-0.12;0.25] (*p* = .488)	0.1 [-0.05;0.24] (*p* = .184)	0.01 [-0.1;0.12] (*p* = .836)	0.07 [-0.1;0.25] (*p* = .424)	-0.05 [-0.18;0.1] (*p* = .526)	0.01 [-0.1;0.12] (*p* = .9)	0.05 [-0.12;0.23] (*p* = .562)	-0.01 [-0.16;0.13] (*p* = .864)
EM	-0.02 [-0.11;0.07] (*p* = .706)	-0.04 [-0.19;0.11] (*p* = .578)	0 [-0.12;0.11] (*p* = .95)	-0.02 [-0.11;0.06] (*p* = .604)	-0.07 [-0.21;0.06] (*p* = .286)	-0.01 [-0.12;0.11] (*p* = .916)	-0.07 [-0.16;0.02] (*p* = .14)	-0.04 [-0.18;0.09] (*p* = .532)	-0.09 [-0.21;0.03] (*p* = .144)
PG	0.07 [-0.05;0.18] (*p* = .242)	0.04 [-0.14;0.22] (*p* = .666)	0.06 [-0.1;0.23] (*p* = .438)	-0.04 [-0.16;0.07] (*p* = .464)	-0.08 [-0.25;0.08] (*p* = .308)	-0.04 [-0.2;0.13] (*p* = .664)	-0.05 [-0.16;0.06] (*p* = .4)	-0.06 [-0.22;0.1] (*p* = .456)	-0.05 [-0.22;0.12] (*p* = .566)
PR	0.03 [-0.04;0.11] (*p* = .392)	0.02 [-0.1;0.13] (*p* = .784)	0.04 [-0.06;0.14] (*p* = .398)	-0.04 [-0.11;0.03] (*p* = .278)	-0.06 [-0.17;0.05] (*p* = .308)	-0.03 [-0.13;0.06] (*p* = .522)	0.01 [-0.06;0.08] (*p* = .824)	0.04 [-0.07;0.14] (*p* = .494)	-0.01 [-0.11;0.09] (*p* = .84)
SP	-0.01 [-0.11;0.08] (*p* = .768)	-0.02 [-0.18;0.13] (*p* = .75)	0 [-0.13;0.12] (*p* = .946)	-0.01 [-0.1;0.09] (*p* = .852)	-0.03 [-0.17;0.12] (*p* = .706)	-0.01 [-0.14;0.11] (*p* = .832)	-0.07 [-0.16;0.03] (*p* = .152)	-0.03 [-0.17;0.11] (*p* = .65)	-0.1 [-0.23;0.02] (*p* = .106)
Other Reason									
SA	0.02 [-0.05;0.09] (*p* = .646)	-0.01 [-0.13;0.1] (*p* = .86)	0.06 [-0.04;0.16] (*p* = .228)	0.08 [0;0.15] (*p* = .048)*	0.06 [-0.06;0.19] (*p* = .344)	0.11 [0.01;0.2] (*p* = .03)*	0.07 [0;0.14] (*p* = .064)	0.06 [-0.06;0.18] (*p* = .294)	0.07 [-0.03;0.17] (*p* = .168)
A	0.01 [-0.06;0.08] (*p* = .784)	0.01 [-0.11;0.12] (*p* = .91)	0.02 [-0.06;0.11] (*p* = .602)	0.04 [-0.04;0.11] (*p* = .298)	0.04 [-0.09;0.17] (*p* = .548)	0.07 [-0.02;0.15] (*p* = .13)	0.05 [-0.03;0.12] (*p* = .216)	0.04 [-0.09;0.16] (*p* = .558)	0.05 [-0.04;0.14] (*p* = .27)
EM	0.06 [0;0.12] (*p* = .054)	**0.16** [0.06;0.26] (*p* = .002)	0.03 [-0.05;0.1] (*p* = .468)	**0.12** [0.06;0.18] (*p* < .001)	**0.2** [0.09;0.3] (*p* < .001)	0.08 [0.01;0.16] (*p* = .026)*	0.08 [0.01;0.14] (*p* = .02)*	0.13 [0.03;0.23] (*p* = .014)*	0.05 [-0.04;0.13] (*p* = .266)
PG	0.02 [-0.06;0.1] (*p* = .64)	0 [-0.14;0.14] (*p* = .984)	0.09 [-0.02;0.2] (*p* = .114)	0.04 [-0.04;0.13] (*p* = .336)	0.07 [-0.09;0.22] (*p* = .384)	0.08 [-0.03;0.19] (*p* = .14)	0.05 [-0.04;0.14] (*p* = .276)	0.06 [-0.09;0.2] (*p* = .444)	0.05 [-0.06;0.16] (*p* = .384)
PR	0.01 [-0.04;0.06] (*p* = .68)	0 [-0.08;0.09] (*p* = .958)	0.04 [-0.04;0.1] (*p* = .324)	0.03 [-0.02;0.08] (*p* = .254)	0.06 [-0.03;0.15] (*p* = .178)	0.05 [-0.02;0.11] (*p* = .166)	0.04 [-0.02;0.09] (*p* = .184)	0.06 [-0.03;0.14] (*p* = .21)	0.03 [-0.04;0.1] (*p* = .416)
SP	0 [-0.07;0.06] (*p* = .916)	0.05 [-0.06;0.17] (*p* = .384)	-0.01 [-0.1;0.07] (*p* = .814)	0.02 [-0.05;0.1] (*p* = .536)	0.06 [-0.06;0.19] (*p* = .33)	0.02 [-0.07;0.1] (*p* = .696)	0.04 [-0.03;0.11] (*p* = .282)	0.13 [0.01;0.24] (*p* = .03)*	-0.01 [-0.11;0.08] (*p* = .768)

Notes. 95%-credibility intervals are presented in brackets, and the two-sided uncorrected p-values are depicted in parenthesis. Asterisks indicate that *p*-values were not significant after Benjamini-Hochberg correction. The parameter are printed in bold, when the corrected *p*-value was smaller than .05. The "overall" column contains the coefficients for the overall model and the "reEMP↓" and "reEMP↑" columns contain the coefficients for the model that takes the re-employment expectations into account. Specifically, "reEMP↓" references the effects when re-employment expectations are low and "reEMP↑" when re-employment expectations are high. SA = self-acceptance; A = autonomy, EM = environmental mastery, PG = psychological growth, PR = positive relations with others, SP = sense of purpose

Figure 1

ME-TSO Models for Examining Overall Unemployment-Related SWB Changes for SWB Facets With Two Indicators



Note. SWB_{i1t} and SWB_{i2t} are observed subjective well-being scores of person *i* at time *t*. ε_1 and ε_2 are residuals of these well-being indicators. O_{it} is the occasion-specific residual variable with a residual variance of ζ_{it}. λ_{AR} is the autoregressive effect of $O_{it\text{-}1}$ on O_{it}, which we restricted to be equal across individuals and over time. The factor loading of the first well-being indicator on O_{it} is set to 1 in order to identify the model; the factor loadings of the other well-being indicators were freely estimated. The unemployment-related SWB trait changes (i.e., $T1_{i,UE}$-$T1_{i,EMP}$, $T2_{i,UE}$-$T2_{i,EMP}$) were modelled as random effects at the between-person level. The regression coefficients of the binary situation variables belonging to the situations *participating in an ALMP (ALMP)* and *being in other non-employment (nonEMP)* as well as the linear time effect (*t-1*) were fixed across individuals. PWB depicts the scale score of a dimension of psychological well-being. Moreover, the latent trait variables corresponding to the reference situation (i.e., $T1_{i,EMP}$, $T2_{i,EMP}$) were modeled as random variables on the between-person level (see Castro-Alvarez, Tendeiro, de Jonge, et al., 2021; Geiser et al., 2015). In Model 3, ω_1 and ω_2 represent the residuals of the latent difference variables. Variances and intercepts of the variables are not depicted to improve the readability of the figure.

Figure 2

Unemployment-Related Changes in Cognitive Well-Being Facets

Note. The plots depict the average unemployment-related changes in the examined cognitive well-being facets with the corresponding 95% credibility intervals for the reference indicator. The grey shaded areas represent the model implied distribution of these changes (i.e., random effects). The first row depicts the results for the mass layoff sample and the second row the results for the other reason sample. $UE_{overall}$ = changes between all episodes of unemployment and episodes of employment; $UE_{reEMP\downarrow}$ = changes between episodes of unemployment with low re-employment expectations and episodes of employment; $UE_{reEMP\uparrow}$ = changes between episodes of unemployment with high re-employment expectations and episodes of employment

Figure 3

Unemployment-Related Changes in Affective Well-Being Facets

Note. The plots depict the average unemployment-related changes in the examined affective well-being facets with the corresponding 95% credibility intervals for the reference indicator. The grey shaded areas represent the model implied distribution of these changes (i.e., random effects). The first row depicts the results for the " mass layoff" sample and the second row the results for the " other reason" sample. $UE_{overall}$ = changes between all episodes of unemployment and episodes of employment; $UE_{reEMP\downarrow}$ = changes between episodes of unemployment with low re-employment expectations and episodes of employment; $UE_{reEMP\uparrow}$ = changes between episodes of unemployment with high re-employment expectations and episodes of employment

Chapter 5

Unemployment and Chronic Stress:
Longitudinal Evidence from Hair Samples (Study III)

This chapter contains the submitted version of the article that has been published as:

Lawes, M., Hetschko, C., Schöb, R., Stephan, G., & Eid, M. (2022). Unemployment and hair cortisol as a biomarker of chronic stress. Scientific Reports, 12(21573).

https://doi.org/10.1038/s41598-022-25775-1

The supplementary materials of this article are presented in Appendix C.

Unemployment and Chronic Stress:

Longitudinal Evidence from Hair Samples

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Acknowledgments and Funding Sources

We gratefully acknowledge financial support from the German Science Foundation (grants EI 379/11-1, EI 379/11-2, SCHO 1270/5-1, SCHO 1270/5-2, STE 1424/4-1, and STE 1424/4-2). Mario Lawes is a pre-doctoral fellow of the International Max Planck Research School on the Life Course (LIFE, www.imprs-life.mpg.de). The authors are grateful to the Data and IT Management (DIM) unit of IAB for encompassing support in identifying and contacting the survey population. Moreover, we want to thank our student assistants for helping to prepare the hair collection kits as well as Kai Ludwigs for providing valuable feedback throughout the project. Mario Lawes played lead role in data curation, formal analysis, investigation, project administration, visualization, writing of original draft and equal role in methodology. Clemens Hetschko played lead role in conceptualization, and equal role in funding acquisition, investigation, project administration, and reviewing and editing the draft. Ronnie Schöb played equal role in reviewing and editing the draft, conceptualization, and funding acquisition, as well as supporting role in project administration. Gesine Stephan played equal role in conceptualization and funding acquisition, as well as supporting role in project administration and reviewing and editing the draft. Michael Eid played lead role in supervision and equal role in conceptualization, funding acquisition, methodology, project administration, and reviewing and editing the draft.

Abstract

Unemployment is widely considered an important chronic stressor. However, the few studies investigating the effects of unemployment on the physiological stress system mostly relied on cross-sectional data and measures of acute stress. Using longitudinal data of initially employed German jobseekers, the present study examines whether unemployment is related to changes in hair cortisol concentration (HCC), a reliable biomarker for chronic stress. The results indicate that HCC is the highest initially when individuals are insecurely employed and decrease as people gain certainty about whether they enter unemployment or not. We find no effects when comparing the average changes in HCC between individuals who entered unemployment to those of continuously employed individuals. However, medium-term unemployment was associated with a stronger mean increase in HCC if re-employment expectations were low compared to continuous employment. Taken together, our results support two key conclusions. First, experiencing the uncertainty of looming unemployment is more stressful than unemployment itself. Second, whether working or being unemployed is generally more stressful is highly context-dependent, with poor re-employment prospects being a key stressor for unemployed individuals. Taken together, the results provide further evidence that the physiological stress system is especially sensitive to uncontrollable situations and unfamiliar challenge.

Keywords: unemployment, re-employment expectations, stress, hair cortisol, biomarker

Unemployment and Chronic Stress:
Longitudinal Evidence from Hair Samples

Unemployment has detrimental effects on physical, subjective, and mental well-being (McKee-Ryan et al., 2005; Paul & Moser, 2009). It generally causes financial strain and is associated with a wide range of psychosocial stressors, such as a loss of identity (Hetschko et al., 2021; Jahoda, 1982), feeling rejected during job search (Warr, 1987) and growing uncertainty (Mantler et al., 2005). While most of the existing research on the effects of unemployment focused on subjective measures of well-being and mental health (e.g., Cygan-Rehm et al., 2017; Knabe et al., 2010; Lawes, Hetschko, Schöb, et al., 2022), only few studies examined the effects of unemployment on (physiological) stress. Existing studies using self-reported stress data found that unemployed individuals generally report higher levels of perceived stress than employed individuals (Allott et al., 2013; Klein et al., 2016; Mantler et al., 2005). However, while such questionnaire studies are vital for assessing the subjectively perceived levels of stress, they are also prone to distortions (e.g., social desirability bias) and are limited to phenomena that respondents are aware of (Weinstein et al., 2008). To obtain a more holistic understanding of the effects of unemployment, biological stress markers can be collected alongside questionnaire data (Boyle et al., 2020; Sakshaug et al., 2015). In the context of stress, the hormone cortisol is the primary choice of such a biomarker. Cortisol is the main effector of the hypothalamus-pituitary-adrenal (HPA) axis and mobilizes bodily resources to overcome the increased demands resulting from stressors (Kudielka & Kirschbaum, 2005). A dysregulated or enduring cortisol secretion (e.g., following chronic stress) is related to numerous negative long-term health outcomes like cardiovascular disease (e.g., Dimsdale, 2008), obesity (Vicennati et al., 2009), type 2 diabetes (Pouwer et al., 2010), reduced fertility (Ebbesen et al., 2009) as well as mental disorders (e.g., Brady & Sinha, 2005; Kim et al., 2007; Lee et al., 2010). Crucially, unemployment has been linked to similar negative health outcomes (e.g., Currie & Schwandt, 2014; Dupre et al., 2012; Hughes et al.,

2015) suggesting that chronic stress and the subsequent over-production of cortisol might channel its long-lasting impact on health. To partially probe this relationship, the present study examines the effects of short- and medium-term unemployment on hair cortisol concentration (HCC), a reliable biomarker for chronic stress.

Traditionally, cortisol was measured in plasma, saliva, or urine samples. While these measures are well-suited to capture acute cortisol changes, the analysis of HCC has become the gold-standard method for obtaining a meaningful measure of chronic stress (Kirschbaum et al., 2009; Stalder et al., 2017). As human hair grows at a fairly predictable rate of 1 cm per month, aggregated cortisol levels over multiple months can be examined retrospectively (Short et al., 2016). Moreover, the collection of hair samples can be integrated into surveys without any face-to-face contact with its respondents, making it possible to examine long-term cortisol secretion alongside questionnaire data to assess chronic stress in an economical and valid manner (Lawes, Hetschko, Sakshaug, & Eid, 2022).

Empirical studies on the relationship between unemployment and cortisol are scarce, mostly cross-sectional, and provided mixed results (Sumner & Gallagher, 2017). Across studies utilizing measures of acute cortisol secretion (i.e., blood or saliva samples), some reported higher overall levels of cortisol in unemployed individuals compared to employed individuals (Arnetz et al., 1991), others found no differences between these groups (Claussen, 1994; Ockenfels et al., 1995) and one found higher overall cortisol levels among employed in comparison to unemployed individuals (Gallagher et al., 2016). These divergent results are likely due to varying conceptualizations of unemployment (e.g., long-term vs. short-term unemployment) as well as differences in how cortisol was measured (i.e., blood vs. saliva samples). The only study in the context of unemployment that used HCC as a biomarker for chronic stress found that average HCC levels of long-term unemployed individuals (> 12 months) were significantly higher than those of employed individuals (Dettenborn et al., 2010). However, due to the cross-sectional nature of this study and the rather selective

sample, longitudinal studies analyzing HCC levels of individuals before and after entering unemployment are needed.

Our study fills this gap and extends the existing literature in three important ways. First, we utilize prospective panel data on HCC of initially employed German jobseekers who were at high risk of losing their job. Unlike existing studies that relied on cross-sectional data, we are hence able to disentangle unemployment-related changes in HCC from pre-existing differences in individual HCC levels. Second, we consider the context of unemployment by taking the unemployment duration (short- vs. medium-term) and the re-employment expectations during unemployment into account. In the process, we follow up on previous findings suggesting that differences in the uncertainty about one's (future) employment situation explain why unemployed individuals feel more stressed than employed individuals (Mantler et al., 2005). Third, we contrast unemployment-related changes in HCC to those in self-reported stress in order to examine whether unemployment differentially affects these two stress measures.

We use data from the German Job Search Panel (GJSP; Hetschko et al., 2020), a monthly app-based panel study with five quarterly hair collection waves for measuring HCC. To recruit employed German jobseekers who are at high risk of losing their job, the GJSP exploits the German job search registration process, which requires employees to register as jobseekers at least three months prior to their expected job loss. Crucially, only around 60% of individuals who register as jobseekers enter unemployment later on, whereas the other individuals manage to keep their jobs or to immediately start a new job without entering unemployment (Stephan, 2016). Thus, by comparing individuals who actually enter unemployment (i.e., event group) to comparable individuals who remain employed (i.e., comparison group), the GJSP offers unique opportunities to conduct detailed analyses on how unemployment relates to changes in both HCC and perceived stress.

Results

HCC (in pg per mg hair) in the scalp-near 3 cm hair was determined as a measure of the average cortisol secretion within the last three months. As HCC data are typically not normally distributed and the conducted statistical analysis are sensitive to outliers, we winsorized and log-transformed the raw HCC data separately for each HCC collection wave (see Mayer et al., 2018). In a first step, we examined the stability of HCC over the five quarterly hair collection waves (see Table 1)[1]. The mean HCC levels decreased from the first HCC measurement occasion (Q1) to the second HCC measurement occasion (Q2) and remained fairly constant in later collection waves (Q3-Q5). The re-test correlations of HCC ranged from .37 to .66 underlining that HCC is highly stable over time. Still, there was substantial variation in the HCC levels as well as HCC changes.

Table 1. Descriptive Statistics for HCC across the Five Collection Points

Measurement Occasion	N_{Obs}	Mean(HCC_t)	Var(HCC_t)	Var(HCC_t - HCC_1)	Re-Test Correlations			
					HCC_1	HCC_2	HCC_3	HCC_4
Q1	687	1.61	0.46					
Q2	424	1.36	0.48	0.43	.53			
Q3	314	1.4	0.55	0.44	.54	.66		
Q4	268	1.43	0.39	0.43	.47	.37	.51	
Q5	219	1.42	0.44	0.41	.53	.58	.54	.47

Notes. HCC: hair cortisol concentration (in pg per mg hair); N_{Obs}: Number of valid hair samples per measurement occasion; Mean(HCC_t): Mean of winsorized and log-transformed HCC values across measurement occasions; Var(HCC_t): Variance of winsorized and log-transformed HCC values across measurement occasions; Var(HCC_t - HCC_1): Variance of winsorized and log-transformed HCC changes between the first measurement occasion (Q1) and measurement occasion *t*.

In order to investigate whether experiencing unemployment accounts for inter-individual differences in the intraindividual changes in HCC, we applied (latent) baseline change score modelling (McArdle, 2009; McArdle & Nesselroade, 1994; Steyer et al., 1997). Besides the HCC data, we also integrated assessments of perceived stress obtained via

[1] Nearly identical results were found based on individuals who provided valid hair samples during all five hair collection waves (see supplementary materials, Table S1).

monthly questionnaires into the model to also explore the effects of unemployment on perceived stress. To obtain a measure of perceived stress that corresponds to the same timeframe as the HCC data, we aggregated the scores of the stress items across the previous three months for measurement occasions Q2 – Q5. For Q1 we used the responses to the stress items during the first measurement occasion. We investigated whether changes in HCC and perceived stress were related to the various employment transitions individuals could experience between Q1 (i.e., when all individuals were still employed) and later waves (i.e., when some individuals have entered unemployment).

Because the sample consists of workers who registered as jobseekers roughly three months before the first measurement occasion, most entries into unemployment occurred between Q1 and Q2. Moreover, due to the favorable labor market conditions at the time in which we conducted our study, most individuals who entered unemployment found a new job rather quickly so that only few individuals were still unemployed at Q4. In order to have sufficiently large sample sizes of unemployed individuals and to be able to examine the effects of unemployment duration, we thus limited the analyses to the first three hair collection waves (Q1 – Q3) and excluded individuals who entered unemployment after Q2 (N = 19). This way, changes in HCC and perceived stress occurring between Q1 and Q2 can be linked to short-term unemployment (i.e., 1 – 3 months) and changes occurring between Q1 and Q3 can be linked to medium-term unemployment (i.e., 4 – 6 months). We further excluded individuals with missing values on the employment status (N = 148) and individuals who entered unemployment more than once (N = 19) between Q1 and Q3.

In our first main analysis, we examined general effects of becoming unemployed. Specifically, we grouped individuals according to their employment transitions in the period between Q1 and Q2 as well as Q1 and Q3. The resulting groups with their corresponding sample sizes are depicted in Figure 1. By regressing the changes in HCC and perceived stress onto dummy variables corresponding to the various groups, we obtained the average group

differences in respect to these changes. When deriving these average group differences, we controlled for all stable between-person differences affecting HCC and perceived stress by regressing the changes in HCC and perceived stress onto the initial levels of these variables. Moreover, we statistically controlled for the reason of the job seeking registration (mass layoff or plant closure vs. other reasons), age (grand-mean centered), gender as well as recruitment time (cohort 1 vs. cohort 2) (see Figure S2 in the supplementary materials for path diagram).

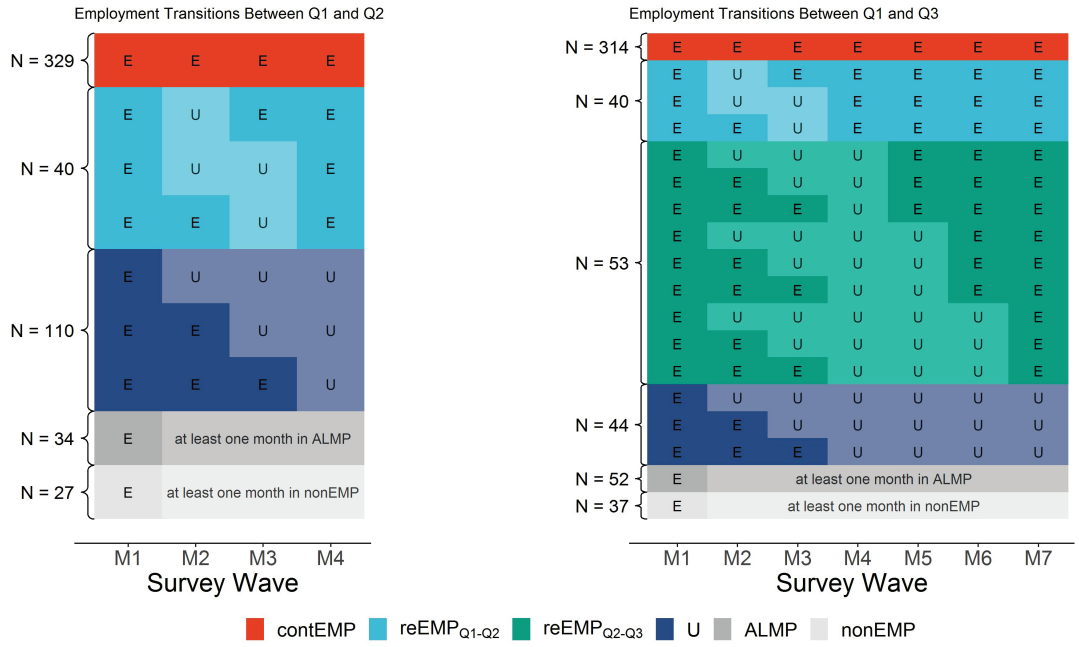

Figure 1. Employment Patterns for the Different Employment Groups (General Unemployment Effects)
E: Employed; U: Unemployed; M1 – M7: monthly survey waves; Q1 – Q3: quartery hair collection waves; contEMP: continously employed (reference group); $reEMP_{Q1\text{-}Q2}$: entered unemployment between Q1 and Q2 and became re-employed between Q1 and Q2; $reEMP_{Q2\text{-}Q3}$: entered unemployment between Q1 and Q2 and became re-employed between Q2 and Q3; UE: still unemployed in Q2/Q3; ALMP: individuals who participated in an active labour market program between Q1 and Q2/Q3; nonEMP: individuals who were categorized as being in other non-employment (e.g., retirement) between Q1 and Q2/Q3. The sample sizes of each group are presented next to the braces.

After excluding individuals with missing values on the control variables ($N = 14$), the analyses were based on a sample of $N = 526$ (see Figure S1 in the supplementary materials for participant flow chart). The model fit the data well ($\chi^2 = 106.185$; $df = 90$; $p = .117$, RMSEA

= .018 [0;.032]; CFI = .993). The estimated average changes in HCC and perceived stress for the different groups are presented in Figure 2. The full model results are available at: https://osf.io/pjh46/. The average HCC levels of continuously employed individuals decreased from Q1 to Q2 and from Q1 to Q3. Similarly, the perceived stress rating (scale: 0-100) of continuously employed individuals decreased from Q1 to Q2 and from Q1 to Q3. The average changes in HCC and perceived stress occurring between Q1 and Q2 as well as between Q1 to Q3 of individuals who became unemployed between Q1 and Q2 were not statistically different from those of continuously employed individuals. This was the fact regardless of the examined length of unemployment (i.e., short- vs. medium-term unemployment) and the re-entry into paid employment.

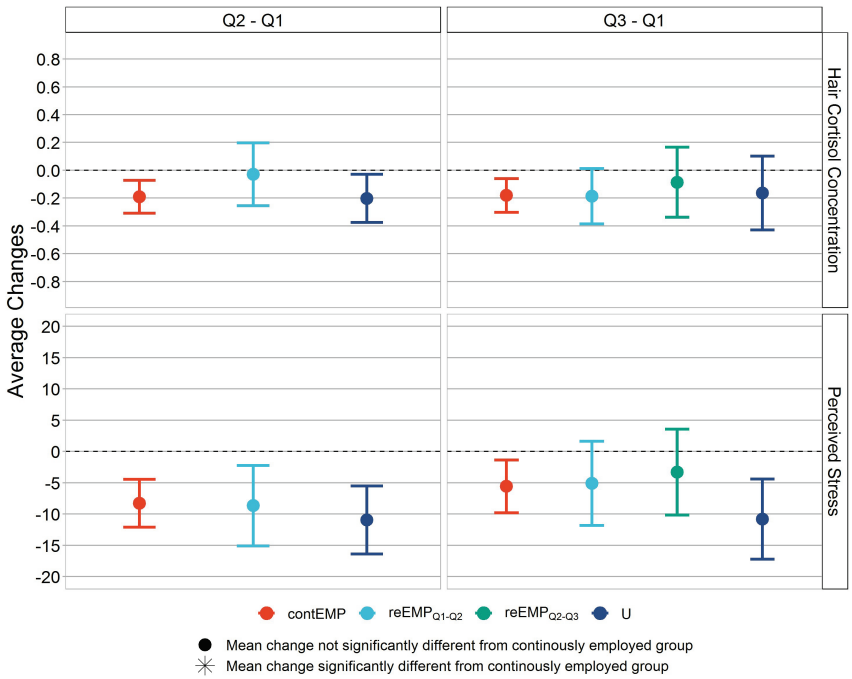

Figure 2. General Effect of Unemployment Status on HCC and Perceived Stress
Note. The figure depicts the model-implied average changes in hair corticol concentration (first row) and perceived stress (second row) between Q1 and Q2 (first column) and Q1 and Q3 (second column) for the different groups. Changes for individuals who participated in an active labour market program or who were categorized as being in other non-employment (e.g., retirement) between Q1 and Q2/Q3 are not depicted to improve readibility. Full model results are available at https://osf.io/pjh46/. A path diagram for the underlying model is presented in Figure S2 in the supplementary materials. Hair cortisol levels (in pg per mg hair) were winsorised and log-transformed before analyses. The perceived stress values ranged from 0 – 100. contEMP: continously employed (reference group); $reEMP_{Q1\text{-}Q2}$: entered unemployment between Q1 and Q2 and became re-employed between Q1 and Q2; $reEMP_{Q2\text{-}Q3}$: entered unemployment between Q1 and Q2 and became re-employed between Q2 and Q3; U: still unemployed in Q2/Q3.

In our second main analysis, we extended the previously described model by additionally considering the re-employment expectations during unemployment. In particular, we differentiated between unemployed individuals with high vs. low re-employment expectations at Q2 and Q3 (see Figure S4 in supplementary materials for patterns and group sizes). This analysis relied on the same individuals as the previously reported model ($N = 526$) and the model fit was good ($\chi^2 = 145.455$; $df = 102$; $p = .003$, RMSEA = .028 [.016;.039]; CFI = .992). The main results are depicted in Figure 3. The average changes in HCC between Q1 and Q3 of individuals who were unemployed in Q3 (i.e., who had been unemployed for 4 – 6 months) and reported low re-employment expectations significantly differed from those of continuously employed individuals ($b = 0.318$, $p = .015$). Specifically, the mean HCC levels of individuals who were unemployed in Q3 and reported low re-employment expectations increased from Q1 to Q3, whereas average HCC levels of continuously employed individuals decreased. Moreover, the average changes in HCC significantly differed between individuals who were unemployed in Q3 and reported *low* vs. *high* re-employment expectations ($b = 0.606$, $p = .009$). Individuals who were still unemployed in Q3 and reported high re-employment expectations showed descriptively, albeit not statistically significant ($b = -0.288$, $p = .121$), stronger mean decreases in HCC compared to continuously employed individuals.

Short-term unemployment (i.e., changes between Q1 and Q2) was not associated with differential mean changes in HCC in comparison to continuously employed individuals regardless of the re-employment expectations. In terms of perceived stress, individuals who were unemployed at Q2 with high re-employment expectations showed stronger mean decreases in perceived stress between Q1 and Q2 compared to continuously employed individuals. The average changes in perceived stress of unemployed individuals with low re-employment expectations in Q2 were not statistically different from the average changes of continuously employed individuals. Further, the average changes in perceived stress between Q1 and Q3 did not differ between individuals who were still unemployed in Q3 compared to

continuously employed individuals regardless of re-employment expectations. Interestingly, (residual) correlations between initial levels as well as changes in HCC and perceived stress were not significantly different from zero in all models.

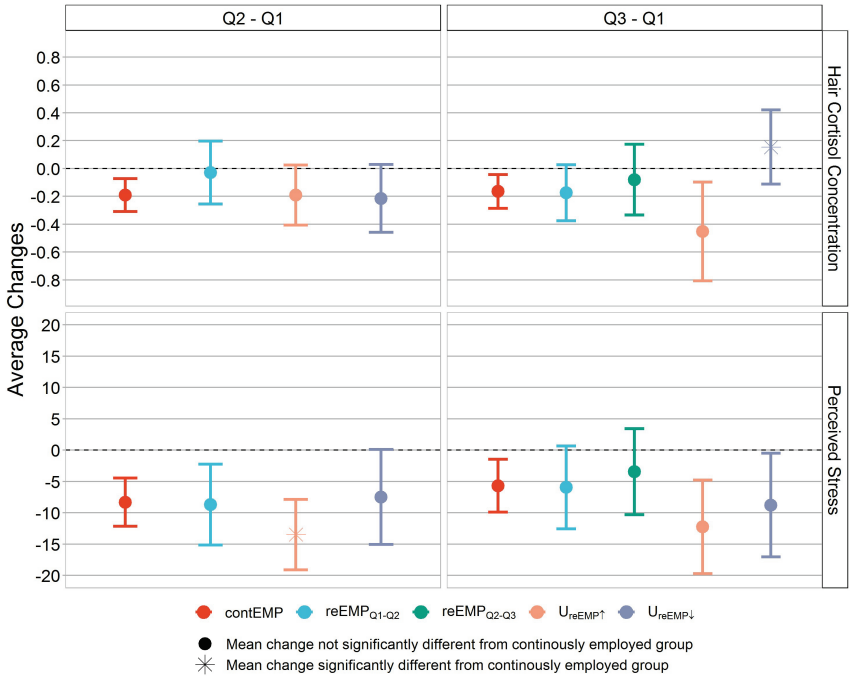

Figure 3. Effects of Unemployment on HCC and Perceived Stress Taking Re-Employment Expectations into Account

Note. The figure depicts the model-implied changes in hair cortisol concentration (first row) and perceived stress (second row) between Q1 and Q2 (first column) and Q1 and Q3 (second column) for the different groups. Changes for individuals who participated in an active labour market programs or were categorized as being in other non-employment (e.g., retirement) between Q1 and Q2/Q3 are not depicted to improve readibility. Full model results are available at https://osf.io/pjh46/. A path diagram for the underlying model is presented in Supplementary materials, Figure S2. Hair cortisol levels (in pg per mg hair) were winsorised and log-transformed before analyses. The perceived stress values ranged from 0 – 100. contEMP: continously employed (reference group); reEMP$_{Q1-Q2}$: entered unemployment between Q1 and Q2 and became re-employed between Q1 and Q2; reEMP$_{Q2-Q3}$: entered unemployment between Q1 and Q2 and became re-employed between Q2 and Q3; U$_{reEMP↑}$: still unemployed in Q2/Q3 with high re-employment expectations; U$_{reEMP↓}$: still unemployed in Q2/Q3 with low re-employment expectations.

Discussion

The present longitudinal study examined (i) whether short- and medium-term unemployment is associated with changes in hair cortisol concentration (HCC) as a biomarker of chronic stress and (ii) how re-employment expectations during unemployment moderate these associations. Descriptive analyses revealed that even though rank-order stability of the

HCC levels was high across the five quarterly hair collection waves, individuals meaningfully differed in their initial HCC levels as well as in their intraindividual changes over time. In line with previous research, this underlines that HCC levels are jointly influenced by stable dispositions as well as the changeable circumstances of life (Stalder et al., 2012).

The first key conclusion of our analysis is that an uncertain future of looming unemployment is even more stressful than unemployment itself. This implication originates from the observed mean-level decrease in HCC from the first hair collection wave, when all individuals were insecurely employed, to later collection waves, when some individuals entered unemployment whereas others remained employed. Thus, the months immediately *before* a potential loss of work, during which individuals experience high levels of uncertainty about their future as well as bear the high burden of fulfilling their work duties while looking for a new job, seem to be particularly stressful. Once individuals gained more certainty about their employment situation, regardless of whether or not individuals actually entered unemployment, mean HCC levels decreased again. Thus, resolving uncertainty, irrespective of whether it is resolved in a favorable or unfavorable manner, seems to reduce stress, which highlights the role of (economic) uncertainty for mental health. These results are in line with previous research showing that job insecurity can be a potent chronic stressor that has stronger detrimental effects in terms of stress and well-being than the actual job loss (Dekker & Schaufeli, 1995; Jacobson, 1991). This can be explained by the fact that the uncertainty associated with job insecurity often inhibits the effective use of coping strategies (Lazarus & Folkman, 1984; Sverke et al., 2002). For example, insecurely employed individuals will likely be more hesitant to look for a new job compared to individuals who already lost their jobs or who know for certain that they will lose their job in the future.

The second key conclusion of our study is that being out of work is not necessarily more stressful than being in work. Specifically, the results indicate that the current unemployment status does not affect the cortisol system *per se* but that it is important to

consider the context of unemployment, particularly future re-employment prospects. Whereas we found no general associations between the current unemployment status and changes in HCC, differentiating between unemployed individuals with high vs. low re-employment expectations yielded a more heterogeneous picture. Compared to being continuously employed, medium-term unemployment (i.e., 4 – 6 months) was associated with a *stronger mean level increase* in HCC when re-employment expectations were low and a *stronger mean-level decline* (albeit not statistically significant) in HCC when re-employment expectations were high. For short-term unemployment (i.e., 1 – 3 months) no such effects were present, regardless of the re-employment expectations. These results suggest that it is not so much the actual status of being unemployed that affects stress. Rather, poor re-employment prospects during unemployment seem to be harmful to the cortisol system when unemployment persists. This result is, again, in line with previous findings suggesting that the increased uncertainty of one's employment situation matters most for stress (Mantler et al., 2005). In consequence, unemployed individuals with poor re-employment prospects are an at-risk group of numerous negative health outcomes associated with increased cortisol secretion, notably cardiovascular disease (Dimsdale, 2008), hypertension (Esler et al., 2008), or mental disorders (e.g., Brady & Sinha, 2005; Kim et al., 2007; Lee et al., 2010). Thus, our study has important practical implications for case-workers and policymakers as it emphasizes the need for targeted job placement programs for individuals with low employability to effectively promote their reintegration into the workforce.

Further, the lack of effects of short-term unemployment on chronic stress as well as the descriptively positive effects of unemployment, when re-employment prospects are good, provide additional evidence that being unemployed can also have several benefits compared to being employed (e.g., more leisure time, less work-related stress). That relates to a sizable body of studies showing that work can also be a major stressor (Chida & Steptoe, 2009; Eddy et al., 2018; Ganster & Rosen, 2013; Gustafsson et al., 2012; Kunz-Ebrecht et al., 2004).

Moreover, these findings are in line with research indicating that unemployment is associated with positive effects in terms of affective well-being (i.e., feeling happy) when re-employment expectations are high (Lawes et al., 2022). Interestingly, the literature on affective well-being also cites the burdens that come with working as a key reason for why most unemployed individuals are not clearly worse off compared to workers (Bryson & MacKerron, 2017; Knabe et al., 2010). We, therefore, note that the effects of unemployment on hair cortisol and affective well-being are context-dependent in similar ways. In contrast, the average effects of unemployment on how individuals evaluate their lives (i.e., life satisfaction) are negative even if re-employment prospects are good (Clark et al., 2010; Lawes et al., 2022). Taken together, these findings underline that the effects of unemployment on cognitive well-being facets (e.g., life satisfaction) are more pronounced and generally negative but that effects of unemployment on daily lives are highly context-dependent and can even be positive, leading to less physiological stress and higher affective well-being.

We also examined whether short- and medium-term unemployment was related to changes in perceived stress. Analogously to HCC, we found no evidence of general effects of the current unemployment status on perceived stress. Crucially, however, when taking future re-employment expectations into account, unemployment was differentially related to perceived stress and HCC. In particular, mean self-reported stress levels of newly unemployed individuals who reported high re-employment expectations decreased more strongly than those of continuously employed individuals whereas no such effects were found for HCC. Another striking difference between the results for HCC and perceived stress is that no average effects of medium-term unemployment (i.e., 4 – 6 months) on perceived stress were found regardless of the re-employment expectations. Thus, we conclude that HCC and perceived stress are differentially affected by unemployment, when taking re-employment expectations into account. Interestingly, the initial levels of HCC and perceived stress as well as the subsequent changes in HCC and perceived stress were also not correlated. These

counterintuitive results are in line with numerous existing studies (for a meta-analysis see Stalder et al., 2017) and indicate that HCC and self-reported stress capture different aspects of stress. In particular, studies suggested that cortisol secretion is closely linked to anticipation, stressor novelty, and social-evaluative threat (Dickerson & Kemeny, 2004; Gaab et al., 2005; Mayer et al., 2018), whereas stress perceptions are more closely linked to stressor demands and cognitive appraisals (Lazarus & Folkman, 1984). Nevertheless, more multimethod studies incorporating both cortisol data and self-reported stress are needed to better understand why (long-term) cortisol secretion and perceived stress are differentially affected by unemployment. Further, this would be important to better understand the channels by which long-term health outcomes are affected by unemployment.

Materials and Methods

Data

GJSP participants were recruited as two cohorts. For the first cohort, 79,710 jobseekers who were likely to be affected by mass layoffs and 48,126 jobseekers who were likely to lose their jobs due to other reasons were identified between November 2017 and May 2019. For the second cohort, 42,340 jobseekers all of whom were likely to be affected by mass layoffs were identified between July 2020 and February 2021. Identified jobseekers were contacted via letter or email (Lawes, Hetschko, Sakshaug, & Grießemer, 2022). In total, 6,591 individuals ($N_{cohort1} = 4{,}700$, $N_{cohort2} = 1{,}891$) started filling out the entry survey and 2,449 individuals were included in the final sample (for exclusion criteria see Hetschko et al., 2020). Analyses based on data of the first cohort indicate that the overall selection bias of the sample was small despite the low sign-up rate (Hetschko et al., 2020). Data was gathered via a specifically developed smartphone app, which runs on Android and iOS (for details see Ludwigs & Erdtmann, 2019). Over up to 25 months, participants received monthly questionnaires assessing a wide range of information, including perceived stress (for details

see Hetschko et al., 2020). The parallel collection of hair samples ran on a quarterly basis from the beginning of study participation for up to one year only.

Measures

The wordings of all utilized questionnaire items are presented in Materials S1 in the Supplementary materials.

Hair Cortisol

On the seventh measurement day of survey waves 1, 4, 7, 10, and 13, individuals were asked via the survey app whether they were willing to send in a hair sample for HCC analysis. Respondents who indicated that (a) their hair was shorter than 2 cm or (b) that they took cortisone-based medication were excluded from the hair collection as non-eligible. Individuals who were not willing or eligible for the cortisol study in the first hair collection wave were excluded from later hair collection waves. Eligible respondents received the hair collection kits via mail and were asked to send in three hair strands of 3 mm diameter each to the research team within 10 days after receiving the collection kit. When insufficient hair material was sent in (i.e., less than 3cm hair or less than 7.5g hair), HCC data was treated as missing.

For each hair sample, respondents received a 10 euros cash incentive. Moreover, individuals could receive feedback concerning their hair cortisol levels at the end of the study. The 3 cm hair segments closest to the scalp were analyzed by the bio laboratory Dresden Lab Service using immunoassays to obtain a measure of the cumulated cortisol exposure over the last three months. As a quality check, 10% of the hair samples were analyzed using liquid chromatography tandem-mass spectrometry (LC-MS/MS). The HCC values obtained from both analysis methods correlate between .95 and .999 across the five hair collection waves. Because no thresholds for healthy/unhealthy HCC levels have been established, they can primarily be compared between different groups within a study (Russell et al., 2015).

Self-Reported Stress

Self-reported stress was assessed monthly via the survey app by asking respondents to indicate how often they felt 'overburdened' and 'stressed' within the last week. Individuals could respond to both items on a five-point rating scale ranging from (1) *rarely or none of the time (less than 1 day)*, (2) *some or a little of the time (1-2 days)*, (3) *occasionally or a moderate amount of time (3-4 days)*, (4) *most or all of the time (5-7 days)*, to (5) *don't know*. *Don't know* answers were coded as missing values. To obtain a measure of self-reported stress that corresponds to the same time frame as the HCC values, we averaged the scores of the stress item across the concurrent and two previous survey months. Moreover, we transformed the item scores into percent of maximum possible scores (POMP; P. Cohen et al., 1999) so that they range from 0 to 100 and can be interpreted in terms of percentage points.

Employment Groups

Each survey month, respondents were asked about their current employment status. Individuals were categorized as being *employed* when they were employed or self-employed, and as *unemployed* when they were unemployed. Moreover, individuals who took part in public subsidy programs or occupational retraining were categorized as *participants of active labor market policies (ALMPs)*. Individuals who were in occupational training, school, or university, unable to work (i.e., due to illness), or retired were categorized as *individuals with other non-employment*. The same was true for individuals who chose the category 'other' when answering the question on their employment situation. In survey months, in which individuals were not employed, they were asked to respond to the question "How likely is it that you will start a paid job within the next three months?" using an 11-point rating scale ranging from 0% to 100%. We defined the high vs. low re-employment groups by dichotomizing this variable (0% -50%: low re-employment expectation vs. 60% - 100%: high re-employment expectation).

Control Variables

Age and gender were assessed during the entry survey. Gender was assessed with the following three categories: *female*, *male*, and *other*. Age (in years) was mean-centered for the analyses. Moreover, we differentiated between individuals who registered as job seeking due to (a) mass layoffs and plant closures or (b) other reasons. Lastly, we controlled for the different recruitment times (cohort 1 vs. cohort 2).

Statistical Model

We applied (latent) baseline change score models (McArdle, 2009; McArdle & Nesselroade, 1994; Steyer et al., 1997) to model the initial levels of HCC and perceived stress as well as the changes in these constructs between Q1 and Q2 as well as Q1 and Q3. We used the two (aggregated) items of perceived stress to define the true (i.e., error-free) stress levels and the true intra-individual changes using latent variables. Because change score modeling requires strong measurement invariance (Steyer et al., 2000), we constrained the factor loadings and the intercepts of the stress items to be invariant over time. We included an indicator-specific factor to account for indicator-specific variance of the second stress item over time (Eid & Kutscher, 2014; Geiser et al., 2010). To control for differences in the initial HCC and perceived stress levels, we regressed the HCC changes onto the HCC levels at Q1 and the changes in perceived stress onto the levels of perceived stress at Q1 (McArdle, 2009). Moreover, we regressed the change variables as well as the variables corresponding to the initial levels of HCC and perceived stress onto dummy variables denoting the various employment groups as well as the control variables. A path diagram of the utilized model is depicted in Figure S2 in the supplementary materials.

Computational Procedure and Data Availability

All models were fitted using the structural equation modeling software lavaan (version 0.6-9; Rosseel, 2012) in R (version 4.1.1; R Core Team, 2017). We used the robust full information maximum likelihood estimator in order to handle missing data and to account for

the nonnormal distribution of the indicators while utilizing all available information (Graham & Coffman, 2012). All scripts and model results are available at the online repository of this study (https://osf.io/pjh46/). The data are available for research purposes upon request.

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Chapter 6

General Discussion

6. General Discussion

Within this dissertation, three empirical studies that examine how unemployment affects well-being and chronic stress have been conducted. In the following, I will briefly summarize the objectives, utilized analysis methods, and main results of the three studies before discussing how their overall findings contribute to the research field of unemployment, well-being, and stress. Further, I will highlight how several methodological approaches utilized in this dissertation provided novel opportunities to better understand how unemployment affects well-being and stress. Moreover, I will describe how future studies can build upon these methodological advancements and discuss limitations of this dissertation.

6.1. Brief Summary of Empirical Studies

Study I aimed at advancing our knowledge on the temporal unfolding of the effects of unemployment on various aspects of well-being. It addresses this issue by (i) examining the immediate effects of unemployment on cognitive, affective, and eudaimonic well-being facets using a causal modeling framework and (ii) investigating patterns of short-term adaptation in the various well-being facets. To model the true well-being changes (i.e., free of measurement error) and to derive the immediate effects of unemployment, latent change score models (McArdle, 2009; Steyer, Eid, et al., 1997) based on the first two waves of data from the first GJSP cohort were used. Patterns of short-term adaptation were analyzed using mixed-effects-trait-state-occasion models (Castro-Alvarez et al., 2021). While the causal analyses focused on individuals from mass layoffs and plant closures, effects for individuals who registered as jobseekers due to other reasons were also reported. For individuals who lost their job due to mass layoffs and plant closures, unemployment had an immediate negative effect on life satisfaction (about 5 percentage points) and income satisfaction (about 8 percentage points) from the last month in employment to the first month of unemployment. No immediate effects of unemployment were found in terms of the other examined well-being facets. Moreover, the mean well-being levels were generally stable within the first months of unemployment,

indicating a lack of short-term adaptation. For individuals who lost their job due to reasons other than mass layoffs or plant closures, unemployment had an immediate negative effect on income satisfaction but not on life satisfaction or any of the other examined well-being facets. However, mean life satisfaction levels of these individuals decreased with longer unemployment durations.

Study II explored interindividual differences in unemployment-related changes in cognitive and affective well-being facets in various contexts of unemployment. In particular, it examined whether pre-unemployment levels of psychological well-being buffered the negative effects of unemployment on the cognitive and affective well-being facets. Similar to the analyses on short-term adaptation in Study I, a mixed-effects-trait-state-occasion model was applied to the data from the first GJSP cohort. However, unlike in Study I, interindividual differences in unemployment-related changes were explicitly modeled in Study II. All analyses were run separately for individuals who registered as jobseekers due to (a) mass layoffs and plant closures or (b) other reasons. Moreover, besides contrasting episodes of unemployment and employment, unemployment episodes with low vs. high re-employment expectations were also differentiated. The results indicate that individuals substantially differed in their unemployment-related well-being changes across all well-being facets. Crucially, however, dimensions of psychological well-being did generally not moderate the effects of unemployment on the examined cognitive and affective well-being facets. Further, unemployment was found to have stronger detrimental effects when re-employment expectations were low and when individuals had lost their jobs due to mass layoffs or plant closures. In contrast, being unemployed with good re-employment prospects was found to be related to increases in several well-being facets (e.g., leisure satisfaction, feeling awake) compared to being employed. Lastly, pre-unemployment levels of all six dimensions of psychological well-being were positively, yet differentially related to pre-unemployment dispositions of cognitive and affective well-being facets.

Study III built upon the idea that unemployment is associated with chronic stress. Specifically, it examined whether unemployment is related to changes in hair cortisol, a reliable biomarker for chronic stress, as well as perceived stress. Based on data from the first three hair cortisol collection waves of both GJSP cohorts, average changes in hair cortisol and aggregated levels of perceived stress were compared between individuals who entered unemployment and continuously employed individuals using (latent) change score modeling. No general effects of the current employment status on hair cortisol or perceived stress were found regardless of the length of unemployment (i.e., short- vs. medium-term unemployment). However, having been unemployed for between four and six months and reporting low re-employment prospects was associated with stronger mean-level increases in hair cortisol compared to being continuously employed. Contrarily, individuals who had been unemployed for four to six months but reported high expectations for re-employment showed stronger average decreases (albeit not statistically significant) in hair cortisol compared to continuously employed individuals. For short-term unemployment (i.e., 1 – 3 months) no such effects were present, regardless of the re-employment expectations. Lastly, Study III showed that unemployment was differentially associated with perceived stress and hair cortisol. Moreover, these two stress measures were not correlated with each other. Therefore, hair cortisol and self-reported stress seem to capture different aspects of stress.

6.2. Integrative Discussion of the Findings

While the findings of the three empirical studies were presented separately in the previous section, their integration will highlight their overall contributions. In the following, I will thus illustrate the four central take-home messages of this dissertation.

6.2.1. Effects of Unemployment Cannot Be Fully Explained by Anticipatory Effects but also Develop Immediately after Entering Unemployment

A central goal of this dissertation was to learn more about the temporal unfolding of the effects of unemployment on various well-being facets. Existing studies underlined that the

average well-being levels of individuals who will enter unemployment in the future are already altered years before the job loss (Clark et al., 2008; Luhmann et al., 2013; von Scheve et al., 2017). However, as most existing longitudinal studies on the effects of unemployment on well-being relied on data with rather long time intervals between measurement occasions (e.g., 1 year), *anticipatory effects* occurring in the months before a job loss, *immediate effects* occurring right after the job loss and *medium-term effects* occurring in the months after the job loss could not be differentiated. In contrast, the monthly panel data of the GJSP with at least one pre-unemployment measurement occasion made it possible to isolate the immediate effects of unemployment from anticipatory effects occurring before the job loss. Further, selection effects could be minimized by focusing on individuals who registered as jobseekers due to mass layoffs or plant closures. The results of Study I showed that unemployment had an immediate negative causal effect on life satisfaction and income satisfaction from the last month in employment to the first month of unemployment. The negative effects in terms of income satisfaction were also found for individuals who lost their jobs due to reasons other than mass layoffs or plant closures, whereas no immediate effects on life satisfaction were found for these individuals. The effects of unemployment on income satisfaction in Study I and II were notably smaller compared to previous studies (e.g., Chadi & Hetschko, 2017; Powdthavee, 2012). These diverging findings suggest that the unemployment-related declines in income satisfaction occur both before the job loss (i.e., in anticipation of the unemployment-related loss in income) and after the job loss (i.e., when individuals experience the unemployment-related income loss). In contrast, the effects of unemployment on life satisfaction were comparable to those reported in studies relying on representative panel data with yearly measurement occasions (Anusic et al., 2014; Clark et al., 2008; Kassenboehmer & Haisken-DeNew, 2009; Luhmann et al., 2014; Voßemer et al., 2018; Yap et al., 2012). The similarity of these effects suggests that the actual transition into unemployment and not the anticipation of unemployment seems to be the central driver of the observed changes in life

satisfaction. This finding is in contrast to a recently published study based on Dutch panel data, which indicated that anticipatory effects seem to account for most of the unemployment-related changes in life satisfaction (Reitz et al., 2022). One reason for this dissimilarity might be the more employee-friendly job protection policies and more generous unemployment benefits in the Netherlands compared to Germany. Thus, more studies are needed to examine how the effects reported in this dissertation generalize to other countries.

Importantly, even though the recruitment strategy of the GJSP (i.e., inviting individuals who have already registered as jobseekers) limits the possibilities of examining well-being changes occurring in the months before a job loss, the present dissertation still provides evidence for prospective effects of unemployment. In particular, Study III showed that average hair cortisol levels were the highest initially when individuals were insecurely employed and decreased as individuals gained certainty about their (future) employment situation, regardless of whether they actually entered unemployment or not. This finding underlines that the time before a job loss can be highly stressful and demanding, probably even more so than actually losing one's job. This phenomenon has been explained by the fact that the uncertainty associated with job insecurity inhibits the use of effective coping strategies (Dekker & Schaufeli, 1995; Jacobson, 1991; Lazarus & Folkman, 1984; Sverke et al., 2002). For example, insecurely employed individuals will likely be more hesitant to actively search for a new job compared to individuals who know for certain that they will lose their job or who have already lost their jobs. Another explanation of this effect is that individuals who know they will lose their job are faced with the demanding and stressful task of fulfilling their work duties while also looking for a new job, which might also account for well-being changes prior to a job loss. Thus, the prospective effects of unemployment might also stem from job insecurity and not only the anticipation of the negative consequences of unemployment.

Another central question that this dissertation aimed to address is whether individuals adapt to being unemployed shortly after the job loss. In this regard, we generally found no meaningful changes within the first few months of unemployment across any of the examined well-being facets. This overall lack of short-term adaptation signals that the life circumstances relevant to one's well-being do not drastically change within the first months of unemployment. Contrary to this general absence of short-term adaptation, average life satisfaction levels of individuals who registered as jobseekers due to reasons other than mass layoffs or plant closures decreased within the first months of unemployment. Together with the lacking immediate effect of unemployment on life satisfaction in this sample, this finding suggests that the negative effects of unemployment on life satisfaction seem to develop over time for these individuals rather than immediately after the job loss. A plausible explanation for this pattern is that most individuals in this sample lost their jobs due to expiring contracts and were thus already able to anticipate their looming unemployment for months before the job loss. Such long anticipation phases likely result in more pronounced anticipatory effects and weaker immediate effects of unemployment. Crucially, the presented findings, however, show that staying unemployed for multiple months is related to additional negative effects on life satisfaction for these individuals.

In sum, the results of the present dissertation suggest that the actual transition into unemployment affects life satisfaction and income satisfaction beyond anticipatory effects occurring before the job loss. Moreover, it provides new evidence for prospective effects of unemployment by finding that average hair cortisol levels were higher in the months before a job loss that in the first months of unemployment. Lastly, individuals' well-being levels generally do not change within the first months of unemployment, suggesting a lack of short-term adaptation.

6.2.2. Unemployment Differentially Impacts Various Aspects of Well-Being and Stress

Another central contribution of this dissertation lies in highlighting that unemployment differentially affects various aspects of well-being and stress. The simultaneous monthly assessment of numerous well-being facets using state-of-the-art assessment methods like experience sampling made it possible to contrast changes in the various well-being in a detailed way. In particular, average levels of life satisfaction and income satisfaction (i.e., cognitive well-being facets) were found to be reduced following unemployment, whereas the satisfaction with other domains (i.e., family life, household chores, leisure) as well as facets of affective and eudaimonic well-being were not consistently impacted by unemployment. These differential effects of unemployment on cognitive and affective well-being facets are in line with previous studies (Dolan et al., 2017; Knabe et al., 2010, 2017; Schimmack et al., 2008; von Scheve et al., 2017) and underline the distinctiveness of the various well-being facets (Eid & Diener, 2004; Luhmann, Hawkley, et al., 2012). The phenomenon that cognitive well-being is more strongly impacted by unemployment than affective well-being can be explained by the fact that unemployed individuals generally spend more time in pleasant situations than employed individuals during a work day, which is mainly because working is typically not perceived as highly pleasant (Bryson & MacKerron, 2017; Hoang & Knabe, 2021a, 2021b; Knabe et al., 2010; Wolf et al., 2022). Moreover, unemployment was found to particularly negatively affects one's social status and identity, which is associated with changes in how people evaluate their lies but not necessarily how they feel throughout the day (Hetschko et al., 2021; Schöb, 2012; Synard & Gazzola, 2019). Thus, an important path for reducing the negative consequences of unemployment would be to eradicate the stigma connected to unemployment (see also Gross et al., 2020; Krug & Eberl, 2018).

This dissertation extended the existing literature on the effects of unemployment in three important ways. First, the GJSP is the first longitudinal study on unemployment that has administered a comprehensive measure of eudaimonic well-being, namely the Ryff Scales of

Psychological Well-Being (Risch et al., 2005; Ryff, 1989). Even though eudaimonic well-being facets were expected to play a major role in the context of unemployment, the current dissertation finds no evidence that eudaimonic well-being facets are impacted by unemployment. However, this dissertation only examined rather short unemployment episodes so that it is possible that when individuals stay unemployed for longer, their eudaimonic well-being will also be affected (see section 6.3.2). Second, Study III of this dissertation is the first longitudinal study that has examined associations between unemployment and hair cortisol, a reliable biomarker for chronic stress. Contrary to a cross-sectional study by Dettenborn et al. (2010), the results showed that the current unemployment status was not *per se* associated with mean-level changes in hair cortisol concentration but that it is important to consider the context of unemployment, particularly re-employment expectations (see section 6.2.3). Third, this dissertation not only examined unemployment-related mean changes in the various well-being facets but also explored interindividual differences in these changes (i.e., effect heterogeneity). Even though all analyses of this dissertation accounted for interindividual differences in intraindividual changes, Study II particularly focused on this issue. It found that the largest interindividual differences in unemployment-related well-being changes emerged in terms of income and leisure satisfaction. This result likely reflects the varying levels of financial resources that individuals can draw upon to compensate for their income loss during unemployment. In general, individuals differed more strongly in respect to changes in cognitive well-being facets than in changes in affective well-being. This finding is contrary to results reported in a meta-analysis by Luhmann, Hofmann, et al, (2012), which found that studies examining effects of unemployment on affective well-being facets generally yielded more heterogeneous effects than studies investigating cognitive well-being facets. The authors explained this effect by stating that affective well-being is more strongly influenced by other constructs such as coping strategies, personality, or social support than cognitive well-being facets (see also

Schimmack et al., 2008). However, Luhmann, Hofmann, et al. (2012) compared between-study variability in effect sizes so that it is likely that at least some of the differences in the effects sizes stem from differences in the methods used to measure affective well-being. In contrast, Study II contrasted the heterogeneity in the effects of unemployment on the various affective and cognitive well-being facets within the same study. Thus, the results of Study II are not influenced by method effects but rather indicate genuine differences in terms of how people react to unemployment.

In sum, the present dissertation provided novel evidence that unemployment differentially affects various aspects of well-being and stress, emphasizing the importance of assessing well-being and stress in a differentiated manner. The general lack of effects of unemployment on affective and eudaimonic well-being facets is in some sense reassuring, as it shows that experiencing unemployment seems to be primarily associated with changes in how individuals evaluate their lives but not with changes in their affective experiences or their psychological functioning. Moreover, unemployment does not impact everyone alike. Some unemployed individuals experience strong declines in well-being and stress following a job loss, whereas others show increases in these constructs. This finding motivates the development of targeted interventions that provide risk groups with adequate help in the context of unemployment.

6.2.3. The Reason for a Job Loss and Re-Employment Expectations during Unemployment are Highly Relevant for the Effects of Unemployment on Well-Being and Stress

Previous studies found that the way individuals attribute and appraise their job loss plays a central role in how being unemployed affects their well-being (McKee-Ryan et al., 2005; McKee-Ryan & Kinicki, 2002). Following up on this finding, Study I and II of this dissertation considered the reason for job loss (mass layoffs or plan closures vs. other reasons) as an important contextual factor that is related to who individuals blame for their job loss (McKee-Ryan et al., 2005). The results show that unemployment had stronger detrimental

effects on well-being when individuals lost their jobs due to mass layoffs or plant closures compared to losing it due to other reasons. A plausible explanation for this effect is that individuals who lost their jobs due to mass layoffs or plant closures likely had shorter anticipation phases compared to the other group, in which most individuals lost their jobs due to expiring contracts. This explanation relies on the assumption that smaller anticipation effects are associated with stronger effects after the job loss and vice versa. However, whether this assumption holds is not clear and needs to be tested in future studies.

Moreover, Study II and III examined re-employment expectations during unemployment as a central determinant of how unemployed individuals appraise their situation (McKee-Ryan & Kinicki, 2002). Being unemployed with poor re-employment prospects was found to be related to stronger unemployment-related declines in life satisfaction and income satisfaction compared to being unemployed with good re-employment prospects. Moreover, being unemployed with high re-employment expectations was related to increases in leisure satisfaction and feeling more awake. These results are in line with existing research (Chadi & Hetschko, 2017; Powdthavee, 2012) and underline that unemployment can have positive effects on several well-being facets, especially when individuals expect to find a new job soon. A central reason for these positive effects of unemployment is likely the absence of the burdens related to work (see also Bryson & MacKerron, 2017). More evidence for the moderating role of re-employment prospects during unemployment comes from Study III, which found that having high vs. low re-employment expectations during unemployment was related to differential changes in hair cortisol. Specifically, having been unemployed for 3 – 6 months and still reporting poor re-employment prospects was associated with significantly increased hair cortisol levels compared to being continuously employed, whereas no such effects were found for short-term unemployment (i.e., less than 3 months). Thus, unemployment seems to be related to chronic stress measured via hair cortisol but only when the circumstances of unemployment are rather severe (i.e., medium-term unemployment with

low re-employment expectations). In contrast, when individuals were optimistic about finding a new job, average hair cortisol levels showed descriptively (albeit not significantly) stronger decreases compared to continuously employed individuals. Again, this relief effect likely stems from the fact that unemployed individuals with good re-employment prospects are neither confronted with work stressors nor with the typical stressors of being unemployed (e.g., active job search, high levels of uncertainty).

Taken together, this dissertation underlines that the reason for job loss and re-employment prospects during unemployed are highly relevant contextual factors when examining the effects of unemployment on well-being and stress.

6.2.4. Pre-Unemployment Levels of Cognitive, Affective and Psychological Well-Being do not Buffer the Negative Effects of Unemployment on Cognitive and Affective Well-Being

Even though numerous personal resources that might buffer the effects of unemployment on well-being have been discussed in the literature (see McKee-Ryan et al., 2005), so far no robust empirical evidence for the protective role of any internal coping resources has been established. Study II of this dissertation added to this literature by showing that none of the six dimensions of psychological well-being (Ryff, 1989) consistently buffered the effects of unemployment on various cognitive and affective well-being facets. The only exceptions were found for individuals who registered as jobseekers due to reasons other than mass layoffs or plant closures. For these individuals, environmental mastery was found to be associated with more positive unemployment-related changes in feeling awake and feeling happy. However, because these effects were not found for individuals who registered as jobseekers due to mass layoffs or plant closures and clear theoretical explanations for the presence of these effects and the absence of other moderator effects are missing, these results should be interpreted with caution.

Further, pre-unemployment levels of the examined cognitive and affective well-being facets were not related to subsequent unemployment-related changes in these facets. This

finding contradicts the results of Binder and Coad (2015a, 2015b), which indicated that unemployment has less detrimental effects on selected cognitive and affective well-being facets for individuals who generally score high on these facets. The contrasting findings likely emerged because Binder and Coad based their conclusions on the *overall* well-being levels (i.e., across episodes of employment and unemployment) whereas Study II based its moderator analyses on the pre-unemployment levels of the well-being measures. An important limitation of Binder and Coad's approach is that individuals who show particularly strong negative effects following unemployment will also have lower overall well-being scores so that the moderator variable (i.e., overall well-being) is strongly influenced by the outcome variable (i.e., unemployment-related well-being changes). In contrast, Study II clearly disentangled the unemployment-related well-being changes (i.e., the outcome) from the pre-unemployment well-being levels (i.e., the moderator) allowing for a more straightforward interpretation of the effects.

In sum, the present dissertation provides further evidence that personal resources do not seem to play a central role in how individuals experience and cope with unemployment. This conclusion is in line with numerous studies that also did not find robust evidence for personal resources that buffer the negative effects of unemployment (e.g., Anusic et al., 2014; Boyce et al., 2010; Hahn et al., 2015; Yap et al., 2012).

6.3. Methodological Implications, Limitations, and Future Directions

The previous synthesis of the main findings highlights that several methodological approaches utilized in this dissertation proved to be fruitful for advancing our understanding of how unemployment affects well-being and chronic stress. In the following, I will unpack these methodological advancements and will elaborate on how future studies on unemployment and life events in general can profit from them. Importantly, within each of the following subsections I will also point to limitations of this dissertation and lay out how future studies could address these.

6.3.1. Differentiated Assessment of Well-Being and Chronic Stress

The present dissertation underlined the importance of assessing well-being and stress in a differentiated manner. For example, simultaneously assessing cognitive, affective, and eudaimonic well-being facets made it possible to show that unemployment primarily impacts how individuals evaluate their life but less how pleasurable or fulfilling they perceive it to be. Such a differentiated characterization of the effects of unemployment can then stimulate new research that aims at explaining reasons for the differential effects. A prime example of this process is the extensive research on the concept of *identity utility*, which has been proposed as an explanation for why unemployment affects cognitive well-being more strongly than affective well-being (Hetschko et al., 2014, 2021; Hetschko, Schöb, et al., 2020; Schöb, 2012).

Nevertheless, most existing research relied on a rather narrow definition of well-being and primarily focused on life satisfaction as an indicator of cognitive well-being. In particular, eudaimonic well-being facets have rarely been studied in the context of unemployment even though they are defining features of several theories on unemployment. A common critique against eudaimonic well-being measures is that they are supposedly not empirically distinguishable from subjective well-being facets (Disabato et al., 2016; Kashdan et al., 2008). However, most existing studies that reported a lack of discriminant validity collapsed multiple facets of eudaimonic and hedonic well-being into higher-order factors (e.g., Disabato et al., 2016; M. W. Gallagher et al., 2009; Goodman et al., 2018; Keyes et al., 2002; Linley et al., 2009). In contrast, Study I and II of this dissertation separately examined the various well-being facets and found that unemployment was associated with distinct changes in the various cognitive, affective and eudaimonic well-being facets. Moreover, Study II showed that the six dimensions of psychological well-being (i.e., eudaimonic well-being facets) were differentially associated with various facets of cognitive and affective well-being with correlations ranging from .10 to .56. Thus, the sub-facets of cognitive, affective and

eudaimonic well-being are indeed empirically distinguishable and capture related, yet distinct aspects of well-being.

This dissertation mainly focused on the six dimensions of psychological well-being (Ryff, 1989) to measure eudaimonic well-being. The advantage of Ryff's operationalization is that it directly defines eudaimonic well-being in contrast to other theories that describe features that foster rather than define eudaimonic well-being (Heintzelman, 2018; Ryan & Deci, 2001). However, the dimensions of psychological well-being define well-being using broad, trait-like characteristics that are highly stable over time (Ryff et al., 2015) and are thus less sensitive to environmental changes (e.g., becoming unemployed) compared to other measures of eudaimonic well-being. While operationalizing eudaimonic well-being as a stable, trait-like construct is essential when studying it as a time-invariant moderator variable (like in Study II), a more transient operationalization would be desirable when interested in studying change (like in Study I). Thus, items of the Ryff scale that were least likely to be sensitive to change were removed in Study I and experience sampling was additionally utilized to measure momentarily experienced meaning in life using ad-hoc developed items. Future studies interested in studying change in eudaimonic well-being would, however, be better advised to administer measures that are more sensitive to change. In particular, the PERMA-Profiler (Butler & Kern, 2016), the Comprehensive Inventory of Thriving (Su et al., 2014), or the Well-Being Profile (Marsh et al., 2020) seem to be promising instruments in this context.

This dissertation also examined the associations of unemployment with hair cortisol levels. The high rank-order stability of hair cortisol levels across the five quarterly hair collection waves provided further evidence that hair cortisol is a reliable and rather stable biomarker for chronic stress. Crucially, however, individuals also meaningfully differed in their initial hair cortisol levels as well as in their intraindividual changes over time emphasizing that hair cortisol levels are indeed changeable by life circumstances despite the

strong dispositional influences (similar results have been found by Stalder et al., 2012). Interestingly, in line with previous research, hair cortisol levels and perceived stress were not correlated with each other. Moreover, these two stress measures were differentially associated with unemployment. Thus, hair cortisol and self-reported stress seem to capture distinct aspects of stress. An important avenue for future studies is to better understand why unemployment affects perceived and physiological stress differently and to investigate how hair cortisol and perceived stress are linked to long-term health outcomes. Moreover, it would be highly valuable to follow up on previous efforts to establish reference levels for hair cortisol concentration (Russell et al., 2015) in order to identify clinically relevant levels of hair cortisol.

Taken together, a detailed characterization of how life events like unemployment affect various aspects of well-being and stress is a central starting point for the development of new theories and empirical investigations aiming at explaining these differential effects. Moreover, a broad conceptualization of well-being that includes eudaimonic well-being facets is important to understand the effects of unemployment in a holistic way. Lastly, much promise lies in the combination of objective data sources like biomarkers and self-reported data for a better understanding of the complex interrelationships between a person's physiological status, their physical and social environment as well as health outcomes.

6.3.2. Frequent Measurements Occasions to Examine Timing of Effects

A central feature of the GJSP is that individuals were surveyed on a monthly basis. These frequent measurements provide novel opportunities to study the temporal dynamics of the effects of unemployment occurring in close proximity to a job loss. Specifically, unemployment was found to have immediate effects on life satisfaction and income satisfaction that go beyond anticipatory effects occurring in the months before a job loss. Moreover, well-being levels were found to be rather stable within the first months of unemployment indicating a general lack of short-term adaptation. Despite these novel

insights, important questions about the temporal unfolding of the effects of unemployment remain. For instance, as most individuals in the GJSP either entered unemployment early on or stayed employed throughout the study, anticipatory effects of unemployment can only be studied in a limited way. To comprehensively examine antecedents and correlates of anticipatory effects of unemployment, longitudinal studies with longer pre-unemployment intervals would be needed. However, conducting such a study will be challenging, as it requires recruiting a rather large sample of individuals who will likely become unemployed in the following years. Moreover, to differentiate between anticipatory effects and selection effects, not only employees but also employers would need to be surveyed so that employees could be asked about plans to quit their current jobs and employers could be questioned about reasons for planned layoffs.

Further, as most unemployed individuals found a new job rather quickly in the GJSP, long-term adaptation to unemployment could not be examined. However, long unemployment spells will likely have stronger impacts on one's life than short-term unemployment. Particularly critical in this context will be examining well-being changes when individuals transition into more restrictive unemployment benefit schemes. For example, in Germany unemployed individuals receive comparably high unemployment benefits (i.e., 60 - 67% of their former salary) within the first year of unemployment (*Arbeitslosengeld I*), which are then drastically cut to a fixed amount (i.e., 449 € in 2022) when individuals stay unemployed for longer (*Arbeitslosengeld II*). Examining how the anticipation and actual experience of these cuts affect well-being would shed more light onto the role of financial resources during unemployment. However, to examine these well-being changes and to investigate patterns of long-term adaptation to unemployment, high-frequency prospective panel studies spanning multiple years that examine individuals who are at high risk of long-term unemployment would be needed. Crucially, such studies should also include measures of eudaimonic well-being to investigate whether eudaimonia is really not impacted by unemployment. However,

high-frequency studies that span multiple years are highly burdensome for respondents, which will likely lead to high dropout rates. Alternatively, to render data collection more feasible, the measurement frequency could be temporarily increased during periods in which especially strong well-being changes (e.g., the months before after the job loss) can be expected (measurement burst designs, see Nesselroade, 1991).

In sum, prospective panel data with short time intervals between measurement occasions are crucial for identifying critical time periods in which the effects of life events like unemployment unfold. However, the realization of such high frequency panel studies on is highly challenging. Thus, it might be more promising to conduct specialized studies that focus on specific aspects of how and when certain life events affect well-being and health (see next section).

6.3.3. Causal Analysis for Causal Research Questions

Investigating the effects of unemployment on well-being or stress is an inherently causal endeavor, which can, however, only be pursued based on observational data. The GJSP was specifically tailored to address this issue. A key feature in this regard is the innovative recruitment strategy, in which individuals who are at high risk of losing their jobs were contacted several months before their potential job loss. This strategy made it possible to compare well-being changes of individuals who eventually entered unemployment (i.e., event group) to those of highly comparable individuals who stayed employed (i.e., control group). This approach can be described as a natural experiment, which is considered the gold standard method for approximating causal effects in observational studies (Hernán & Robins, 2020). By focusing on mass layoffs and plant closures (i.e., external reasons for a job loss) and controlling for pre-existing differences between the two groups, the causal interpretability of the effects was strengthened further. Moreover, the robustness of the obtained results was probed in two sensitivity analyses, in which (a) the expectations to “lose one’s job” as well as to “search for a new job” within the next six months were included as control variables and

(b) the analyses were ran based on a propensity score-matched subsample. Lastly, unlike most existing studies on the effects of unemployment on well-being, the analyses accounted for measurement error as most well-being facets were assessed using multi-item questionnaires. The combination of these methodological advancements made it possible to approximate the immediate causal effect of unemployment on various facets of unemployment.

Important to note is, however, that all GJSP respondents already registered as jobseekers prior to participating in the study and thus all received the notification that their job might be in danger, which in itself is a critical life event. Thus, individuals in the control group of Study I are fundamentally different to continuously employed individuals in the general population. Consequently, the effects obtained in Study I are conceptually different from those typically derived in studies using large nationally representative panel data that compare individuals who enter unemployment to a diverse group of continuously employed individuals (e.g., Gebel & Voßemer, 2014). Crucially, because individuals in the control group of Study 1 were initially also at high risk of losing their job, they were highly similar to individuals in the event group (i.e., who entered unemployment). Thus, the well-being changes of the control group also more likely resembled how individuals in the event group would have changed if they had not entered unemployment (i.e., counterfactual trajectory). In contrast, much less information about the composition of the control groups is generally available in studies based on large scale panel data so that it is less clear whether the changes in the control group actually resemble the counterfactual trajectories of the event group.

Another crucial point is that the causal analyses in Study I relied on individuals who lost their jobs due to mass layoffs and plant closures (i.e., external reasons), which are both rather unique forms of job loss. After a mass layoff or plant closure, individuals can attribute their job loss to external factors as well as share their fate with former coworkers. Crucially, both of these factors have been shown to lessen the detrimental effects of unemployment (Clark, 2003; McKee-Ryan et al., 2005). Moreover, mass layoffs or plant closures are more

common in industrial jobs than in administrative jobs, which limits the generalizability of the results. To address these issues, all studies of this dissertation further included individuals who lost their jobs due to other reasons (e.g., expiring contracts) in order to compare the effects between both groups. Another issue that might put the generalizability of the results into question is selective participation in the GJSP. Even though the whole population of jobseekers from mass layoffs and plant closures was invited over many months, only a fraction of them actually participated in the GJSP. Importantly, however, analyses based on data of the first cohort of the GJSP indicate that the overall selection bias is small despite the low sign-up rates (Hetschko, Eid, et al., 2020). Still, the low participation rates underline how challenging it is to conduct large-scale longitudinal studies even if you have direct access to the entire population.

Going forward, specialized panel studies similar to the GJSP could be designed to investigate the effects of other life events in highly controlled settings. For example, researchers could collaborate with national pension insurances in order to recruit individuals that are approaching retirement age in order to examine how well-being changes in the transition into retirement. Analogously to the GJSP, not all individuals will retire right when they reach their regular retirement age; some will retire earlier and will accept cuts to their pensions and others will keep working past their retirement age. The well-being trajectories of these groups could then be compared to each other in order to unravel the well-being dynamics occurring around retirement. Similar approaches could be applied for studying other life events like childbirth (e.g., recruit newly married couples via local marriage bureaus), divorce (e.g., recruit married couples that are struggling through marriage counselors), or re-employment (e.g., recruit newly unemployed individuals via the local unemployment agency) by comparing individuals who experience the respective life events to those who do not.

In sum, an important avenue for future studies is to develop research designs that permit examining the effects of life events in highly controlled settings using causal analysis

frameworks. Crucially, however, a potential drawback of such specialized studies is that the effects might not always generalize to the general population.

6.3.4. Modeling Interindividual Differences and Situational and Personal Causes Thereof

The results of the present dissertation emphasize that individuals strongly differ in how they react to unemployment. In particular, individuals differ more strongly in terms of how unemployment affects their life evaluations than their daily affective experiences. The circumstances in which individuals are unemployed were found to be particularly relevant for how individuals react to unemployment, whereas personal resources seem to only play a peripheral role. In particular, this dissertation examined the reason for the job loss as well as the re-employment expectations during unemployment as broad contextual factors that are linked to how unemployed individuals appraise their situation and how they attribute their job loss. However, even after accounting for the reason of the job loss and re-employment expectations during unemployment, large interindividual differences in the unemployment-related changes in well-being and stress remained. This underlines that more work is needed to explore alternative sources explaining why the effects of unemployment on well-being and stress varies between people. An important step in this context would be to directly ask unemployed individuals about their thoughts on their job loss, who they blame for it and what their employment-related goals are. Moreover, longitudinal studies following up on recent research suggesting that unemployment hinders individuals in achieving their life goals (Paul et al., 2016) would be valuable. For example, future studies could examine whether the extent to which the attainment of central life goals are obstructed during unemployment accounts for differences in how individuals react to unemployment. In addition, more research is needed to better understand the role of various coping resources such as financial resources and social support during the job search. Optimally, these studies would be conducted across different countries with varying levels of employment protection laws and unemployment benefits so that effects of different economic policies can be investigated.

A more detailed assessment of contextual information would also promote research on life events in general. To characterize life events, Luhmann et al. (2021) recently developed the Event Characteristics Questionnaire (ECQ). The ECQ assesses self-perceived characteristics of life events based on the following nine dimensions: valence, impact, predictability, challenge, emotional significance, change in worldviews, social status changes, external control, and extraordinariness. Research on the ECQ underlines that the nine dimensions are differentially stable over time (Haehner, Kritzler, et al., 2022) and that life events vary in their perceived characteristics (Kritzler et al., 2022). The ECQ has already been used to study the relationship between event characteristics and subjective well-being (Haehner, Pfeifer, et al., 2022) as well as prosociality and empathy (Fassbender et al., 2022), underlining that it is a highly informative measure for researching life events. However, it is also a rather broad and unspecific measure. Thus, studies focusing on a specific life event should identify event characteristics that are particularly relevant in that context and modify the ECQ accordingly. Importantly, a more detailed assessment of event characteristics will likely also facilitate research on personal resources (e.g., personality) that help individuals to cope with life events. Specifically, analytically controlling for situational circumstances of life events will likely increase the statistical power to identify personal resources that moderate the effects of life events on well-being and stress.

6.4. Conclusions

Unemployment is a critical life event that occurs rather frequently in our society. The present dissertation advanced our understanding of the effects of unemployment on well-being and stress in three important ways. First, it provided novel evidence of how unemployment affects various aspects of well-being in close proximity to a job loss. Specifically, becoming unemployed had an immediate negative mean level effect on life satisfaction and income satisfaction but no such effects on affective or eudaimonic well-being facets. Moreover, well-being levels did not change within the first months of unemployment,

indicating a lack of short-term adaptation. Second, the results of this dissertation underline that individuals strongly differ in their reactions to unemployment. In particular, the reason for job loss and re-employment expectations during unemployment were highly relevant for how unemployment affected well-being. In contrast, high pre-unemployment levels of well-being did not buffer the negative effects of unemployment on well-being. Third, unemployment was found to be associated with increases in hair cortisol, a reliable biomarker for chronic stress, when re-employment expectations were low after having been unemployed for several months. Taken together, the present dissertation underlines that the effects of unemployment on well-being and stress are diverse, unfold at various stages, and are generally context dependent.

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Appendix A

Supplementary Materials of Study I

Supplementary Materials of Study I

Material S1: Variables Used in the Propensity Score Model

A crucial step for propensity score matching is the selection of the covariates used to estimate the propensity scores. We only included covariates that were measured at M1 (i.e., before the event group entered unemployment) and selected the variables based on the following theoretical considerations.

Dismissal Protection Laws (Employment Protection Act)

In some cases of mass-layoffs, companies formulate rules together with the works council to determine which employees have to be laid off first. These rules are generally based on tenure, age, obligations to support others (e.g., number of dependents) and disabilities (see §1 (3) *KSchG*, 1969). Thus, these characteristics are potentially related to job loss in mass-layoff samples and should be included in the propensity score model. Specifically, we included *age* as proxy for tenure, *number of children in the household* as a proxy for the number of dependents and *self-rated health* as well as *expected health changes in the next three years* as general indicators of health and disability.

Work Characteristics

It is likely that job or workplace characteristics are related to the likelihood of becoming unemployed. Thus, we included a wide range of workplace characteristics in the propensity score model. In the following, the items are presented:

Please indicate in the following whether or not the following aspects are true for your current employment.

Source: adapted from SOEP (for original items see e.g., TNS Infratest Sozialforschung, 2015)

1. Is it a temporary employment relationship? [“Handelt es sich um ein Zeitarbeits- bzw. Leiharbeitsverhältnis?“]
2. Is your contract of employment limited in duration? [“Ist Ihr Arbeitsvertrag zeitlich befristet?”]
3. Do you work in shifts? [“Arbeiten Sie in Schichten?”]

4. It occurs at least once a month that I work from home in agreement with my employer. [“Es kommt wenigstens einmal pro Monat vor, dass ich in Absprache mit meinem Arbeitgeber von zuhause aus arbeite.”]

Scale: 0 (no), 1(yes)

Please indicate in the following whether or not the following aspects are true for your current employment.

Source: adapted from SOEP (for original items see e.g., TNS Infratest Sozialforschung, 2015)

1. My job is diverse. [„Meine Tätigkeit ist abwechslungsreich.“]
2. I have to perform heavy physical labor in my occupation. [“Ich muss bei meiner Tätigkeit körperlich schwere Arbeit leisten.”]
3. I can decide how to carry out my work on my own. [“Ich kann die Durchführung meiner Arbeit selbstständig gestalten.”]
4. My job performance gets controlled rigorously. [“Meine Arbeitsleistung wird streng kontrolliert”]
5. I occasionally get in trouble or have conflicts with superiors. [“Ich habe öfters Ärger oder Konflikte mit Vorgesetzten.”]
6. I get along well with my colleagues from work. [“Ich komme mit meinen Arbeitskollegen gut aus.”]
7. I always learn new things at work that will be useful for my career development. [“Ich kann bei meiner Arbeit immer wieder etwas hinzulernen, was für mein berufliches Fortkommen nützlich ist.”]
8. At work, I am exposed to straining environmental influences like cold temperatures, wetness, heat, harmful chemical substances, vapors or gases. [“Ich bin bei meiner Arbeit belastenden Umwelteinflüssen ausgesetzt, wie etwa Kälte, Nässe, Hitze, chemischen Schadstoffen, Dämpfen oder Gasten.”]
9. My work entails high nervous tension. [“Meine Arbeit ist mit hoher nervlicher Anspannung verbunden.”]
10. At work, I am exposed to a heightened risk of work accidents. [“Ich bin bei meiner Arbeit einem erhöhten Risiko von Arbeitsunfällen ausgesetzt.”]
11. My work offers me opportunities for promotion. [“Meine Tätigkeit bietet mir Aufstiegschancen.”]

Scale: 1 (not true at all) to 5 (completely true)

Employment-related Expectations

Moreover, employment-related expectations are also potential confounders (see robustness check I in the main manuscript). Thus, we included several employment-related expectations as covariates in the propensity score model. In the following, the items are presented:

How likely is it that the following changes to your professional life will occur within the next six months?

Source: SOEP (for original items see e.g., TNS Infratest Sozialforschung, 2015):

1. You look for a new position on your own volition. ["Sie suchen von sich aus eine neue Stelle."]
2. You actually lose your job. ["Sie verlieren tatsächlich Ihren Arbeitsplatz."]
3. You give up your current profession and start over in another profession. ["Sie geben Ihren derzeitigen Beruf auf und fangen in einem anderen Beruf neu an."]
4. You look for a new position. [„Sie suchen von sich aus eine neue Stelle."]
5. You become self-employed. [„Sie machen sich selbstständig bzw. werden freiberuflich tätig."]
6. You give up employment entirely or temporarily. [„Sie geben Ihre Erwerbstätigkeit ganz oder vorübergehend auf."]
7. You retire, regularly or early. [„Sie gehen in den Ruhestand, sei es regulär oder vorzeitig."]
8. You substantially change your working hours, e.g., from full-time to part-time or vice versa. [„Sie verändern Ihre Arbeitszeit wesentlich, wechseln also von Vollzeit in Teilzeit oder von Teilzeit in Vollzeit."]

Scale: 11-point-scale from 0%, 10%, 20%, ... to 100%

Employment Related Attitudes

It is likely that individuals that highly value their work, will make greater efforts to stay employed (e.g., look for new job while still being employed in the old job). Therefore, we included six dimensions of employment-related attitudes in the propensity score model. The scale scores of the following facets of the work behaviour and experience questionnaire (Arbeitsbezogene Verhaltens- und Erlebensmuster [AVEM]) were used: Subjective significance of work, career ambition, tendency to exert, striving for perfection, emotional distancing, satisfaction with work success. Due to copyright restrictions, we cannot print the original items. The items can be found in the manual of the AVEM (see Schaarschmidt & Fischer, 2008). Moreover, we included the logarithm of household income in the propensity score model as individuals with lower household income might have to take up new employment quicker compared to individuals with higher household income.

Tendency to Resign

In addition, one's individual tendency to resign is likely related to the well-being levels as well as the likelihood of finding a new job without becoming unemployed. Thus, we included the scale score of the following items, separately for the positively and negatively worded items, in the propensity score model. In the following, the items, which we developed, are presented:

1. When I do not succeed, I give up. [„Wenn mir etwas nicht gelingt, gebe ich schnell auf."]
2. It is hard for me to deal with failures. [„Mir fällt es schwer, Misserfolge zu verdauen."]
3. If I did not succeed, I am even more motivated. [„Wenn ich bei einer Sache nicht erfolgreich war, spornt mich das umso mehr an."]
4. If something does not work out, I work even more persistently on it. [„Wenn etwas nicht klappt, arbeite ich noch beharrlicher weiter."]

Scale: 1 (not true at all) to 5 (completely true)

Proactive Coping

Analogous to one's individual tendency to resign, proactive coping is also likely related to the well-being levels as well as the likelihood of finding a new job without becoming unemployed. Thus, we included the scale score of the following items in the propensity score model.

Source: Proactive Coping Inventory; subscale "proactive coping" (Greenglass et al., 1999);

1. When I plan something, nothing can stop me. [„Wenn ich mir etwas vorgenommen habe, kann mich nichts mehr aufhalten."]
2. I always try to make progress. [„Mir kommt es immer darauf an, etwas zu bewirken."]
3. When I experience a problem, I take the initiative in resolving it. [„Wenn es „hart auf hart kommt", nehme ich die Sache in die Hand und finde einen Weg."]
4. With everything I do, I want to achieve important things in the world. [„Ich möchte mit dem, was ich tue, etwas Wichtiges in dieser Welt bewegen."]
5. I take valuable experiences from daily hassles, which helps me to live my life in better ways. [„Ich ziehe aus alltäglichen Schwierigkeiten wichtige Erfahrungen, um mein Leben besser zu gestalten."]
6. I always think about what things I can improve. [„Ich denke immer daran, was man wohl noch verbessern könnte."]

Scale: 1 (not true at all) to 4 (completely true)

Well-Being Facets

Lastly, as the initial well-being levels are likely related to subsequent well-being changes, we included all well-being facets that we also used as outcome variables (see Materials S2) as well as *job satisfaction* in the propensity score model in order to equate the event and control group regarding their initial well-being levels.

Additional Covariates

For individuals that registered as jobseekers due to reasons other than mass-layoffs or plant closures, the initial covariate balance was not satisfactory. Thus, in order to improve the covariate balance among matched individuals, we imposed a caliper of one standard deviation of the propensity scores. Moreover, we iteratively added those variables with the highest SMDs to the propensity score until the covariate balance was satisfactorily. In particular, we added the following three scales scores:

Reflective Coping

Source: Proactive Coping Inventory; subscale "reflective coping" (Greenglass et al., 1999);

1. If a problem seems challenging to me, I let it sit until I feel that I am ready to deal with it. [„Wenn mir ein Problem zu schwierig erscheint, dann lasse ich es so lange ruhen, bis ich mich ihm gewachsen fühle."]
2. When I have a problem, I first sleep a night on it. [„Wenn ich ein Problem habe, schlafe ich erst einmal eine Nacht darüber."]
3. When I have a problem, I first let it simmer for a while before I take action. [„Wenn ich ein Problem habe, lasse ich es erst einmal auf kleiner Flamme köcheln, bevor ich es anpacke."]

Scale: 1 (not true at all) to 4 (completely true)

Perceived Stress

Within the last week… [„In der vergangenen Woche…"]

1. I felt overburdened [„habe ich mich überlastet gefühlt."]
2. I felt stressed [„habe ich mich gestresst gefühlt."]

Scale: rarely or none of the time (less than 1 day) (1), some or a little of the time (1-2 days) (2), occasionally or a moderate amount of time (3-4 days) (3) and most or all of the time (5-7 days) (4).

Openness to New Experience

Source: Big Five Inventory SOEP (BFI-S); subscale "openness to new experience" (Schupp & Gerlitz, 2014);

I am somebody who… ["Ich bin jemand, der…"]

1. is original and comes up with new ideas. [„originell ist, neue Ideen einbringt."]
2. values artistic/aesthetic experiences [„künstlerische, ästhetische Erfahrungen schätzt."]
3. is imaginative. [„eine lebhafte Phantasie, Vorstellungen hat."]

Scale: 1 (not true at all) to 7 (completely true)

Material S2: Items of Well-Being Outcomes & Employment Status

Satisfaction With Life Scale

Source: Satisfaction With Life Scale (Diener et al., 1985, p. 72; Schumacher, 2003, p. 2)

Below are five statements that you can agree with or disagree with. Please indicate how much you agree with each statement.

Item Key	Scale	Item Wording
swls1	ls	In most ways my life is close to my ideal. ["In den meisten Bereichen entspricht mein Leben meinen Idealvorstellungen."]
swls2	ls	The conditions of my life are excellent. ["Meine Lebensbedingungen sind ausgezeichnet."]
swls3	ls	I am satisfied with my life. [„Ich bin mit meinem Leben zufrieden."] → *this item was used as the reference item*

Scale: do not agree at all (1) to fully agree (7)

Items 4 and 5 were not used as they are not sensitive to short-term changes:

Item Key	Scale	Item Wording
swls4	ls	So far I have gotten the important things I want in life. [„Bisher habe ich die wesentlichen Dinge erreicht, die ich mir für mein Leben wünsche."]
swls5	ls	If I could live my life over, I would change almost nothing. ["Wenn ich mein Leben noch einmal leben könnte, würde ich kaum etwas ändern."]

Scale: do not agree at all (1) to fully agree (7)

Domain Satisfaction

Source: SOEP (for original items see e.g., TNS Infratest Sozialforschung, 2015):

How satisfied are you presently with the following areas of your life?

1. How satisfied are you ...

Item Key	Item Wording
hSat	with your household activities? ["mit Ihrer Tätigkeit im Haushalt?"]
iSat	with you household income? ["mit dem Einkommen Ihres Haushalts?"]
lSat	with you leisure time? ["mit Ihrer Freizeit?"]
fSat	with your family life? ["mit Ihrem Familienleben?"]

Scale: fully unsatisfied (0) to fully satisfied (10)

Momentary Mood (ESM)

Source: Multidimensional Mood State Questionnaire (Multidimensionaler Befindlichkeitsfragebogen, for items see Steyer et al., 1994)

Right now I feel…

Item Key	Scale	Item Wording
happy	happy	happy. ["glücklich"] → *this item was used as the reference item*
awake	awake	awake. ["wach"] → *this item was used as the reference item*
restless	calm	restless. ["unruhig"]
unhappy	happy	unhappy. ["unglücklich"]
sleepy	awake	sleepy. ["schläfrig"]
calm	calm	calm. ["ruhig"] → *this item was used as the reference item*

Scale: not at all (1) to very (5)

Mood Within Last Week (good, worried, depressed)

Due to the copyright of the German version of the Center for Epidemiological Studies Depression Scale (CES-D) (*Allgemeine Depressionsskala [ADS]*), we are not permitted to print the items. Please see Hautzinger et al. (2012) for German items and Radloff (1977) for English items.

Item Key	Scale	Item of the ADS
worry1	worry	1 → *this item was used as the reference item*
worry2	worry	7
sad1	sad	4 → *this item was used as the reference item*
sad2	sad	13
good1	good	9 → *this item was used as the reference item*
good2	good	12

Scale: rarely or none of the time (less than 1 day) (1), some or a little of the time (1-2 days) (2), occasionally or a moderate amount of time (3-4 days) (3) and most or all of the time (5-7 days) (4).

Adapted Ryff-Scale for Psychological Well-Being

Source: A short version of a German translation of the Ryff-Scale for Psychological Well-Being (Risch et al., 2005; Ryff, 1989) was constructed with an ant algorithm (Schultze, 2017); some negatively worded items were positively rephrased. For items see Schultze (2017, pp. 246–247).

Subscale: Purpose in Life

Item Key	Scale	Item Wording
purp1	purp	I tend to concentrate on the present because the future almost always brings me problems. [„Ich neige dazu, mich mehr auf die Gegenwart zu konzentrieren, da die Zukunft mir fast immer Probleme bringt.“]
purp2	purp	I don't have a good sense of what it is I'm trying to accomplish in life. [„Ich weiß nicht so recht, was ich in meinem Leben erreichen möchte.“]
purp3	purp	I used to set goals for myself, but now it seems like a waste of time to me. [“Früher habe ich mir Ziele gesetzt, aber das kommt mir jetzt wie Zeitverschwendung vor.“]
purp4	purp	I enjoy making plans for the future and working to make them a reality. [„Ich mache gerne Pläne für die Zukunft und arbeite daraufhin, sie zu verwirklichen.“] → *this item was used as the reference item*

Scale: completely disagree (1) to completely agree (4)

Subscale: Psychological Growth

Item Key	Item Wording
growth1	I am interested in activities that will expand my horizons. [„Ich interessiere mich für Aktivitäten, die meinen Horizont erweitern.“]

Scale: completely disagree (1) to completely agree (4)

Subscale: Autonomy

Item Key	Scale	Item Wording
auto1	auto	My decisions are usually influenced by what everyone else is doing. [“Meine Entscheidungen werden normalerweise durch das, was andere machen, beeinflusst.“]
auto2	auto	Being satisfied with myself is more important to me than what others think of me. [“Mit mir selber zufrieden zu sein, ist mir wichtiger als das, was andere von mir halten.“] → *this item was used as the reference item*
auto3	auto	I trust my judgment even when it doesn't reflect the convictions of the majority. [“Ich vertraue meinem Urteil, auch wenn es nicht den Überzeugungen der Mehrheit entspricht.“]
auto4	auto	I judge myself by what I think is important, not by the values of what others think in important. [“Ich beurteile mich selbst nach dem, was ich für wichtig halte, nicht nach den Werten, die für andere gelten.“]

Scale: completely disagree (1) to completely agree (4)

Subscale: Environmental Mastery

Item Key	Scale	Item Wording
mastery1	mastery	The demands of everyday life often get me down. ["Die Anforderungen des Alltags entmutigen mich oft."]
mastery2	mastery	I often feel overwhelmed by my responsibilities. ["Ich fühle mich oft von meinen Pflichten erdrückt."]
mastery3	mastery	I manage to organize my time so that I can get everything done that needs to be done. [„Es gelingt mir, meine Zeit so einzuteilen, dass ich alles erledigen kann, was getan werden muss."] → *this item was used as the reference item*
mastery4	mastery	I have difficulty arranging my life in a way that is satisfying to me. ["Es fällt mir schwer mein Leben so zu organisieren, dass es für mich befriedigend ist."]

Scale: completely disagree (1) to completely agree (4)

Subscale: Positive Relations With Others

Item Key	Scale	Item Wording
posRel1	posRel	I often feel lonely because I have few close friends with whom to share my concerns [„Ich fühle mich oft einsam, weil ich nur wenige enge Freunde habe, denen ich meine Sorgen mitteilen kann."]
posRel2	posRel	There are a lot of people who will want to listen to me if I have the need to talk. ["Ich habe viele Menschen, die mir zuhören wollen, wenn ich das Bedürfnis habe zu reden."] → *this item was used as the reference item*
posRel3	posRel	It seems to me like most other people have more friends than me. ["Mir scheint, dass die meisten anderen Menschen mehr Freunde haben als ich."]

Scale: completely disagree (1) to completely agree (4)

Subscale: Self-Acceptance

Item Key	Scale	Item Wording
accept1	accept	In general, I feel confident and positive about myself. [„Im Allgemeinen bin ich selbstbewusst und sehe mich positiv."]
accept2	accept	I like most parts of my personality ["Ich mag die meisten Seiten meiner Persönlichkeit."] → *this item was used as the reference item*
accept3	accept	When I compare myself to friends and acquaintances, it makes me feel good about who I am. ["Wenn ich mich mit Freunden und Bekannten vergleiche, habe ich ein gutes Gefühl dabei, so zu sein wie ich bin."]

Scale: completely disagree (1) to completely agree (4)

The following items were not used as they are not sensitive to short-term changes:

Subscale: Growth

Item Key	Item Wording
growth2	I have really improved as a person over the last years. ["Ich habe mich in den letzten Jahren als Person wirklich weiterentwickelt."]
growth3	I gave up trying to make big improvements or changes in my life a long time ago. ["Ich habe schon vor langer Zeit aufgegeben, mein Leben grundsätzlich zu verändern und zu verbessern."]
growth4	There's some truth in the saying, "You can't teach an old dog new tricks". ["Es ist etwas Wahres an dem Spruch: Was Hänschen nicht lernt, lernt Hans nimmermehr."]

Scale: completely disagree (1) to completely agree (4)

Subscale: Positive Relations With Others

Item Key	Item Wording
posRel4	I have experienced many warm and trusting relationships with others. ["Ich habe viele warmherzige und vertrauensvolle Beziehungen mit anderen erlebt."]

Scale: completely disagree (1) to completely agree (4)

Subscale: Self-Acceptance

Item Key	Item Wording
accept4	In the past, I have made some mistakes, but all in all, I think most of it has turned out to the best. ["In der Vergangenheit habe ich einige Fehler gemacht, aber ich glaube, alles in allem hat sich das meiste zum Besten gefügt."]

Scale: completely disagree (1) to completely agree (4)

Momentary Meaningfulness (ESM)

Item Key	Scale	Item Wording
meaning	meaning	My current activity has a deeper meaning. ["Meine momentane Tätigkeit hat einen tieferen Sinn."] → *this item was used as the reference item*
noMeaning	meaning	My current activity has no deeper meaning. ["Meine momentane Tätigkeit hat keine tiefere Bedeutung."]

Scale: not at all (1) to very (5)

Employment Status

Source: 'The Value of Work' (see Knabe et al., 2010)

Which of the following main occupations applies to you? (Please choose only one option!) ["*Welche der nachfolgenden Haupttätigkeiten trifft auf Sie zu?*"]

1. Part-time or full-time work with at least 15 working hours per week ["Teilzeit- oder Vollzeitbeschäftigung mit mindestens 15 Stunden pro Woche"]
2. Part-time work with less than 15 working hours per week ["Teilzeitbeschäftigung mit unter 15 Stunden pro Woche"]
3. Self-employed with at least 15 working hours per week ["Selbständig mit mindestens 15 Stunden pro Woche"]
4. Public employment measure (e. g. One-euro job) ["öffentliche Beschäftigungsmaßnahme (z.B. Ein-Euro-Job)"]
5. Registered as unemployed (and not participating in a support scheme) ["Arbeitslos gemeldet (und nicht in einer Fördermaßnahme)"]
6. Seeking employment and participating in an educational programme or other support scheme ["Arbeitssuchend und in einer Fortbildungs- oder sonstigen Fördermaßnahme"]
7. Early retirement/ old-age pensioner ["Vorruhestand/Altersrentner"]
8. In training/studying ["in Ausbildung/Studium"]
9. Other form of non-employment ["sonstige Nicht-Erwerbstätigkeit"]

Table S1

Descriptive Overview of Samples (Separately by the Reason for the Job Seeking Registration)

	Full Sample		Full LCS Sample		Matched LCS Sample	
	Mass-Layoff	Other Reason	Mass-Layoff	Other Reason	Mass-Layoff	Other Reason
age (mean and SD)	40.36 (10.46)	37.37 (9.72)	40.61 (9.98)	37.93 (9.55)	40.95 (10.00)	38.00 (9.86)
female (%)	222 (40.2)	571 (57.7)	114 (43.7)	275 (59.1)	72 (40.4)	90 (57.7)
college degree (%)	157 (28.5)	539 (55.3)	71 (27.2)	255 (55.0)	50 (28.1)	90 (58.1)
net income in M1 (mean SD)	2150.91 (1108.71)	1868.43 (860.88)	2101.92 (1111.63)	1815.87 (814.16)	2182.58 (1156.39)	1846.15 (753.73)
recruitment period (%)						
2019, first quarter	62 (11.2)	12 (1.2)	20 (7.7)	0 (0.0)	14 (7.9)	0 (0.0)
2019, second quarter	47 (8.5)	93 (9.4)	20 (7.7)	31 (6.7)	14 (7.9)	13 (8.3)
2019, third quarter	88 (15.9)	134 (13.5)	31 (11.9)	60 (12.9)	19 (10.7)	20 (12.8)
2019, fourth quarter	118 (21.4)	361 (36.5)	65 (24.9)	181 (38.9)	36 (20.2)	58 (37.2)
2020, first quarter	122 (22.1)	167 (16.9)	69 (26.4)	88 (18.9)	53 (29.8)	26 (16.7)
2020, second quarter	115 (20.8)	222 (22.4)	56 (21.5)	105 (22.6)	42 (23.6)	39 (25.0)
observations	552	989	261	465	178	156

Note. See Figure 1 for Flowchart describing how the three samples are constructed. LCS: latent change score model; Mass-Layoffs: Individuals who registered as jobseekers due to mass-layoffs or plant closures. Other Reason: Individuals who registered as jobseekers due to reasons other than mass-layoffs or plant closures

Table S2

Item Descriptive Statistics: Cognitive Well-Being (Full LCS Sample) in the First two Waves of the GJSP (M1, M2)

Item	Parameter	Mass-Layoff				Other Reason			
		Control		Event		Control		Event	
		M1	M2	M1	M2	M1	M2	M1	M2
swls1	Mean	60.70	59.04	61.75	56.14	58	57.65	56.52	56.06
	SD	20.90	19.81	18.97	19.15	21.04	19.85	23.03	22.66
	N	162	166	95	95	354	355	110	110
swls2	Mean	65.24	65.16	63.86	59.82	62.38	63.57	60.91	59.55
	SD	21.56	20.50	20.14	20.84	21.43	19.72	23.29	24.05
	N	164	166	95	95	354	355	110	110
swls3	Mean	67.58	67.37	67.02	62.28	64.69	63.62	65.15	61.36
	SD	19.41	20.13	18.51	20.37	21.93	20.80	23.74	22.11
	N	165	166	95	95	354	355	110	110
fSat	Mean	66.97	68.21	71.89	68.97	67.61	63.89	67.27	63.45
	SD	23.67	22.87	24.42	23.12	24.58	24.45	24.53	26.14
	N	165	112	95	68	351	283	110	84
hSat	Mean	62.64	61.25	65.68	65.29	64.32	64.28	63.36	64.40
	SD	22.19	22.71	21.17	21.54	20.41	20.12	20.06	23.35
	N	163	112	95	68	352	283	110	84
iSat	Mean	62.24	63.84	55.79	52.09	60.90	63.14	57.91	56.07
	SD	24.08	23.06	25.62	25.56	24.07	21.90	28.25	23.23
	N	165	112	95	67	354	280	110	84
lSat	Mean	59.21	60.36	65.16	66.18	58.93	58.52	60.91	64.29
	SD	23.53	22.38	22.11	23.18	22.74	21.17	22.61	24.06
	N	165	112	95	68	354	283	110	84

Note. SD: standard deviation, N = number of observations; Control: individual in control group; Event: individuals in the event group; Mass-Layoffs: Individuals who registered as jobseekers due to mass-layoffs or plant closures. Other Reason: Individuals who registered as jobseekers due to reasons other than mass-layoffs or plant closures; For item wordings see Material S2. For subjects recruited before November 2018, the domain satisfaction items were not administered in M2. Therefore, the sample size is decreased for these items.

Table S3

Item Descriptive Statistics: Affective Well-Being (Full LCS Sample) in the First two Waves of the GJSP (M1, M2)

Indicator	Parameter	Mass-Layoff				Other Reason			
		Control		Event		Control		Event	
		M1	M2	M1	M2	M1	M2	M1	M2
happy	Mean	64.55	68.07	61.21	63.49	63.57	67.77	60.18	61.98
	SD	20.90	19.96	23.33	21.08	20.04	18.46	21.19	21.56
	N	156	145	80	78	333	313	99	100
unhappy	Mean	24.07	23.83	27.51	25.63	23.57	22.36	27.07	28.68
	SD	24.20	22.69	24.58	22.84	21.53	21.64	22.55	26.91
	N	156	145	80	78	333	313	99	100
awake	Mean	65.52	66.83	64.83	68.06	63.55	65.06	61.58	66.77
	SD	21.28	20.77	19.45	19.68	20.76	20.77	24.43	18.71
	N	156	145	80	78	333	313	99	100
sleepy	Mean	35.05	33.14	33.55	32.45	36.14	36.12	37.56	35.08
	SD	22.48	23.46	23.20	21.44	23.67	22.02	23.63	22.75
	N	156	145	80	78	333	313	99	100
calm	Mean	66.30	69.60	61.82	64.04	61.59	65.93	62.58	65.48
	SD	21.61	19.93	19.40	22.33	19.91	21.04	19.85	20.52
	N	156	145	80	78	333	313	99	100
restless	Mean	22.30	21.13	29.45	27.29	25.29	23.64	25.19	25.60
	SD	22.82	20.28	22.56	23.40	21.35	20.77	22.71	22.77
	N	156	145	80	78	333	313	99	100

Note. SD: standard deviation, N = number of observations; Control: individual in control group; Event: individuals in the event group; Mass-Layoffs: Individuals who registered as jobseekers due to mass-layoffs or plant closures. Other Reason: Individuals who registered as jobseekers due to reasons other than mass-layoffs or plant closures; For item wordings see Material S2. For subjects recruited before November 2018, the domain satisfaction items were not administered in M2. Therefore, the sample size is decreased for these items.

Table S4

Item Descriptive Statistics: Affective Well-Being (Full LCS Sample) in the First two Waves of the GJSP (M1, M2)

Item	Parameter	Mass-Layoff				Other Reason			
		Control		Event		Control		Event	
		M1	M2	M1	M2	M1	M2	M1	M2
worry1	Mean	28.36	23.72	34.06	24.82	25.05	21.52	34.25	25.76
	SD	29.86	27.65	32.02	31.28	27.49	26.06	31.90	28.43
	N	161	163	92	94	350	347	109	110
worry2	Mean	15.84	12.40	19.93	17.75	14.49	11.05	22.63	21.10
	SD	26.32	22.81	28.41	25.42	24.94	20.62	30.73	27.09
	N	162	164	92	92	352	350	109	109
sad1	Mean	19.43	19.84	25.45	25.18	23.39	20.99	32.11	28.13
	SD	27.92	25.29	32	32.68	29.22	28.50	32.37	32.77
	N	163	163	93	94	352	351	109	109
sad2	Mean	19.14	17.18	27.54	26.24	20.99	20.51	29.60	25.69
	SD	27.75	24.39	31.49	30.08	26.66	26.49	31.16	29.96
	N	162	163	92	94	351	351	107	109
good1	Mean	60.61	67.07	64.16	61.70	62.50	66.95	58.18	63.30
	SD	30.19	29.54	29.99	33.50	30.01	30.47	33.62	31.08
	N	165	164	93	94	352	354	110	109
good2	Mean	56.46	61.43	57.45	59.22	55.46	60.98	50.76	57.58
	SD	35.27	34.48	36.39	35.97	33.25	33.46	35.60	35.53
	N	160	159	94	94	351	352	109	110

Note. SD: standard deviation, N = number of observations; Control: individual in control group; Event: individuals in the event group; Mass-Layoffs: Individuals who registered as jobseekers due to mass-layoffs or plant closures. Other Reason: Individuals who registered as jobseekers due to reasons other than mass-layoffs or plant closures; For item wordings see Material S2. For subjects recruited before November 2018, the domain satisfaction items were not administered in M2. Therefore, the sample size is decreased for these items.

Table S5

Item Descriptive Statistics: Affective Well-Being (Full LCS Sample) in the First two Waves of the GJSP (M1, M2)

Item	Parameter	Full Sample				Matched Sample			
		Control		Event		Control		Event	
		M1	M2	M1	M2	M1	M2	M1	M2
accept1	Mean	78.25	77.11	77.89	79.08	70.90	72.33	71.87	72.48
	SD	22.03	23.17	20.40	21.85	25.17	25.11	26.90	28.63
	N	164	166	95	94	354	353	109	109
accept2	Mean	78.25	78.31	78.60	76.60	76.46	76.43	76.97	74.62
	SD	20.42	19.72	18.78	19.45	20.03	21.23	24.21	26.02
	N	164	166	95	94	354	355	110	109
accept3	Mean	77.71	76.57	77.89	78.01	75.85	74.91	73.03	72.53
	SD	23.44	23.63	20.98	21.62	23.08	23.97	27.65	27.66
	N	163	165	95	94	352	352	110	108
mastery1	Mean	42.07	40.36	41.75	38.65	42.78	41.41	44.85	41.90
	SD	30.86	28.38	27.49	29.86	29.61	28.96	29.41	28.47
	N	164	166	95	94	353	355	110	109
mastery2	Mean	46.67	44.85	48.42	46.10	48.12	47.51	52.42	50.46
	SD	28.70	29.37	29.48	28.55	29.87	28.72	28.36	30.97
	N	165	165	95	94	354	355	110	109
mastery3	Mean	69.29	70.48	64.91	64.89	66.10	66.29	68.48	66.98
	SD	25.23	26.06	28.50	26.94	27.48	26.67	26.65	29.71
	N	165	166	95	94	354	354	110	108
mastery4	Mean	33.74	35.57	37.19	35.82	37.12	36.16	38.89	42.59
	SD	28.60	32.64	28.29	30.23	29.74	29.12	30.06	31.52
	N	164	164	95	94	352	354	108	108
posRel1	Mean	34.76	32.11	36.14	37.59	33.80	33.62	37.31	36.39
	SD	32.68	31.74	33.92	31.77	33.05	30.94	35.06	34.11
	N	164	164	95	94	354	355	109	109

posRel2	Mean	64.24	65.66	64.56	63.48	63.54	63.85	65.44	64.51
	SD	27.68	28.29	28.69	29.36	27.56	29.72	31.40	30.32
	N	165	166	95	94	352	355	109	108
posRel3	Mean	43.90	41.46	41.05	39.72	41.83	43.19	41.21	47.84
	SD	33.59	33.87	33.14	32.16	33.10	33.80	32.54	33.88
	N	164	164	95	94	353	355	110	108
purp1	Mean	32.71	27.31	31.93	29.43	31.81	31.92	35.47	36.42
	SD	25.76	25.76	23.78	23.88	27.02	26.37	26.17	28.66
	N	160	166	95	94	350	353	109	108
purp2	Mean	36.16	34.14	37.19	37.59	36.25	35.22	38.23	41.59
	SD	31.32	30.79	26.12	31.39	30.02	29.88	32.97	33.07
	N	165	165	95	94	354	353	109	109
purp3	Mean	33.33	29.24	32.28	30.50	29.88	31.16	26.97	27.41
	SD	28.54	26.13	27.70	25.24	27.31	27.03	24.10	25.83
	N	162	163	95	94	347	353	110	107
purp4	Mean	65.65	69.08	63.16	70.57	64.68	66.10	63.64	61.16
	SD	27.24	26.61	25.94	26.26	25.48	26.98	27.67	25.87
	N	164	166	95	94	353	355	110	109
auto1	Mean	36.79	39.96	38.25	35.46	41.24	43.06	38.84	40.98
	SD	24.94	23.56	25.25	24.83	24.59	24.55	27.03	26.31
	N	164	166	95	94	354	353	109	109
auto2	Mean	75.81	76.31	76.84	73.05	72.03	73.24	74.85	74.92
	SD	24.30	22.94	26.66	23.58	25.94	23.91	26.78	27.28
	N	164	166	95	94	354	355	110	109
auto3	Mean	75.41	74.50	75.09	75.53	73.31	73.54	72.73	74.14
	SD	22.11	22.89	20.03	20.26	21.53	22.16	24.39	23.93
	N	164	166	95	94	351	354	110	107
auto4	Mean	76.48	78.51	76.84	80.85	76.64	76.14	75.76	76.54
	SD	24.27	22.33	23.36	19.85	24.27	22.48	24.69	22.45

	N	163	166	95	94	351	352	110	108
growth1	Mean	85.37	87.95	85.26	89.72	84.75	87.04	89.60	92.05
	SD	19.61	17.66	20.46	16.95	20.37	19.11	16.79	14.98
	N	164	166	95	94	354	355	109	109
meaning	Mean	44.41	43.02	39.45	43.78	44.52	44.05	42.69	42.87
	SD	25.55	24.53	24.58	25.46	25.58	26.79	25.48	25.88
	N	156	145	79	78	333	313	99	100
noMeaning	Mean	46.02	46.82	46.08	47.96	45.71	46.37	46.61	50.80
	SD	24.47	25.41	22.22	23.77	24.96	25.06	25.71	27.45
	N	154	144	79	78	333	311	99	99

Note. SD: standard deviation, N = number of observations; Control: individual in control group; Event: individuals in the event group; Mass-Layoffs: Individuals who registered as jobseekers due to mass-layoffs or plant closures. Other Reason: Individuals who registered as jobseekers due to reasons other than mass-layoffs or plant closures; For item wordings see Material S2. For subjects recruited before November 2018, the domain satisfaction items were not administered in M2. Therefore, the sample size is decreased for these items.

Table S6

Descriptive Results of the (Latent) State Models (Full LCS Sample)

	M1							M2							
	Item Reliability				Scale Rel	Scale Con	Scale Spe	Item Reliability				Scale Rel	Scale Con	Scale Spe	Stability
Well-Being Facet	I1	I2	I3	I4				I1	I2	I3	I4				
swls	.69	.71	.88	-	.90	.83	.06	.73	.73	.84	-	.90	.84	.07	.74
hSat	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.55
iSat	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.66
lSat	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.56
fSat	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.71
happy	.71	.77	-	-	.84	.77	.08	.69	.76	-	-	.83	.75	.08	.50
awake	.83	.75	-	-	.88	.87	.01	.91	.76	-	-	.90	.89	.01	.52
calm	.91	.61	-	-	.85	.80	.05	.98	.72	-	-	.91	.87	.05	.46
worry	.66	.56	-	-	.74	.67	.07	.54	.63	-	-	.70	.61	.09	.55
sad	.73	.67	-	-	.82	.81	.02	.78	.76	-	-	.87	.85	.02	.59
good	.77	.77	-	-	.86	.83	.04	.75	.78	-	-	.86	.83	.04	.61
accept	.70	.59	-	.61	.82	.71	.11	.71	.61	-	.61	.82	.72	.10	.93
mastery	.45	.67	.66	.60	.80	.50	.31	.47	.71	.70	.57	.82	.52	.29	.87
posRel	.69	.75	.68	-	.85	.68	.17	.76	.73	.69	-	.87	.70	.17	.90
purp	.52	.67	.53	.59	.79	.55	.24	.52	.63	.56	.62	.80	.57	.23	.89
auto	.48	.44	.54	.45	.72	.57	.16	.52	.54	.58	.52	.77	.62	.16	.92
growth	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.53
meaning	.68	.51	-	-	.73	.69	.04	.78	.56	-	-	.79	.75	.04	.64

Note. I1 – I4 correspond to the indicators of the well-being scales. Scale Rel: reliability of the scale; Scale Con: consistency of the scale; Scale Spe: specificity of the scale (for computations see Eid et al., 2003, p. 59); Stability: latent correlation between the well-being factors at the first two measurement occasions (*M1*, *M2)*; We used the following abbreviations for the well-being facets: ls: *life satisfaction*; hSat: *satisfaction with household activities*; iSat: *satisfaction with household income*; lSat: *satisfaction with leisure*; fSat: *satisfaction with family life*; happy: *momentary mood: happy*; awake: *momentary mood: awake*; calm: *momentary mood: calm*; worry: *worried mood (in last week)*; sad: *sad mood (in last week)*; good: *good mood (in last week)*; accept: *self-acceptance*; mastery: *environmental mastery*; posRel: *positive relations with* others; purp: *sense of purpose*; auto: *autonomy*; growth: *psychological* growth; meaning: *experienced meaning (ESM)*; for items used to define the scales and the item wordings of the single item measures see Material S2 in the supplementary materials.

Table S7

Descriptive Results of the (Latent) State Models (Matched Sample)

	M1							M2							
	Item Reliability				Scale Rel	Scale Con	Scale Spe	Item Reliability				Scale Rel	Scale Con	Scale Spe	Stability
Well-Being Facet	I1	I2	I3	I4				I1	I2	I3	I4				
swls	.69	.73	.87	-	.90	.84	.06	.75	.78	.82	-	.91	.85	.06	.75
hSat	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.51
iSat	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.74
lSat	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.48
fSat	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.68
happy	.72	.79	-	-	.85	.78	.08	.70	.78	-	-	.84	.76	.08	.53
awake	.84	.75	-	-	.89	.87	.01	.96	.78	-	-	.93	.91	.01	.57
calm	.89	.68	-	-	.87	.82	.05	.98	.73	-	-	.91	.87	.05	.54
worry	.65	.56	-	-	.74	.67	.07	.59	.67	-	-	.75	.66	.08	.57
sad	.80	.68	-	-	.85	.84	.01	.82	.74	-	-	.87	.86	.01	.60
good	.80	.81	-	-	.89	.86	.03	.71	.85	-	-	.88	.84	.03	.65
accept	.71	.60	-	.58	.81	.74	.08	.68	.64	-	.63	.82	.75	.07	.94
mastery	.47	.70	.65	.63	.82	.51	.30	.51	.72	.67	.53	.82	.53	.28	.88
posRel	.77	.76	.64	-	.86	.68	.18	.78	.70	.65	-	.86	.67	.18	.86
purp	.56	.70	.56	.68	.83	.60	.23	.54	.64	.53	.67	.81	.57	.24	.89
auto	.43	.40	.46	.34	.66	.49	.18	.54	.58	.55	.49	.78	.61	.17	.94
growth	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.49
meaning	.58	.46	-	-	.67	.65	.02	.70	.57	-	-	.77	.75	.02	.74

Note. I1 – I4 correspond to the indicators of the well-being scales. Scale Rel: reliability of the scale; Scale Con: consistency of the scale; Scale Spe: specificity of the scale (for computations see Eid et al., 2003, p. 59); Stability: latent correlation between the well-being factors at the first two measurement occasions (*M1*, *M2)*; We used the following abbreviations for the well-being facets: ls: *life satisfaction*; hSat: *satisfaction with household activities*; iSat: *satisfaction with household income*; lSat: *satisfaction with leisure*; fSat: *satisfaction with family life*; happy: *momentary mood: happy*; awake: *momentary mood: awake*; calm: *momentary mood: calm*; worry: *worried mood (in last week)*; sad: *sad mood (in last week)*; good: *good mood (in last week)*; accept: *self-acceptance*; mastery: *environmental mastery*; posRel: *positive relations with* others; purp: *sense of purpose*; auto: *autonomy*; growth: *psychological* growth; meaning: *experienced meaning (ESM)*; for items used to define the scales and the item wordings of the single item measures see Material S2 in the supplementary materials.

Table S8

Results Measurement Invariance Testing (Full Sample)

Well-Being Facet	MI type	Number of Parameter	chisq	df	p	rmsea	BIC	Chisq Diff	Df Diff	*p*-value LRT
ls	Configural	22	7.13	5	.21	0.03 [0.00; 0.07]	36504.33			
ls	Strong	18	11.99	9	.21	0.02 [0.00; 0.05]	36483.05	4.79	4	.31
happy*	Configural	14	0.00	0	-	0.00 [0.00; 0.00]	22785.15			
happy	Strict	9	36.39	5	.00	0.11 [0.08; 0.15]	22803.36	36.39	5	.00
awake*	Configural	14	0.00	0	-	0.00 [0.00; 0.00]	22236.01			
awake	Strong	12	13.96	2	.00	0.09 [0.05; 0.14]	22236.17	13.96	2	.00
calm	Configural	14	0.00	0	-	0.00 [0.00; 0.00]	22427.69			
calm	Strong	12	4.84	2	.09	0.05 [0.00; 0.10]	22419.44	4.84	2	.09
good	Configural	14	0.00	0	-	0.00 [0.00; 0.00]	27066.26			
good	Strong	12	1.82	2	.40	0.00 [0.00; 0.07]	27054.83	1.82	2	.40
worry	Configural	14	0.00	0	-	0.00 [0.00; 0.00]	26536.48			
worry	Strong	12	0.25	2	.88	0.00 [0.00; 0.04]	26523.56	0.25	2	.88
sad	Configural	14	0.00	0	-	0.00 [0.00; 0.00]	26325.02			
sad	Strong	12	0.11	2	.95	0.00 [0.00; 0.00]	26311.96	0.11	2	.95
accept	Configural	22	6.66	5	.25	0.02 [0.00; 0.07]	38042.77			
accept	Strong	18	10.87	9	.28	0.02 [0.00; 0.05]	38020.56	4.05	4	.40
mastery	Configural	31	32.78	13	.00	0.05 [0.03; 0.07]	53740.39			
mastery	Strong	25	40.75	19	.00	0.04 [0.02; 0.06]	53709.24	8.05	6	.23
posRel	Configural	22	3.84	5	.57	0.00 [0.00; 0.05]	40358.85			
posRel	Strong	18	7.64	9	.57	0.00 [0.00; 0.04]	40336.40	3.91	4	.42
purp	Configural	31	14.14	13	.36	0.01 [0.00; 0.04]	53247.20			
purp	Strong	25	18.83	19	.47	0.00 [0.00; 0.03]	53212.36	4.51	6	.61
auto	Configural	31	18.11	13	.15	0.02 [0.00; 0.05]	51930.93			
auto	Strong	25	27.22	19	.10	0.03 [0.00; 0.05]	51900.62	9.18	6	.16
meaning*	Configural	14	155.19	0	-	NA [0.00; 0.00]	23892.86			
meaning	Strong	12	2.99	2	.22	0.03 [0.00; 0.08]	23727.33	2.99	2	.22

Note. The models with an asterisk yielded improper solutions as some of the estimated variances were below zero. We used the following abbreviations for the well-being facets: ls: *life satisfaction*; hSat: *satisfaction with household activities*; iSat: *satisfaction with household income*; lSat: *satisfaction with leisure*; fSat: *satisfaction with family life*; happy: *momentary mood: happy*; awake: *momentary mood: awake*; calm: *momentary mood: calm*; worry: *worried mood (in last week)*; sad: *sad mood (in last week)*; good: *good mood (in last week)*; accept: *self-acceptance*; mastery: *environmental mastery*; posRel: *positive relations with* others; purp: *sense of purpose*; auto: *autonomy*; growth: *psychological* growth; meaning: *experienced meaning (ESM)*; For items used to define the scales see Material S2.

Table S9

Results Measurement Invariance Testing (Matched Sample)

Well-Being Facet	MI type	Number of Parameter	chisq	df	p	rmsea	BIC	Chisq Diff	Df Diff	*p*-value LRT
ls	Configural	22	8.84	5	.12	0.05 [0.00; 0.10]	16750.11			
ls	Strong	18	10.61	9	.30	0.02 [0.00; 0.07]	16728.45	1.53	4	.82
happy*	Configural	14	0.00	0	-	0.00 [0.00; 0.00]	10478.99			
happy	Strict	9	19.97	5	.00	0.12 [0.07; 0.17]	10479.60	19.97	5	.00
awake*	Configural	14	0.00	0	-	0.00 [0.00; 0.00]	10141.93			
awake	Strong	12	5.11	2	.08	0.07 [0.00; 0.14]	10135.27	5.11	2	.08
calm*	Configural	14	0.00	0	-	0.00 [0.00; 0.00]	10325.02			
calm	Strict	12	5.03	2	.08	0.07 [0.00; 0.15]	10318.43	5.03	2	.08
good	Configural	14	0.00	0	-	0.00 [0.00; 0.00]	12392.81			
good	Strong	12	1.89	2	.39	0.00 [0.00; 0.10]	12382.98	1.89	2	.39
worry	Configural	14	0.00	0	-	0.00 [0.00; 0.00]	12362.29			
worry	Strong	12	1.42	2	.49	0.00 [0.00; 0.10]	12352.11	1.42	2	.49
sad	Configural	14	0.00	0	-	0.00 [0.00; 0.00]	12185.51			
sad	Strong	12	0.38	2	.83	0.00 [0.00; 0.07]	12174.32	0.38	2	.83
accept	Configural	22	8.09	5	.15	0.05 [0.00; 0.11]	17395.79			
accept	Strong	18	12.23	9	.20	0.04 [0.00; 0.08]	17376.72	3.93	4	.42
mastery	Configural	31	17.24	13	.19	0.03 [0.00; 0.07]	16750.11			
mastery	Strong	25	20.34	19	.37	0.01 [0.00; 0.05]	16728.45	3.12	6	.79
posRel	Configural	22	2.28	5	.81	0.00 [0.00; 0.05]	10478.99			
posRel	Strong	18	6.60	9	.68	0.00 [0.00; 0.05]	10479.60	4.69	4	.32
purp	Configural	31	11.62	13	.56	0.00 [0.00; 0.05]	10141.93			
purp	Strong	25	14.81	19	.73	0.00 [0.00; 0.04]	10135.27	2.98	6	.81
auto	Configural	31	13.48	13	.41	0.01 [0.00; 0.06]	10325.02			
auto	Strong	25	19.77	19	.41	0.01 [0.00; 0.05]	10318.43	6.29	6	.39
meaning	Configural	14	0.00	0	-	0.00 [0.00; 0.00]	12392.81			
meaning	Strong	12	4.07	2	.13	0.05 [0.00; 0.13]	12382.98	1.89	2	.39

Note. The models with the asterisks yielded improper solutions as some of the estimated variances were below zero. We used the following abbreviations for the well-being facets: ls: *life satisfaction*; hSat: *satisfaction with household activities*; iSat: *satisfaction with household income*; lSat: *satisfaction with leisure*; fSat: *satisfaction with family life*; happy: *momentary mood: happy*; awake: *momentary mood: awake*; calm: *momentary mood: calm*; worry: *worried mood (in last week)*; sad: *sad mood (in last week)*; good: *good mood (in last week)*; accept: *self-acceptance*; mastery: *environmental mastery*; posRel: *positive relations with* others; purp: *sense of purpose*; auto: *autonomy*; growth: *psychological* growth; meaning: *experienced meaning (ESM)*; For items used to define the scales see Material S2.

Table S10

Coding Scheme for the Binary Situation Variables in the ME-TSO Model

				Mass-Layoff or Plant Closure							Other Reason							
id	wave	empStatus	reason	newUE	UE2	UE3	UE4	longUE	ALMP	nEMP	EMP	newUE	UE2	UE3	UE4	longUE	ALMP	nEMP
1	1	Employed	Mass	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	2	Unemployed	Mass	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	3	Unemployed	Mass	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
1	4	ALMP	Mass	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
2	1	Employed	other	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
2	2	Unemployed	Other	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
2	3	Unemployed	Other	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
2	4	Unemployed	Other	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
2	5	Unemployed	Other	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
2	6	Unemployed	Other	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
2	7	Unemployed	Other	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
2	8	Unemployed	Other	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
2	9	Employed	Other	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…

Note. EMP: employed (only for other reason group because being employed and having registered as job seeking due to mass-layoffs/plant closures is the reference situation); newUE: entered unemployment within last month; UE2: second month in unemployment; UE3: third month in unemployment; UE4: fourth month in unemployment; longUE: more than four month of unemployment; ALMP: taking part in active labor market program; nEMP: in other non-employment (e.g., early retirement)

Table S11

Additional Model Results of LCS based on the Full Sample

Well-Being Facet	Pre-Event Differences for Mass-Layoff Groups (β_4)	Pre-Event Differences for Other Reason Groups ($\beta_5 - \beta_6$)	Pre-Event Differences for Event Groups (β_6)	σ^2_{M1}	σ^2_{Change}	$Cor(M1, Change)$
ls	-3.16 [-6.87;0.56] (p = .096)	-0.37 [-5.05;4.31] (p = .877)	0 [-4.85;4.86] (p = .998)	393.32 [347.44;439.19] (p < .001)	197.96 [153.4;242.51] (p < .001)	-0.41
fSat	0.64 [-3.79;5.06] (p = .778)	4.93 [-1.14;10.99] (p = .112)	-0.33 [-5.57;4.9] (p = .9)	589.34 [532.11;646.57] (p < .001)	342.61 [282.99;402.23] (p < .001)	-0.40
hSat	1.68 [-2.33;5.69] (p = .411)	3.05 [-2.38;8.47] (p = .271)	-0.95 [-5.25;3.34] (p = .663)	433.32 [387.85;478.78] (p < .001)	401.74 [345.67;457.81] (p < .001)	-0.46
iSat	-1.34 [-5.78;3.1] (p = .554)	-6.45 [-12.75;-0.15] (p = .045)	-2.99 [-8.82;2.83] (p = .313)	619.22 [565.53;672.91] (p < .001)	390.6 [320.49;460.71] (p < .001)	-0.51
lSat	-0.29 [-4.58;4] (p = .896)	5.95 [0.26;11.64] (p = .041)	1.98 [-2.84;6.81] (p = .421)	518.05 [472.25;563.85] (p < .001)	447.09 [376.25;517.92] (p < .001)	-0.50
happy	-0.19 [-3.87;3.5] (p = .921)	-3.37 [-9.1;2.35] (p = .248)	-3.41 [-7.78;0.95] (p = .125)	302.86 [254.31;351.42] (p < .001)	291.91 [229.26;354.55] (p < .001)	-0.53
awake	-1.73 [-5.63;2.17] (p = .384)	-0.14 [-5.53;5.26] (p = .96)	-1.67 [-6.7;3.35] (p = .514)	383.83 [330.38;437.27] (p < .001)	364.8 [287.97;441.62] (p < .001)	-0.51
calm	-4.9 [-8.89;-0.91] (p = .016)	-4.93 [-10.39;0.53] (p = .077)	1.06 [-3.32;5.44] (p = .636)	372.41 [309.88;434.94] (p < .001)	426.33 [310.99;541.68] (p < .001)	-0.47
good	1.21 [-4.12;6.54] (p = .657)	2.8 [-4.64;10.24] (p = .46)	-4.55 [-11.12;2.03] (p = .175)	717.61 [623.19;812.03] (p < .001)	569.47 [443.94;695] (p < .001)	-0.44
worry	-3.29 [-8.43;1.86] (p = .211)	5.12 [-2.38;12.62] (p = .181)	9.29 [2.91;15.67] (p = .004)	549.02 [398.2;699.83] (p < .001)	431.47 [250.68;612.26] (p < .001)	-0.61
sad	3.19 [-1.81;8.18] (p = .211)	7.07 [-0.48;14.62] (p = .067)	9.02 [2.68;15.36] (p = .005)	630.88 [519.1;742.66] (p < .001)	523.27 [389.12;657.42] (p < .001)	-0.44
accept	-3.23 [-6.44;-0.02] (p = .048)	-0.31 [-4.45;3.83] (p = .884)	-0.33 [-4.9;4.23] (p = .886)	252.05 [210.83;293.28] (p < .001)	41.64 [16.62;66.67] (p = .001)	-0.06
mastery	-3.45 [-7.9;1.01] (p = .129)	-4.83 [-11.35;1.69] (p = .147)	1.25 [-4.21;6.71] (p = .654)	473.58 [403.24;543.93] (p < .001)	135 [85.11;184.9] (p < .001)	-0.17
posRel	0.05 [-4.82;4.92] (p = .983)	0.42 [-6.5;7.35] (p = .904)	1.1 [-5.2;7.4] (p = .731)	600.1 [525.81;674.38] (p < .001)	118.28 [69.49;167.07] (p < .001)	-0.18
purp	0.42 [-4.14;4.98] (p = .857)	-0.55 [-6.71;5.61] (p = .862)	-1.12 [-6.59;4.35] (p = .688)	421.15 [352.26;490.04] (p < .001)	92.67 [38.34;147] (p < .001)	-0.18
auto	-3.19 [-7.08;0.71] (p = .109)	-0.64 [-5.88;4.59] (p = .809)	1.42 [-3.5;6.35] (p = .571)	292.5 [226.51;358.48] (p < .001)	52.46 [8.16;96.77] (p = .02)	-0.11
growth	-0.62 [-4.29;3.05] (p = .74)	-0.1 [-5.17;4.97] (p = .968)	4.86 [1.07;8.64] (p = .012)	386.4 [331.72;441.08] (p < .001)	328.18 [268.32;388.04] (p < .001)	-0.55
meaning	0.26 [-4.31;4.82] (p = .912)	-3.5 [-9.72;2.72] (p = .27)	-1.46 [-7.1;4.19] (p = .613)	440.81 [337.9;543.71] (p < .001)	348.25 [206.16;490.34] (p < .001)	-0.34

Note. 95%-confidence intervals are presented in brackets, and the two-sided p-values in parentheses. When coefficients are printed in bold, their confidence intervals do not contain zero. The results are based on a LCM analogous to the model displayed in Figure 2, except that the Change factor is not regressed onto M1 but rather the correlation between both factors (i.e., $Cor(M1, Change)$) is estimated. This way σ^2_{M1} corresponds to the variance of the pre-event well-being levels and σ^2_{Change} corresponds to the variance in intra-individual well-being changes from M1 to M2. The regression coefficient β_4 captures the average pre-event well-being differences between the event group mass-layoff and the control group mass-layoff. By subtracting β_6 from β_5, we obtained the average pre-event well-being differences between the event group other reason and the control group other reason. β_6 corresponds to the average pre-event well-being differences between the control group other reason and the control group mass-layoff. We used the following abbreviations for the well-being facets: ls: *life satisfaction*; hSat: *satisfaction with household activities*; iSat: *satisfaction with household income*; lSat: *satisfaction with leisure*; fSat: *satisfaction with family life*; happy: *momentary mood: happy*; awake: *momentary mood: awake*; calm: *momentary mood: calm*; worry: *worried mood (in last week)*; sad: *sad mood (in last week)*; good: *good mood (in last week)*; accept: *self-acceptance*; mastery: *environmental mastery*; posRel: *positive relations with* others; purp: *sense of purpose*; auto: *autonomy*; growth: *psychological* growth; meaning: *experienced meaning (ESM)*

Table S12

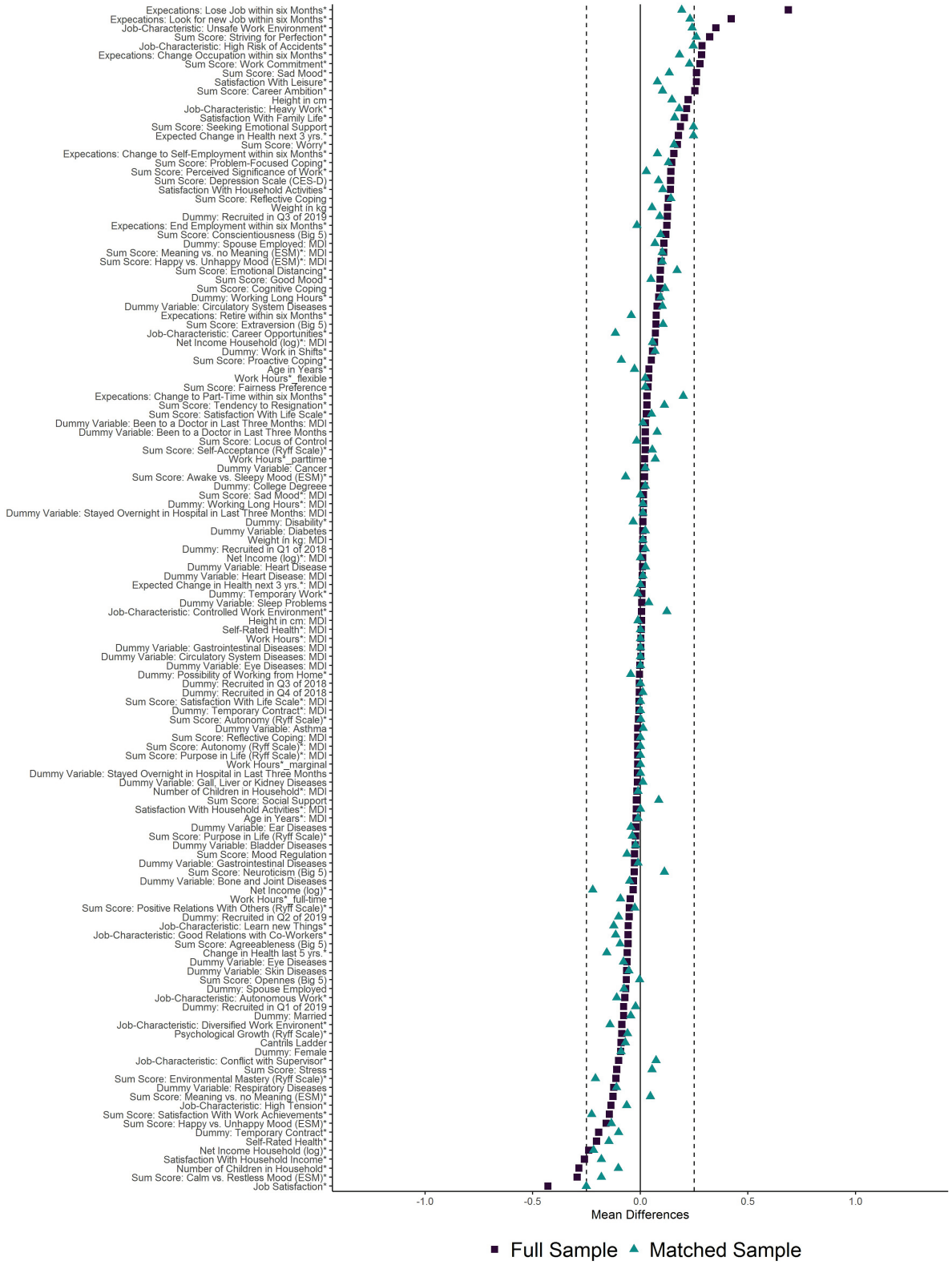
Immediate Effects of Unemployment based on Separate LCS Models for Groups "Mass-Layoff" and "Other Reason" Using a Single Event Dummy Variable

Well-Being Facet	Mass-Layoff			Other Reason		
	LCS (Full Sample)	LCS with Covariates (Full Sample)	LCS (PS-Matched Sample)	LCS (Full Sample)	LCS with Covariates (Full Sample)	LCS (PS-Matched Sample)
ls	-4.57 [-8.15;-0.99] (*p* = .012)	-5.3 [-8.96;-1.65] (*p* = .004)	-6.11 [-10.06;-2.16] (*p* = .002)	-2.37 [-5.72;0.98] (*p* = .165)	-2.9 [-7.22;1.42] (*p* = .188)	-2.11 [-7.01;2.79] (*p* = .399)
fSat	-0.45 [-5.45;4.55] (*p* = .86)	-3.25 [-8.61;2.11] (*p* = .234)	0.09 [-5.5;5.68] (*p* = .975)	0.29 [-3.93;4.51] (*p* = .894)	0.11 [-5.18;5.4] (*p* = .967)	1.44 [-5.16;8.04] (*p* = .67)
hSat	3.84 [-1.37;9.05] (*p* = .149)	3.14 [-2.92;9.21] (*p* = .31)	1.07 [-4.52;6.66] (*p* = .708)	1.1 [-3.67;5.87] (*p* = .652)	-0.38 [-6.15;5.38] (*p* = .897)	-0.97 [-7.73;5.79] (*p* = .779)
iSat	-8.1 [-14;-2.21] (*p* = .007)	-12.05 [-18.11;-5.99] (*p* < .001)	-9.85 [-15.14;-4.56] (*p* < .001)	-5.69 [-10.03;-1.34] (*p* = .01)	-6.39 [-10.9;-1.87] (*p* = .006)	-5.87 [-11.02;-0.71] (*p* = .026)
lSat	3.01 [-2.88;8.89] (*p* = .317)	1.05 [-5.42;7.51] (*p* = .751)	1.3 [-5.18;7.78] (*p* = .695)	5.28 [0.46;10.11] (*p* = .032)	3.58 [-2.34;9.51] (*p* = .236)	4.51 [-2.9;11.91] (*p* = .233)
happy	-1.9 [-6.89;3.1] (*p* = .457)	-2.6 [-7.91;2.7] (*p* = .337)	-2.8 [-8.06;2.47] (*p* = .297)	-4.3 [-8.46;-0.15] (*p* = .042)	-5.93 [-10.49;-1.36] (*p* = .011)	-4.44 [-10.14;1.25] (*p* = .126)
awake	0.63 [-4.31;5.57] (*p* = .804)	-0.18 [-5.56;5.19] (*p* = .947)	3.49 [-2.18;9.15] (*p* = .228)	2.41 [-1.48;6.31] (*p* = .224)	1.64 [-2.98;6.25] (*p* = .487)	NA
calm	-2.61 [-7.75;2.53] (*p* = .319)	-3.71 [-9;1.58] (*p* = .169)	NA	-1.01 [-5.1;3.07] (*p* = .627)	-1.06 [-5.93;3.82] (*p* = .67)	3.35 [-2.8;9.49] (*p* = .286)
good	-3.87 [-10.45;2.71] (*p* = .249)	-6.25 [-13.19;0.68] (*p* = .077)	-5.14 [-12.71;2.42] (*p* = .183)	-0.67 [-6.18;4.84] (*p* = .811)	-1.28 [-7.59;5.04] (*p* = .692)	-5.06 [-12.93;2.8] (*p* = .207)
worry	0.88 [-5.48;7.23] (*p* = .787)	1.27 [-5.36;7.89] (*p* = .708)	-0.29 [-7.89;7.31] (*p* = .94)	3.59 [-2.21;9.39] (*p* = .225)	1.31 [-5.22;7.84] (*p* = .694)	1.43 [-6.38;9.25] (*p* = .72)
sad	3.84 [-2.16;9.84] (*p* = .21)	4.82 [-1.33;10.98] (*p* = .125)	3.54 [-3.16;10.24] (*p* = .301)	0.82 [-5.04;6.68] (*p* = .784)	-0.31 [-7.41;6.78] (*p* = .931)	1.63 [-6.98;10.23] (*p* = .711)
accept	0.07 [-3.48;3.63] (*p* = .968)	1.01 [-2.77;4.79] (*p* = .601)	0.62 [-2.95;4.19] (*p* = .734)	-1.19 [-3.93;1.55] (*p* = .395)	-1.76 [-4.96;1.44] (*p* = .28)	-1.99 [-6.01;2.02] (*p* = .33)
mastery	-0.42 [-5.28;4.44] (*p* = .866)	0.37 [-4.93;5.67] (*p* = .891)	-0.72 [-6.6;5.17] (*p* = .811)	-2.07 [-6.55;2.42] (*p* = .366)	-2.94 [-7.94;2.06] (*p* = .249)	0.7 [-4.94;6.33] (*p* = .809)
posRel	-2.89 [-7.39;1.6] (*p* = .207)	-1.8 [-6.62;3.02] (*p* = .464)	-4.47 [-9.36;0.42] (*p* = .073)	-2.1 [-6.06;1.86] (*p* = .299)	-1.36 [-6.26;3.54] (*p* = .587)	-0.34 [-6.59;5.91] (*p* = .916)
purp	-0.19 [-5.44;5.07] (*p* = .945)	0.77 [-4.71;6.25] (*p* = .783)	-0.05 [-5.87;5.78] (*p* = .987)	-3.75 [-7.61;0.12] (*p* = .057)	-4.02 [-8.59;0.55] (*p* = .085)	0.11 [-5.24;5.45] (*p* = .969)
auto	1.01 [-3.45;5.47] (*p* = .656)	0.85 [-3.6;5.29] (*p* = .708)	0.42 [-5.61;6.44] (*p* = .892)	-0.05 [-3.48;3.38] (*p* = .976)	-0.22 [-4.13;3.69] (*p* = .911)	-1.48 [-7.49;4.54] (*p* = .631)
growth	1.63 [-2;5.25] (*p* = .379)	1.04 [-2.71;4.79] (*p* = .588)	-0.57 [-4.64;3.49] (*p* = .783)	2.28 [-0.75;5.31] (*p* = .14)	1.1 [-2.54;4.74] (*p* = .555)	0.97 [-3.98;5.92] (*p* = .701)
meaning	2.77 [-3.34;8.88] (*p* = .374)	3.95 [-2.81;10.71] (*p* = .252)	-0.04 [-7.07;6.98] (*p* = .99)	-0.95 [-6.4;4.5] (*p* = .732)	-1.31 [-7.94;5.31] (*p* = .698)	-2.13 [-9.5;5.24] (*p* = .571)

Note. 95%-confidence intervals are presented in brackets, and the two-sided *p*-values in parentheses. When coefficients are printed in bold, their confidence intervals do not contain zero. The two models with "NA" yielded negative (residual) variances and can thus not be interpreted. The table is organized analogously to Table 1 in the main manuscript. We used the following abbreviations for the well-being facets: ls: *life satisfaction*; hSat: *satisfaction with household activities*; iSat: *satisfaction with household income*; lSat: *satisfaction with leisure*; fSat: *satisfaction with family life*; happy: *momentary mood: happy*; awake: *momentary mood: awake*; calm: *momentary mood: calm*; worry: *worried mood (in last week)*; sad: *sad mood (in last week)*; good: *good mood (in last week)*; accept: *self-acceptance*; mastery: *environmental mastery*; posRel: *positive relations with* others; purp: *sense of purpose*; auto: *autonomy*; growth: *psychological* growth; meaning: *experienced meaning (ESM)*

Figure S1

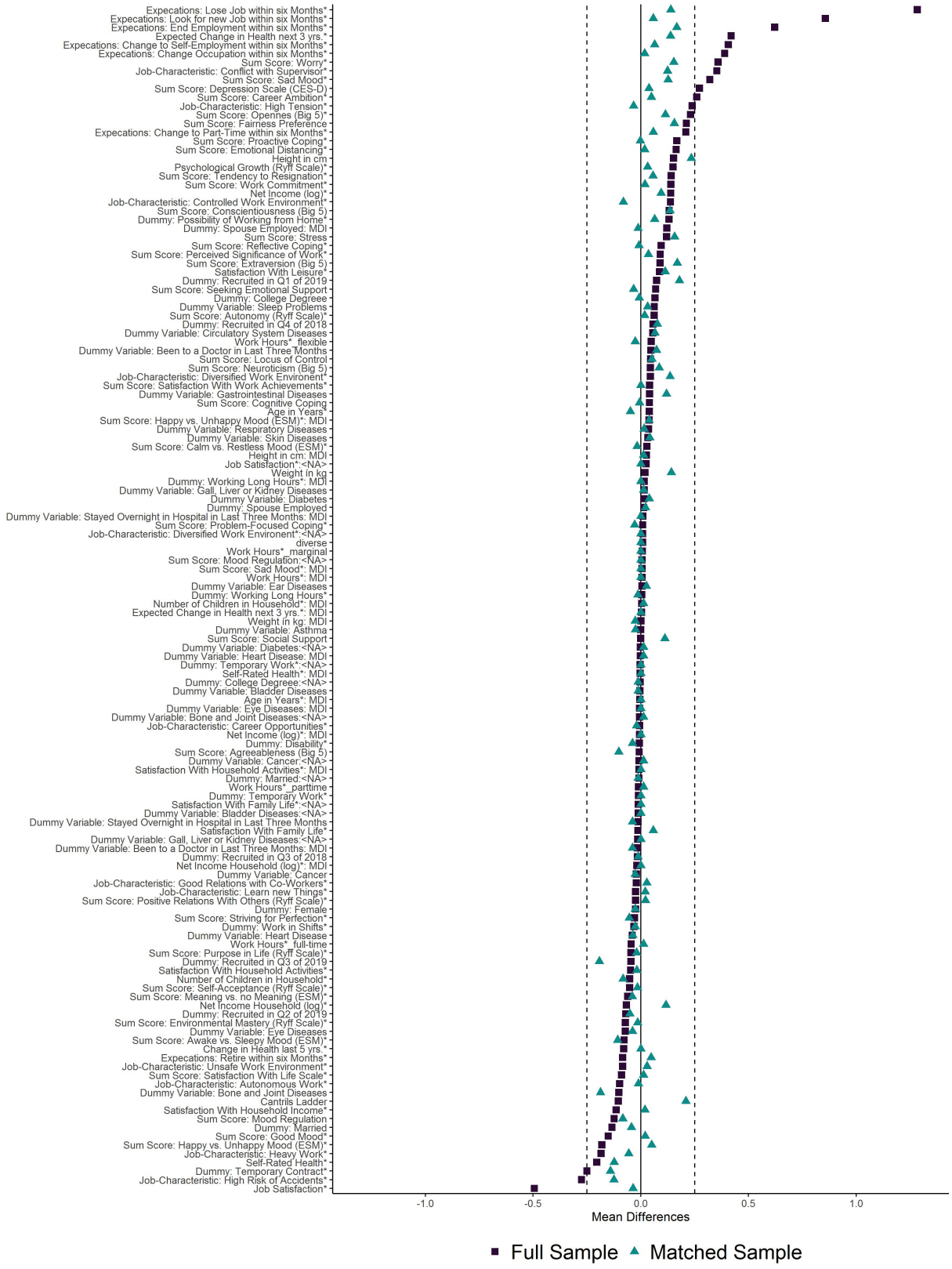
Covariate Balance Before and After Matching (Mass-Layoff)



Note. All covariates were measured during M1. The variables with an asterisk were included in the propensity score model.

Figure S2

Covariate Balance Before and After Matching (Other Reason)



Note. All covariates were measured during M1. The variables with an asterisk were included in the propensity score model.

Figure S3

Variance Ratios Before and After Matching (Mass-Layoff)

Note. All covariates were measured during M1. The variables with an asterisk were included in the propensity score model.

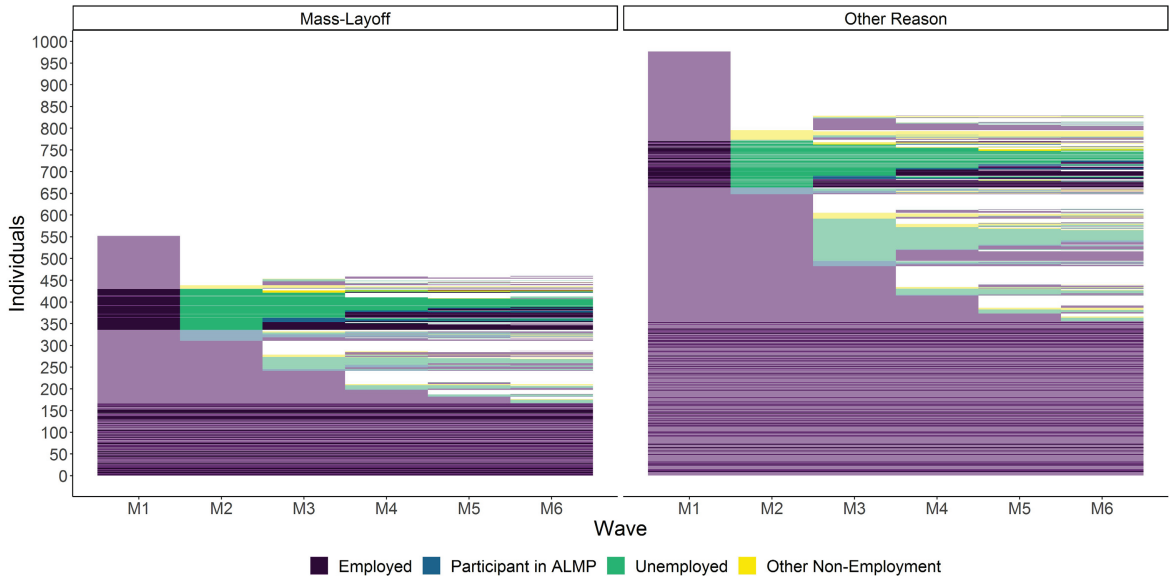
Figure S4

Variance Ratios Before and After Matching (Other Reason)

Note. All covariates were measured during M1. The variables with an asterisk were included in the propensity score model.

Figure S5

Employment Status over the First Six Waves of all GJSP Respondents



Note. Each row depicts one individual; the employment status within each of the first six waves is color coded. Missing data is represented in white. Individuals depicted in transparent colors are not part of the matched sample.

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Appendix B

Supplementary Materials of Study II

Supplementary Materials of Study II

Material S1: Questionnaire Items

Employment Status

Source: 'The Value of Work' (see Knabe et al., 2010)

Which of the following main occupations applies to you? (Please choose only one option!) ["*Welche der nachfolgenden Haupttätigkeiten trifft auf Sie zu?*"]

10. Part-time or full-time work with at least 15 working hours per week ["Teilzeit- oder Vollzeitbeschäftigung mit mindestens 15 Stunden pro Woche"]
11. Part-time work with less than 15 working hours per week ["Teilzeitbeschäftigung mit unter 15 Stunden pro Woche"]
12. Self-employed with at least 15 working hours per week ["Selbständig mit mindestens 15 Stunden pro Woche"]
13. Public employment measure (e. g. One-euro job) ["öffentliche Beschäftigungsmaßnahme (z.B. Ein-Euro-Job)"]
14. Registered as unemployed (and not participating in a support scheme) ["Arbeitslos gemeldet (und nicht in einer Fördermaßnahme)"]
15. Seeking employment and participating in an educational programme or other support scheme ["Arbeitssuchend und in einer Fortbildungs- oder sonstigen Fördermaßnahme"]
16. Early retirement/ old-age pensioner ["Vorruhestand/Altersrentner"]
17. In training/studying ["in Ausbildung/Studium"]
18. Other form of non-employment ["sonstige Nicht-Erwerbstätigkeit"]

Re-Employment Expectations

Source: SOEP (for original items see e.g., TNS Infratest Sozialforschung, 2015):

How likely is it that the following changes to your professional life will occur within the next three months?

1. Start a paid job? ["Dass Sie eine bezahlte Beschäftigung aufnehmen?"]

Scale: 11-point-scale from 0%, 10%, 20%, ... to 100%

Satisfaction With Life Scale

Source: Satisfaction With Life Scale (Diener et al., 1985, p. 72; Schumacher, 2003, p. 2)

Below are five statements that you can agree with or disagree with. Please indicate how much you agree with each statement.

Item Key	Item Wording
swls1	In most ways my life is close to my ideal. ["In den meisten Bereichen entspricht mein Leben meinen Idealvorstellungen."]
swls2	The conditions of my life are excellent. ["Meine Lebensbedingungen sind ausgezeichnet."]
swls3	I am satisfied with my life. [„Ich bin mit meinem Leben zufrieden."] → *this item was used as the reference item*

Scale: do not agree at all (1) to fully agree (7)

Items 4 and 5 were not used as they are not sensitive to short-term changes:

Item Key	Item Wording
swls4	So far I have gotten the important things I want in life. [„Bisher habe ich die wesentlichen Dinge erreicht, die ich mir für mein Leben wünsche."]
swls5	If I could live my life over, I would change almost nothing. ["Wenn ich mein Leben noch einmal leben könnte, würde ich kaum etwas ändern."]

Scale: do not agree at all (1) to fully agree (7)

Domain Satisfaction

Source: SOEP (for original items see e.g., TNS Infratest Sozialforschung, 2015):

How satisfied are you presently with the following areas of your life?

How satisfied are you ...

Item Key	Item Wording
hSat	with your household activities? ["mit Ihrer Tätigkeit im Haushalt?"]
iSat	with you household income? ["mit dem Einkommen Ihres Haushalts?"]
lSat	with you leisure time? ["mit Ihrer Freizeit?"]
fSat	with your family life? ["mit Ihrem Familienleben?"]

Scale: fully unsatisfied (0) to fully satisfied (10)

Momentary Mood (ESM)

Source: Multidimensional Mood State Questionnaire (Multidimensionaler Befindlichkeitsfragebogen, for items see Steyer et al., 1994)

Right now I feel…

Item Key	Scale	Item Wording
happy	happy	happy. [“glücklich”] → *this item was used as the reference item*
awake	awake	awake. [“wach”] → *this item was used as the reference item*
restless	calm	restless. [“unruhig”]
unhappy	happy	unhappy. [“unglücklich”]
sleepy	awake	sleepy. [“schläfrig”]
calm	calm	calm. [“ruhig”] → *this item was used as the reference item*

Scale: not at all (1) to very (5)

Adapted Ryff-Scale for Psychological Well-Being

Source: A short version of a German translation of the Ryff-Scale for Psychological Well-Being (Risch et al., 2005; Ryff, 1989) was constructed with an ant algorithm (Schultze, 2017); some negatively worded items were positively rephrased. For items see Schultze (2017, pp. 246–247).

Subscale: Purpose in Life

Item Key	Scale	Item Wording
purp1	purp	I tend to concentrate on the present because the future almost always brings me problems. [„Ich neige dazu, mich mehr auf die Gegenwart zu konzentrieren, da die Zukunft mir fast immer Probleme bringt.“]
purp2	purp	I don’t have a good sense of what it is I’m trying to accomplish in life. [„Ich weiß nicht so recht, was ich in meinem Leben erreichen möchte.“]
purp3	purp	I used to set goals for myself, but now it seems like a waste of time to me. [“Früher habe ich mir Ziele gesetzt, aber das kommt mir jetzt wie Zeitverschwendung vor.“]
purp4	purp	I enjoy making plans for the future and working to make them a reality. [„Ich mache gerne Pläne für die Zukunft und arbeite daraufhin, sie zu verwirklichen.“] → *this item was used as the reference item*

Scale: completely disagree (1) to completely agree (4)

Subscale: Psychological Growth

Item Key	Item Wording
growth1	I am interested in activities that will expand my horizons. [„Ich interessiere mich für Aktivitäten, die meinen Horizont erweitern.“]
growth2	I have really improved as a person over the last years. [“Ich habe mich in den letzten Jahren als Person wirklich weiterentwickelt.“]
growth3	I gave up trying to make big improvements or changes in my life a long time ago. [“Ich habe schon vor langer Zeit aufgegeben, mein Leben grundsätzlich zu verändern und zu verbessern.“]
growth4	There’s some truth in the saying, “You can’t teach an old dog new tricks”. [“Es ist etwas Wahres an dem Spruch: Was Hänschen nicht lernt, lernt Hans nimmermehr.“]

Scale: completely disagree (1) to completely agree (4)

Subscale: Autonomy

Item Key	Item Wording
auto1	My decisions are usually influenced by what everyone else is doing. [“Meine Entscheidungen werden normalerweise durch das, was andere machen, beeinflusst.“]
auto2	Being satisfied with myself is more important to me than what others think of me. [“Mit mir selber zufrieden zu sein, ist mir wichtiger als das, was andere von mir halten.“] → *this item was used as the reference item*
auto3	I trust my judgment even when it doesn’t reflect the convictions of the majority. [“Ich vertraue meinem Urteil, auch wenn es nicht den Überzeugungen der Mehrheit entspricht.“]
auto4	I judge myself by what I think is important, not by the values of what others think is important. [“Ich beurteile mich selbst nach dem, was ich für wichtig halte, nicht nach den Werten, die für andere gelten.“]

Scale: completely disagree (1) to completely agree (4)

Subscale: Environmental Mastery

Item Key	Item Wording
mastery1	The demands of everyday life often get me down. [“Die Anforderungen des Alltags entmutigen mich oft.“]
mastery2	I often feel overwhelmed by my responsibilities. [“Ich fühle mich oft von meinen Pflichten erdrückt.“]
mastery3	I manage to organize my time so that I can get everything done that needs to be done. [„Es gelingt mir, meine Zeit so einzuteilen, dass ich alles erledigen kann, was getan werden muss.“] → *this item was used as the reference item*
mastery4	I have difficulty arranging my life in a way that is satisfying to me. [“Es fällt mir schwer mein Leben so zu organisieren, dass es für mich befriedigend ist.“]

Scale: completely disagree (1) to completely agree (4)

Subscale: Positive Relations With Others

Item Key	Item Wording
posRel1	I often feel lonely because I have few close friends with whom to share my concerns [„Ich fühle mich oft einsam, weil ich nur wenige enge Freunde habe, denen ich meine Sorgen mitteilen kann."]
posRel2	There are a lot of people who will want to listen to me if I have the need to talk. ["Ich habe viele Menschen, die mir zuhören wollen, wenn ich das Bedürfnis habe zu reden."] → *this item was used as the reference item*
posRel3	It seems to me like most other people have more friends than me. ["Mir scheint, dass die meisten anderen Menschen mehr Freunde haben als ich."]
posRel4	I have experienced many warm and trusting relationships with others. ["Ich habe viele warmherzige und vertrauensvolle Beziehungen mit anderen erlebt."]

Scale: completely disagree (1) to completely agree (4)

Subscale: Self-Acceptance

Item Key	Item Wording
accept1	In general, I feel confident and positive about myself. [„Im Allgemeinen bin ich selbstbewusst und sehe mich positiv."]
accept2	I like most parts of my personality ["Ich mag die meisten Seiten meiner Persönlichkeit."] → *this item was used as the reference item*
accept3	When I compare myself to friends and acquaintances, it makes me feel good about who I am. ["Wenn ich mich mit Freunden und Bekannten vergleiche, habe ich ein gutes Gefühl dabei, so zu sein wie ich bin."]
accept4	In the past, I have made some mistakes, but all in all, I think most of it has turned out to the best. ["In der Vergangenheit habe ich einige Fehler gemacht, aber ich glaube, alles in allem hat sich das meiste zum Besten gefügt."]

Scale: completely disagree (1) to completely agree (4)

Table S1a

Overview of Sample Sizes and Relative Frequency of the Various Employment Statuses Across all Waves (Mass Layoff Sample)

SWB Facet	Analysis Model	N_{ind}	Obs_{all}	$\overline{N_{Occ}}$	Obs_{refInd}	$Freq_{EMP}$	$Freq_{UE}$	$Freq_{UE\,reEMP\downarrow}$	$Freq_{UE\,reEMP\uparrow}$	$Freq_{ALMP}$	$Freq_{NEMP}$
Life Satisfaction	overall	399	5936	14.9	5893	.791	.126	-	-	.043	.04
	reEMP	398	5867	14.7	5825	.792	-	.058	.067	.043	.04
Family Satisfaction	overall	326	5532	17	4948	.791	.123	-	-	.045	.041
	reEMP	322	5455	16.9	4889	.792	-	.056	.067	.044	.041
Household Satisfaction	overall	325	5529	17	4933	.79	.124	-	-	.045	.041
	reEMP	322	5452	16.9	4874	.792	-	.056	.067	.044	.041
Income Satisfaction	overall	324	5526	17.1	4935	.791	.123	-	-	.045	.041
	reEMP	321	5449	17	4876	.792	-	.056	.067	.044	.041
Leisure Satisfaction	overall	325	5531	17	4946	.791	.123	-	-	.045	.041
	reEMP	322	5454	16.9	4887	.792	-	.056	.067	.044	.041
Happy	overall	362	5571	15.4	4891	.794	.124	-	-	.043	.039
	reEMP	361	5509	15.3	4841	.795	-	.057	.066	.043	.039
Awake	overall	362	5571	15.4	4892	.794	.124	-	-	.043	.039
	reEMP	361	5509	15.3	4842	.795	-	.057	.066	.043	.039
Calm	overall	362	5571	15.4	4892	.794	.124	-	-	.043	.039
	reEMP	361	5509	15.3	4842	.795	-	.057	.066	.043	.039

Note. The column "Analysis Model" references whether the descriptive statistics belong to the models for the overall unemployment effects (i.e., overall) or the models that take the re-employment expectations into account (i.e., reEMP). N_{ind}: Number of individuals; Obs_{all}: Number of observations; $\overline{N_{Occ}}$: Average number of measurement occasions per individual; Obs_{refInd}: Number of observations of reference indicator; $Freq_{EMP}$: Relative frequency of employment situation *being employed*; $Freq_{UE}$: Relative frequency of employment situation *being unemployed*; $Freq_{UE\,reEMP\downarrow}$: Relative frequency of employment situation *being unemployed with low re-employment expectations*; $Freq_{UE\,reEMP\uparrow}$: Relative frequency of employment situation *being unemployed with high re-employment expectations*; $Freq_{ALMP}$: Relative frequency of employment situation *being in an active labour market policy*; $Freq_{NEMP}$: Relative frequency of employment situation *being in other nonemployment.* SWB = subjective well-being

Table S1b

Overview of Sample Sizes and Relative Frequency of the Various Employment Statuses Across all Waves (Other Reason Sample)

SWB Facet	Analysis Model	N_{ind}	Obs_{all}	$\overline{N_{Occ}}$	Obs_{refInd}	$Freq_{EMP}$	$Freq_{UE}$	$Freq_{UE\,reEMP\downarrow}$	$Freq_{UE\,reEMP\uparrow}$	$Freq_{ALMP}$	$Freq_{NEMP}$
Life Satisfaction	overall	744	11652	15.7	11623	.814	.108	-	-	.023	.055
	reEMP	741	11503	15.5	11474	.82	-	.044	.059	.023	.054
Family Satisfaction	overall	679	11337	16.7	10398	.815	.106	-	-	.023	.056
	reEMP	676	11189	16.6	10261	.823	-	.043	.057	.023	.054
Household Satisfaction	overall	678	11317	16.7	10386	.815	.106	-	-	.023	.056
	reEMP	675	11168	16.5	10248	.823	-	.043	.057	.023	.054
Income Satisfaction	overall	679	11340	16.7	10398	.815	.106	-	-	.023	.056
	reEMP	676	11192	16.6	10261	.823	-	.043	.057	.023	.054
Leisure Satisfaction	overall	679	11343	16.7	10415	.815	.106	-	-	.023	.056
	reEMP	676	11194	16.6	10277	.823	-	.043	.057	.023	.054
Happy	overall	683	11054	16.2	9823	.814	.108	-	-	.023	.055
	reEMP	680	10908	16	9683	.821	-	.044	.058	.023	.054
Awake	overall	683	11054	16.2	9827	.814	.108	-	-	.023	.055
	reEMP	680	10908	16	9687	.821	-	.044	.058	.023	.054
Calm	overall	683	11052	16.2	9824	.814	.108	-	-	.023	.055
	reEMP	680	10906	16	9684	.821	-	.044	.058	.023	.054

Note. The column "Analysis Model" references whether the descriptive statistics belong to the models for the overall unemployment effects (i.e., overall) or the models that take the re-employment expectations into account (i.e., reEMP). N_{ind}: Number of individuals; Obs_{all}: Number of observations; $\overline{N_{Occ}}$: Average number of measurement occasions per individual; Obs_{refInd}: Number of observations of reference indicator; $Freq_{EMP}$: Relative frequency of employment situation *being employed*; $Freq_{UE}$: Relative frequency of employment situation *being unemployed*; $Freq_{UE\,reEMP\downarrow}$: Relative frequency of employment situation *being unemployed with low re-employment expectations*; $Freq_{UE\,reEMP\uparrow}$: Relative frequency of employment situation *being unemployed with high re-employment expectations*; $Freq_{ALMP}$: Relative frequency of employment situation *being in an active labour market policy*; $Freq_{NEMP}$: Relative frequency of employment situation *being in other nonemployment.* SWB = subjective well-being

Table S2a

Means and Variances of the Unemployment-Related Changes in the SWB Trait Levels (Mass Layoff Sample)

	Overall		reEMP↓		reEMP↑	
SWB Facet	Average Effect	Variance of Effect	Average Effect	Variance of Effect	Average Effect	Variance of Effect
Satisfaction With Life	**-4.37** [-6.05;-2.7] ($p < .001$)	**38.4** [19.48;65.82] ($p < .001$)	**-7.19** [-10.11;-4.33] ($p < .001$)	**98.22** [50.87;170.77] ($p < .001$)	**-3.24** [-5.21;-1.3] ($p < .001$)	**42.26** [19;78.25] ($p < .001$)
Family Satisfaction	1.56 [-0.09;3.24] ($p = .064$)	**18.58** [2.61;46.43] ($p < .001$)	0.06 [-2.46;2.57] ($p = .958$)	**30.94** [6.67;80.04] ($p < .001$)	**2.67** [0.69;4.69] ($p = .008$)	**19** [3.72;51.31] ($p < .001$)
Household Satisfaction	0.72 [-1.16;2.57] ($p = .442$)	**44.02** [19.08;80.19] ($p < .001$)	-0.12 [-2.89;2.71] ($p = .928$)	**78.11** [31.33;149.18] ($p < .001$)	1.12 [-1.04;3.29] ($p = .308$)	**33.89** [9.36;74.8] ($p < .001$)
Income Satisfaction	**-8.65** [-11.01;-6.33] ($p < .001$)	**116.93** [76.36;173.79] ($p < .001$)	**-10.47** [-13.98;-7.01] ($p < .001$)	**195.49** [120.94;307.61] ($p < .001$)	**-7.85** [-10.22;-5.45] ($p < .001$)	**76.37** [40.83;129.29] ($p < .001$)
Leisure Satisfaction	**5.18** [2.77;7.6] ($p < .001$)	**110.06** [66.7;171.14] ($p < .001$)	2.62 [-0.77;6.14] ($p = .13$)	**153** [80.6;262.66] ($p < .001$)	**7.48** [4.9;10.01] ($p < .001$)	**75.26** [34.5;136.88] ($p < .001$)
Happy	**2.5** [0.66;4.33] ($p = .008$)	**21.83** [4.13;56.3] ($p < .001$)	0.23 [-2.74;3.26] ($p = .88$)	**56.62** [17.41;127.58] ($p < .001$)	**3.84** [1.53;6.11] ($p = .002$)	**34.97** [9.43;82.77] ($p < .001$)
Awake	**3.03** [1.22;4.85] ($p = .002$)	**21.05** [4.22;51.3] ($p < .001$)	2.37 [-0.45;5.18] ($p = .096$)	**44.24** [13.84;101.12] ($p < .001$)	**3.24** [0.9;5.48] ($p = .006$)	**38.32** [11.17;85.18] ($p < .001$)
Calm	0.7 [-1.11;2.51] ($p = .448$)	**14.2** [2.27;41.05] ($p < .001$)	-0.04 [-2.87;2.75] ($p = .978$)	**30.69** [7.77;79.35] ($p < .001$)	1.41 [-0.97;3.78] ($p = .24$)	**46.26** [13.66;102.73] ($p < .001$)

Notes. 95%-credibility intervals are presented in brackets, and the two-sided *p*-values are depicted in parenthesis. Parameters are printed in bold, when their 95%-credibility interval does not contain zero. The "overall" column contains the coefficients for the overall model and the "reEMP↓" and " reEMP↑" columns contain the coefficients for the model that takes the re-employment expectations into account. Specifically, "reEMP↓" references the effects when re-employment expectations are low and "reEMP↑" when re-employment expectations are high. SWB = subjective well-being;

Table S2b

Means and Variances of the Unemployment-Related Changes in the SWB Trait Levels (Other Reason Sample)

	Overall		reEMP↓		reEMP↑	
SWB Facet	Average Effect	Variance of Effect	Average Effect	Variance of Effect	Average Effect	Variance of Effect
Satisfaction With Life	**-2.84** [-4.04;-1.65] ($p < .001$)	**37.26** [20;58.84] ($p < .001$)	**-4.9** [-6.83;-2.94] ($p < .001$)	**60.18** [31.75;101.51] ($p < .001$)	**-1.59** [-3.11;-0.06] ($p = .04$)	**56.46** [31.32;88.67] ($p < .001$)
Family Satisfaction	-0.12 [-1.39;1.13] ($p = .85$)	**30.7** [13.01;54.82] ($p < .001$)	-0.86 [-2.61;0.95] ($p = .342$)	**18.25** [3.77;44.97] ($p < .001$)	0.43 [-1.28;2.15] ($p = .614$)	**58.44** [28.96;98.21] ($p < .001$)
Household Satisfaction	-0.17 [-1.65;1.27] ($p = .814$)	**59.16** [36.41;89.39] ($p < .001$)	-1.2 [-3.07;0.72] ($p = .23$)	**36.37** [12.84;74.24] ($p < .001$)	0.68 [-1.12;2.5] ($p = .456$)	**68.21** [38.31;107.92] ($p < .001$)
Income Satisfaction	**-7.86** [-9.26;-6.46] ($p < .001$)	**58.01** [38.54;83.54] ($p < .001$)	**-8.83** [-10.77;-6.9] ($p < .001$)	**63.97** [36.45;104.26] ($p < .001$)	**-7.4** [-9.12;-5.7] ($p < .001$)	**68.41** [41.51;104.65] ($p < .001$)
Leisure Satisfaction	**3.04** [1.36;4.72] ($p < .001$)	**92.22** [62.3;132.71] ($p < .001$)	0.42 [-1.8;2.71] ($p = .71$)	**69.99** [35.43;123.97] ($p < .001$)	**5.46** [3.47;7.4] ($p < .001$)	**95.38** [60.16;143.32] ($p < .001$)
Happy	-0.16 [-1.45;1.09] ($p = .804$)	**6.57** [1.32;19.89] ($p < .001$)	-1.12 [-3.27;1.14] ($p = .304$)	**31.35** [10.32;70.72] ($p < .001$)	0.62 [-1.11;2.26] ($p = .468$)	**17.4** [4.88;42.18] ($p < .001$)
Awake	1.08 [-0.28;2.46] ($p = .12$)	**14.88** [3.38;34.67] ($p < .001$)	-1.03 [-3.4;1.31] ($p = .39$)	**55.78** [23.61;107.56] ($p < .001$)	**2.86** [1.13;4.57] ($p < .001$)	**20.28** [5.47;46.3] ($p < .001$)
Calm	0.03 [-1.36;1.45] ($p = .968$)	**25.78** [8.83;49.49] ($p < .001$)	-0.93 [-3.26;1.35] ($p = .432$)	**51.41** [20.83;99.6] ($p < .001$)	0.71 [-1.01;2.5] ($p = .418$)	**34.38** [11.74;68.19] ($p < .001$)

Notes. 95%-credibility intervals are presented in brackets, and the two-sided *p*-values are depicted in parenthesis. Parameters are printed in bold, when their 95%-credibility interval does not contain zero. The "overall" column contains the coefficients for the overall model and the "reEMP↓" and " reEMP↑" columns contain the coefficients for the model that takes the re-employment expectations into account. Specifically, "reEMP↓" references the effects when re-employment expectations are low and "reEMP↑" when re-employment expectations are high. SWB = subjective well-being;

Table S3

Correlation of Initial SWB Trait Levels and Unemployment-related Trait Changes in the Same SWB Facets

SWB Facet	Mass Layoff Sample			Other Reason Sample		
	Overall	reEMP↓	reEMP↑	Overall	reEMP↓	reEMP↑
Satisfaction With Life	.06 [-.2;.33] (*p* = .662)	-.15 [-.39;.12] (*p* = .264)	.14 [-.19;.47] (*p* = .404)	-.04 [-.22;.15] (*p* = .662)	-0.08 [-0.29;0.14] (p = 0.47)	0 [-0.2;0.21] (p = 0.992)
Family Satisfaction	-.07 [-.45;.38] (*p* = .712)	.15 [-.27;.64] (*p* = .5)	-.4 [-.82;.08] (*p* = .096)	-.25 [-.46;-.02] (*p* = .034)*	-.09 [-.46;.4] (*p* = .686)	-.29 [-.49;-.06] (*p* = .016)*
Household Satisfaction	-.17 [-.43;.13] (*p* = .246)	-.21 [-.48;.14] (*p* = .218)	-.14 [-.5;.3] (*p* = .496)	-.08 [-.25;.11] (*p* = .414)	-.03 [-.31;.32] (*p* = .876)	-.05 [-.26;.17] (*p* = .662)
Income Satisfaction	-.19 [-.38;.02] (*p* = .078)	-.27 [-.48;-.02] (*p* = .032)*	-.04 [-.31;.26] (*p* = .778)	-.11 [-.28;.08] (*p* = .242)	-.12 [-.33;.12] (*p* = .342)	-.14 [-.35;.1] (*p* = .234)
Leisure Satisfaction	-.24 [-.44;-.01] (*p* = .042)*	-.2 [-.43;.08] (*p* = .158)	-.4 [-.64;-.09] (*p* = .014)*	-.17 [-.34;.03] (*p* = .086)	-.06 [-.32;.25] (*p* = .712)	-.27 [-.45;-.06] (*p* = .012)*
Happy	-.13 [-.51;.34] (*p* = .542)	-.13 [-.47;.3] (*p* = .536)	-.22 [-.61;.27] (*p* = .36)	.17 [-.34;.69] (*p* = .516)	.12 [-.25;.53] (*p* = .54)	.04 [-.35;.5] (*p* = .832)
Awake	-.2 [-.6;.3] (*p* = .39)	-.07 [-.48;.42] (*p* = .756)	-.17 [-.58;.3] (*p* = .446)	-.07 [-.41;.35] (*p* = .712)	.05 [-.25;.38] (*p* = .768)	-.24 [-.61;.15] (*p* = .214)
Calm	.01 [-.46;.55] (*p* = .958)	.15 [-.31;.64] (*p* = .532)	-.23 [-.58;.18] (*p* = .252)	-.08 [-.34;.22] (*p* = .572)	-.05 [-.35;.28] (*p* = .754)	-.06 [-.35;.27] (*p* = .684)

Note. 95%-credibility intervals are presented in brackets, and the two-sided uncorrected p-values are depicted in parenthesis. The "overall" column contains the coefficients for the overall model and the "reEMP↓" and "reEMP↑" columns contain the coefficients for the model that takes the re-employment expectations into account. Specifically, "reEMP↓" references the effects when re-employment expectations are low and "reEMP↑" when re-employment expectations are high. Asterisks indicate that *p*-values were not significant after Benjamini-Hochberg correction. SWB = subjective well-being;

Table S4a

Correlation of PWB Facets and Unemployment-Related Changes in Cognitive Well-Being Levels (Mass Layoff Sample)

PWB Facet	Life Satisfaction			Family Satisfaction			Household Satisfaction			Income Satisfaction			Leisure Satisfaction		
	Overall	reEMP↓	reEMP↑	Overall	reEMP↓	reEMP↑	Overall	reEMP↓	reEMP↑	Overall	reEMP↓	reEMP↑	Overall	reEMP↓	reEMP↑
SA	-0.04 [-0.31;0.25] (*p* = .786)	-0.14 [-0.42;0.16] (*p* = .362)	0.15 [-0.19;0.47] (*p* = .39)	-0.03 [-0.44;0.42] (*p* = .888)	-0.14 [-0.54;0.31] (*p* = .538)	-0.1 [-0.58;0.41] (*p* = .676)	0 [-0.29;0.29] (*p* = .974)	0.02 [-0.3;0.33] (*p* = .926)	-0.12 [-0.49;0.28] (*p* = .556)	-0.01 [-0.23;0.21] (*p* = .934)	-0.16 [-0.4;0.1] (*p* = .238)	0.23 [-0.07;0.51] (*p* = .136)	0.07 [-0.17;0.29] (*p* = .58)	0.11 [-0.18;0.37] (*p* = .454)	0 [-0.31;0.29] (*p* = .984)
A	0.2 [-0.06;0.44] (*p* = .134)	-0.02 [-0.28;0.25] (*p* = .896)	0.28 [-0.02;0.54] (*p* = .064)	-0.2 [-0.6;0.19] (*p* = .304)	-0.32 [-0.71;0.1] (*p* = .132)	-0.09 [-0.55;0.38] (*p* = .682)	-0.05 [-0.32;0.24] (*p* = .75)	-0.08 [-0.37;0.23] (*p* = .622)	-0.05 [-0.41;0.32] (*p* = .806)	-0.16 [-0.36;0.05] (*p* = .14)	-0.27 [-0.48;-0.03] (*p* = .026)*	-0.01 [-0.27;0.26] (*p* = .962)	0.04 [-0.18;0.26] (*p* = .71)	-0.06 [-0.32;0.2] (*p* = .654)	0.11 [-0.18;0.37] (*p* = .442)
EM	-0.02 [-0.27;0.23] (*p* = .898)	-0.27 [-0.52;0] (*p* = .054)	0.12 [-0.17;0.39] (*p* = .424)	-0.29 [-0.67;0.06] (*p* = .1)	-0.26 [-0.63;0.15] (*p* = .216)	-0.31 [-0.72;0.12] (*p* = .15)	-0.06 [-0.32;0.21] (*p* = .656)	-0.16 [-0.44;0.14] (*p* = .29)	0.03 [-0.31;0.38] (*p* = .874)	-0.14 [-0.33;0.06] (*p* = .186)	-0.26 [-0.47;-0.02] (*p* = .034)*	-0.02 [-0.27;0.24] (*p* = .892)	-0.1 [-0.31;0.12] (*p* = .364)	-0.14 [-0.39;0.13] (*p* = .292)	-0.16 [-0.42;0.12] (*p* = .268)
PG	-0.05 [-0.31;0.21] (*p* = .716)	-0.1 [-0.36;0.17] (*p* = .47)	-0.1 [-0.41;0.22] (*p* = .548)	-0.12 [-0.52;0.26] (*p* = .5)	-0.1 [-0.49;0.3] (*p* = .61)	-0.18 [-0.64;0.32] (*p* = .47)	0.12 [-0.16;0.39] (*p* = .406)	0.06 [-0.23;0.34] (*p* = .694)	0.16 [-0.23;0.56] (*p* = .442)	-0.2 [-0.4;0.01] (*p* = .056)	-0.25 [-0.46;-0.01] (*p* = .036)*	-0.17 [-0.43;0.12] (*p* = .266)	0.09 [-0.13;0.31] (*p* = .42)	0.06 [-0.2;0.31] (*p* = .676)	0.08 [-0.22;0.37] (*p* = .61)
PR	0.05 [-0.2;0.29] (*p* = .714)	-0.05 [-0.3;0.21] (*p* = .718)	0.07 [-0.22;0.36] (*p* = .642)	-0.07 [-0.42;0.31] (*p* = .714)	-0.03 [-0.41;0.41] (*p* = .894)	-0.22 [-0.65;0.22] (*p* = .322)	0.22 [-0.05;0.48] (*p* = .11)	0.16 [-0.13;0.44] (*p* = .286)	0.21 [-0.15;0.56] (*p* = .256)	0.05 [-0.15;0.24] (*p* = .646)	0 [-0.24;0.23] (*p* = .984)	0.12 [-0.14;0.38] (*p* = .366)	-0.05 [-0.26;0.16] (*p* = .618)	-0.05 [-0.3;0.2] (*p* = .696)	-0.11 [-0.39;0.16] (*p* = .42)
SP	-0.01 [-0.28;0.25] (*p* = .924)	-0.03 [-0.31;0.25] (*p* = .838)	0.01 [-0.3;0.32] (*p* = .944)	0.03 [-0.39;0.44] (*p* = .902)	0.15 [-0.28;0.58] (*p* = .49)	-0.25 [-0.73;0.24] (*p* = .32)	0.09 [-0.2;0.38] (*p* = .556)	0.07 [-0.25;0.38] (*p* = .656)	0.06 [-0.32;0.47] (*p* = .766)	0.04 [-0.18;0.25] (*p* = .708)	0 [-0.24;0.25] (*p* = .972)	0.06 [-0.23;0.33] (*p* = .684)	0.11 [-0.13;0.34] (*p* = .356)	0.14 [-0.15;0.4] (*p* = .346)	0.04 [-0.26;0.34] (*p* = .822)

Notes. 95%-credibility intervals are presented in brackets, and the two-sided uncorrected p-values are depicted in parenthesis. Asterisks indicate that *p*-values were not significant after Benjamini-Hochberg correction. The "overall" column contains the coefficients for the overall model and the "reEMP↓" and "reEMP↑" columns contain the coefficients for the model that takes the re-employment expectations into account. Specifically, "reEMP↓" references the effects when re-employment expectations are low and "reEMP↑" when re-employment expectations are high. PWB = psychological well-being; SA = self-acceptance; A = autonomy, EM = environmental mastery, PG = psychological growth, PR = positive relations with others, SP = sense of purpose

Table S4b

Correlation of PWB Facets and Unemployment-Related Changes in Cognitive Well-Being Trait Levels (Other Reason Sample)

PWB Facet	Life Satisfaction			Family Satisfaction			Household Satisfaction			Income Satisfaction			Leisure Satisfaction		
	Overall	reEMP↓	reEMP↑	Overall	reEMP↓	reEMP↑	Overall	reEMP↓	reEMP↑	Overall	reEMP↓	reEMP↑	Overall	reEMP↓	reEMP↑
SA	-0.15 [-0.33;0.03] (*p* = .104)	-0.1 [-0.32;0.13] (*p* = .4)	-0.19 [-0.38;0.01] (*p* = .056)	-0.26 [-0.48;-0.04] (*p* = .022)*	-0.35 [-0.69;0.01] (*p* = .054)	-0.2 [-0.42;0.03] (*p* = .08)	-0.09 [-0.26;0.09] (*p* = .344)	-0.15 [-0.44;0.13] (*p* = .29)	0.06 [-0.16;0.27] (*p* = .606)	-0.02 [-0.19;0.15] (*p* = .79)	0 [-0.23;0.21] (*p* = .968)	-0.02 [-0.22;0.18] (*p* = .86)	-0.07 [-0.23;0.1] (*p* = .422)	-0.01 [-0.24;0.22] (*p* = .936)	-0.07 [-0.27;0.12] (*p* = .464)
A	-0.08 [-0.26;0.1] (*p* = .392)	-0.01 [-0.24;0.22] (*p* = .956)	-0.11 [-0.29;0.07] (*p* = .256)	-0.01 [-0.22;0.2] (*p* = .92)	-0.12 [-0.52;0.27] (*p* = .526)	0.04 [-0.15;0.24] (*p* = .666)	0.02 [-0.15;0.19] (*p* = .842)	0.05 [-0.24;0.34] (*p* = .722)	0.05 [-0.14;0.24] (*p* = .618)	0.01 [-0.15;0.18] (*p* = .864)	-0.03 [-0.26;0.2] (*p* = .798)	0.06 [-0.13;0.23] (*p* = .546)	-0.05 [-0.21;0.11] (*p* = .528)	-0.12 [-0.35;0.12] (*p* = .316)	0.01 [-0.17;0.18] (*p* = .928)
EM	-0.01 [-0.18;0.17] (*p* = .916)	-0.08 [-0.3;0.15] (*p* = .514)	0.05 [-0.14;0.23] (*p* = .616)	-0.07 [-0.28;0.14] (*p* = .496)	-0.12 [-0.52;0.28] (*p* = .538)	-0.04 [-0.25;0.16] (*p* = .67)	0.07 [-0.1;0.25] (*p* = .402)	0.11 [-0.18;0.39] (*p* = .454)	0.2 [0;0.41] (*p* = .052)	-0.04 [-0.2;0.13] (*p* = .632)	0.04 [-0.18;0.26] (*p* = .754)	-0.07 [-0.26;0.12] (*p* = .46)	0.06 [-0.1;0.22] (*p* = .476)	0.11 [-0.14;0.34] (*p* = .394)	0.08 [-0.1;0.26] (*p* = .386)
PG	0.07 [-0.13;0.26] (*p* = .476)	0.02 [-0.23;0.27] (*p* = .854)	0.04 [-0.17;0.24] (*p* = .694)	-0.05 [-0.28;0.18] (*p* = .652)	-0.26 [-0.62;0.13] (*p* = .182)	-0.01 [-0.24;0.22] (*p* = .948)	0.07 [-0.12;0.25] (*p* = .486)	0.02 [-0.29;0.32] (*p* = .892)	0.15 [-0.08;0.36] (*p* = .208)	0.01 [-0.17;0.19] (*p* = .918)	-0.09 [-0.31;0.15] (*p* = .482)	0.09 [-0.12;0.3] (*p* = .388)	-0.03 [-0.2;0.15] (*p* = .752)	0.14 [-0.12;0.39] (*p* = .306)	-0.1 [-0.31;0.11] (*p* = .344)
PR	-0.04 [-0.22;0.15] (*p* = .714)	-0.08 [-0.31;0.15] (*p* = .492)	0 [-0.2;0.19] (*p* = .976)	-0.07 [-0.28;0.15] (*p* = .528)	-0.11 [-0.52;0.28] (*p* = .586)	-0.08 [-0.3;0.14] (*p* = .464)	-0.01 [-0.19;0.17] (*p* = .942)	-0.19 [-0.49;0.12] (*p* = .226)	0.1 [-0.11;0.3] (*p* = .376)	0.05 [-0.12;0.22] (*p* = .554)	0.04 [-0.2;0.26] (*p* = .752)	0.07 [-0.13;0.26] (*p* = .494)	0.04 [-0.12;0.21] (*p* = .616)	0.14 [-0.12;0.37] (*p* = .29)	-0.02 [-0.21;0.18] (*p* = .872)
SP	0.14 [-0.05;0.34] (*p* = .146)	0.05 [-0.21;0.29] (*p* = .722)	0.1 [-0.1;0.3] (*p* = .314)	-0.04 [-0.28;0.18] (*p* = .706)	-0.09 [-0.52;0.34] (*p* = .68)	-0.03 [-0.25;0.19] (*p* = .8)	0.17 [-0.02;0.35] (*p* = .082)	0.15 [-0.17;0.44] (*p* = .338)	0.25 [0.04;0.45] (*p* = .02)*	0.08 [-0.1;0.25] (*p* = .396)	0.03 [-0.22;0.27] (*p* = .824)	0.07 [-0.13;0.27] (*p* = .474)	0.05 [-0.12;0.22] (*p* = .572)	0.13 [-0.14;0.39] (*p* = .334)	0.04 [-0.16;0.24] (*p* = .682)

Notes. 95%-credibility intervals are presented in brackets, and the two-sided uncorrected p-values are depicted in parenthesis. Asterisks indicate that *p*-values were not significant after Benjamini-Hochberg correction. The "overall" column contains the coefficients for the overall model and the "reEMP↓" and "reEMP↑" columns contain the coefficients for the model that takes the re-employment expectations into account. Specifically, "reEMP↓" references the effects when re-employment expectations are low and "reEMP↑" when re-employment expectations are high. PWB = psychological well-being; SA = self-acceptance; A = autonomy, EM = environmental mastery, PG = psychological growth, PR = positive relations with others, SP = sense of purpose

Table S5a

Correlation of PWB Facets and Unemployment-Related Changes in Affective Well-Being Trait Levels (Mass Layoff Sample)

PWB Facet	Happy			Awake			Calm		
	Overall	reEMP↓	reEMP↑	Overall	reEMP↓	reEMP↑	Overall	reEMP↓	reEMP↑
SA	0.17 [-0.27;0.59] (p = .448)	0.14 [-0.25;0.52] (p = .486)	0.04 [-0.42;0.48] (p = .874)	-0.06 [-0.52;0.38] (p = .768)	-0.19 [-0.6;0.25] (p = .402)	-0.06 [-0.46;0.38] (p = .776)	0.07 [-0.46;0.58] (p = .798)	0.03 [-0.47;0.54] (p = .908)	-0.02 [-0.42;0.38] (p = .936)
A	0.21 [-0.19;0.62] (p = .282)	0.07 [-0.32;0.45] (p = .71)	0.18 [-0.21;0.54] (p = .338)	0.01 [-0.41;0.4] (p = .97)	0.16 [-0.27;0.55] (p = .476)	-0.15 [-0.52;0.22] (p = .416)	0.02 [-0.48;0.51] (p = .93)	0.16 [-0.34;0.61] (p = .518)	-0.11 [-0.44;0.25] (p = .54)
EM	-0.13 [-0.54;0.27] (p = .5)	-0.18 [-0.55;0.2] (p = .354)	-0.09 [-0.46;0.31] (p = .658)	-0.15 [-0.53;0.27] (p = .47)	-0.22 [-0.61;0.2] (p = .296)	-0.06 [-0.41;0.33] (p = .748)	-0.34 [-0.75;0.12] (p = .152)	-0.13 [-0.59;0.36] (p = .588)	-0.33 [-0.64;0.01] (p = .062)
PG	0.22 [-0.19;0.6] (p = .274)	0.09 [-0.3;0.45] (p = .662)	0.14 [-0.31;0.54] (p = .51)	-0.16 [-0.58;0.24] (p = .416)	-0.23 [-0.6;0.18] (p = .268)	-0.13 [-0.52;0.3] (p = .534)	-0.19 [-0.65;0.29] (p = .43)	-0.18 [-0.63;0.33] (p = .49)	-0.18 [-0.54;0.22] (p = .372)
PR	0.1 [-0.28;0.5] (p = .61)	0 [-0.36;0.37] (p = .99)	0.08 [-0.31;0.49] (p = .68)	-0.23 [-0.61;0.15] (p = .222)	-0.21 [-0.58;0.2] (p = .314)	-0.18 [-0.52;0.2] (p = .338)	0.04 [-0.43;0.5] (p = .86)	0.17 [-0.32;0.62] (p = .49)	-0.11 [-0.45;0.24] (p = .528)
SP	-0.11 [-0.54;0.33] (p = .6)	-0.13 [-0.51;0.26] (p = .526)	-0.09 [-0.49;0.33] (p = .666)	-0.09 [-0.49;0.32] (p = .666)	-0.09 [-0.5;0.35] (p = .67)	-0.09 [-0.45;0.32] (p = .678)	-0.33 [-0.76;0.14] (p = .166)	-0.09 [-0.55;0.42] (p = .744)	-0.33 [-0.64;0.03] (p = .072)

Notes. 95%-credibility intervals are presented in brackets, and the two-sided uncorrected p-values are depicted in parenthesis. Asterisks indicate that p-values were not significant after Benjamini-Hochberg correction. The "overall" column contains the coefficients for the overall model and the "reEMP↓" and "reEMP↑" columns contain the coefficients for the model that takes the re-employment expectations into account. Specifically, "reEMP↓" references the effects when re-employment expectations are low and "reEMP↑" when re-employment expectations are high. PWB = psychological well-being; SA = self-acceptance; A = autonomy, EM = environmental mastery, PG = psychological growth, PR = positive relations with others, SP = sense of purpose

Table S5b

Correlation of PWB Facets and Unemployment-Related Changes in Affective Well-Being Trait Levels (Other Reason Sample)

PWB Facet	Happy			Awake			Calm		
	Overall	reEMP↓	reEMP↑	Overall	reEMP↓	reEMP↑	Overall	reEMP↓	reEMP↑
SA	0.07 [-0.39;0.54] (p = .758)	-0.05 [-0.4;0.3] (p = .76)	0.18 [-0.2;0.57] (p = .362)	0.24 [-0.07;0.57] (p = .124)	0.12 [-0.17;0.39] (p = .408)	0.28 [-0.07;0.6] (p = .112)	0.19 [-0.06;0.46] (p = .138)	0.11 [-0.17;0.39] (p = .452)	0.15 [-0.14;0.46] (p = .304)
A	0.04 [-0.42;0.51] (p = .844)	0 [-0.35;0.36] (p = .986)	0.07 [-0.3;0.45] (p = .72)	0.12 [-0.21;0.45] (p = .458)	0.09 [-0.22;0.36] (p = .566)	0.2 [-0.15;0.52] (p = .25)	0.13 [-0.12;0.4] (p = .296)	0.06 [-0.23;0.35] (p = .668)	0.14 [-0.14;0.42] (p = .328)
EM	0.36 [-0.04;0.79] (p = .078)	**0.49** [0.17;0.78] (p = .002)	0.07 [-0.3;0.46] (p = .706)	**0.47** [0.19;0.77] (p = .002)	**0.48** [0.23;0.7] (p < .001)	0.26 [-0.08;0.57] (p = .128)	0.24 [-0.01;0.52] (p = .054)	0.33 [0.04;0.6] (p = .026)*	0.13 [-0.14;0.42] (p = .344)
PG	0.12 [-0.38;0.59] (p = .628)	-0.01 [-0.41;0.38] (p = .962)	0.31 [-0.11;0.7] (p = .146)	0.13 [-0.24;0.48] (p = .472)	0.15 [-0.19;0.44] (p = .376)	0.23 [-0.17;0.59] (p = .244)	0.14 [-0.14;0.42] (p = .332)	0.12 [-0.2;0.42] (p = .462)	0.13 [-0.19;0.46] (p = .418)
PR	0.07 [-0.41;0.53] (p = .764)	0.01 [-0.35;0.37] (p = .94)	0.14 [-0.26;0.53] (p = .484)	0.13 [-0.2;0.46] (p = .416)	0.2 [-0.1;0.48] (p = .184)	0.18 [-0.19;0.52] (p = .328)	0.14 [-0.12;0.4] (p = .274)	0.16 [-0.12;0.44] (p = .276)	0.1 [-0.2;0.39] (p = .53)
SP	-0.03 [-0.54;0.46] (p = .89)	0.15 [-0.25;0.52] (p = .444)	-0.08 [-0.48;0.37] (p = .702)	0.03 [-0.34;0.36] (p = .872)	0.15 [-0.18;0.45] (p = .378)	-0.02 [-0.42;0.36] (p = .92)	0.11 [-0.17;0.41] (p = .434)	0.32 [0;0.61] (p = .052)	-0.07 [-0.38;0.25] (p = .646)

Notes. 95%-credibility intervals are presented in brackets, and the two-sided uncorrected p-values are depicted in parenthesis. Asterisks indicate that p-values were not significant after Benjamini-Hochberg correction. The parameter are printed in bold, when the corrected p-value was smaller than .05. The "overall" column contains the coefficients for the overall model and the "reEMP↓" and "reEMP↑" columns contain the coefficients for the model that takes the re-employment expectations into account. Specifically, "reEMP↓" references the effects when re-employment expectations are low and "reEMP↑" when re-employment expectations are high. PWB = psychological well-being; SA = self-acceptance; A = autonomy, EM = environmental mastery, PG = psychological growth, PR = positive relations with others, SP = sense of purpose

Table S6a

Correlation of PWB Facets and Initial SWB Levels (Mass Layoff Sample, Overall Model)

PWB Facet	Life Satisfaction	Family Satisfaction	Household Satisfaction	Income Satisfaction	Leisure Satisfaction	Happy	Awake	Calm
SA	**0.48** [0.4;0.56] ($p < .001$)	**0.38** [0.28;0.48] ($p < .001$)	**0.31** [0.2;0.41] ($p < .001$)	**0.24** [0.13;0.35] ($p < .001$)	**0.32** [0.21;0.42] ($p < .001$)	**0.36** [0.26;0.46] ($p < .001$)	**0.31** [0.2;0.41] ($p < .001$)	**0.34** [0.24;0.44] ($p < .001$)
A	**0.28** [0.17;0.37] ($p < .001$)	**0.28** [0.17;0.38] ($p < .001$)	**0.24** [0.13;0.35] ($p < .001$)	**0.14** [0.03;0.25] ($p = .016$)	**0.22** [0.1;0.32] ($p < .001$)	**0.27** [0.16;0.37] ($p < .001$)	**0.24** [0.13;0.34] ($p < .001$)	**0.34** [0.24;0.44] ($p < .001$)
EM	**0.47** [0.38;0.55] ($p < .001$)	**0.38** [0.27;0.48] ($p < .001$)	**0.43** [0.33;0.52] ($p < .001$)	**0.33** [0.23;0.43] ($p < .001$)	**0.42** [0.31;0.51] ($p < .001$)	**0.38** [0.28;0.47] ($p < .001$)	**0.31** [0.21;0.41] ($p < .001$)	**0.36** [0.26;0.46] ($p < .001$)
PG	**0.25** [0.15;0.35] ($p < .001$)	**0.2** [0.09;0.31] ($p < .001$)	**0.18** [0.07;0.3] ($p = .002$)	**0.23** [0.12;0.34] ($p < .001$)	**0.22** [0.1;0.33] ($p < .001$)	**0.18** [0.06;0.29] ($p = .002$)	**0.15** [0.04;0.26] ($p = .012$)	**0.2** [0.09;0.31] ($p < .001$)
PR	**0.42** [0.33;0.5] ($p < .001$)	**0.37** [0.27;0.47] ($p < .001$)	**0.21** [0.1;0.32] ($p < .001$)	**0.23** [0.12;0.34] ($p < .001$)	**0.35** [0.24;0.45] ($p < .001$)	**0.34** [0.23;0.44] ($p < .001$)	**0.25** [0.14;0.36] ($p < .001$)	**0.26** [0.15;0.36] ($p < .001$)
SP	**0.38** [0.29;0.47] ($p < .001$)	**0.3** [0.2;0.4] ($p < .001$)	**0.27** [0.16;0.38] ($p < .001$)	**0.26** [0.15;0.36] ($p < .001$)	**0.27** [0.16;0.38] ($p < .001$)	**0.32** [0.22;0.42] ($p < .001$)	**0.28** [0.18;0.38] ($p < .001$)	**0.25** [0.14;0.35] ($p < .001$)

Notes. 95%-credibility intervals are presented in brackets, and the two-sided uncorrected p-values are depicted in parenthesis. Asterisks indicate that *p*-values were not significant after Benjamini-Hochberg correction. The parameter are printed in bold, when the corrected *p*-value was smaller than .05. PWB = psychological well-being; SWB = subjective well-being; SA = self-acceptance; A = autonomy, EM = environmental mastery, PG = psychological growth, PR = positive relations with others, SP = sense of purpose

Table S6b

Correlation of PWB Facets and Initial SWB Levels (Other Reason Sample, Overall Model)

PWB Facet	Life Satisfaction	Family Satisfaction	Household Satisfaction	Income Satisfaction	Leisure Satisfaction	Happy	Awake	Calm
SA	**.56** [.51;.62] ($p < .001$)	**.45** [.38;.51] ($p < .001$)	**.32** [.24;.39] ($p < .001$)	**.29** [.22;.36] ($p < .001$)	**.37** [.3;.44] ($p < .001$)	**.37** [.29;.44] ($p < .001$)	**.29** [.22;.36] ($p < .001$)	**.31** [.24;.38] ($p < .001$)
A	**.26** [.18;.33] ($p < .001$)	**.2** [.12;.27] ($p < .001$)	**.14** [.06;.22] ($p = .002$)	**.1** [.02;.17] ($p = .018$)	**.2** [.13;.28] ($p < .001$)	**.18** [.11;.26] ($p < .001$)	**.15** [.07;.23] ($p < .001$)	**.2** [.12;.28] ($p < .001$)
EM	**.42** [.35;.48] ($p < .001$)	**.34** [.27;.41] ($p < .001$)	**.43** [.36;.5] ($p < .001$)	**.28** [.21;.35] ($p < .001$)	**.4** [.32;.46] ($p < .001$)	**.33** [.26;.41] ($p < .001$)	**.26** [.19;.34] ($p < .001$)	**.29** [.21;.36] ($p < .001$)
PG	**.35** [.28;.42] ($p < .001$)	**.25** [.17;.32] ($p < .001$)	**.25** [.17;.32] ($p < .001$)	**.26** [.18;.33] ($p < .001$)	**.27** [.2;.35] ($p < .001$)	**.22** [.14;.29] ($p < .001$)	**.16** [.08;.24] ($p < .001$)	**.13** [.04;.2] ($p = .002$)
PR	**.5** [.44;.56] ($p < .001$)	**.44** [.37;.5] ($p < .001$)	**.33** [.25;.4] ($p < .001$)	**.28** [.2;.35] ($p < .001$)	**.38** [.31;.45] ($p < .001$)	**.33** [.26;.4] ($p < .001$)	**.22** [.14;.3] ($p < .001$)	**.2** [.12;.28] ($p < .001$)
SP	**.4** [.34;.46] ($p < .001$)	**.33** [.25;.39] ($p < .001$)	**.21** [.13;.29] ($p < .001$)	**.28** [.2;.35] ($p < .001$)	**.2** [.12;.28] ($p < .001$)	**.29** [.22;.37] ($p < .001$)	**.27** [.19;.34] ($p < .001$)	**.24** [.16;.32] ($p < .001$)

Notes. 95%-credibility intervals are presented in brackets, and the two-sided uncorrected p-values are depicted in parenthesis. Asterisks indicate that *p*-values were not significant after Benjamini-Hochberg correction. The parameter are printed in bold, when the corrected *p*-value was smaller than .05. PWB = psychological well-being; SWB = subjective well-being; SA = self-acceptance; A = autonomy, EM = environmental mastery, PG = psychological growth, PR = positive relations with others, SP = sense of purpose

Table S7a

Regression Coefficients of Initial CWB Trait Levels Predicting Unemployment-Related Changes in CWB Trait Levels (Mass Layoff Sample)

PWB Facet	Life Satisfaction			Family Satisfaction			Household Satisfaction			Income Satisfaction			Leisure Satisfaction		
	Overall	reEMP↓	reEMP↑	Overall	reEMP↓	reEMP↑	Overall	reEMP↓	reEMP↑	Overall	reEMP↓	reEMP↑	Overall	reEMP↓	reEMP↑
SA	0.04 [-0.05;0.14] (p = .4)	-0.02 [-0.18;0.14] (p = .832)	0.03 [-0.1;0.16] (p = .686)	-0.01 [-0.1;0.08] (p = .76)	0.07 [-0.07;0.21] (p = .318)	-0.09 [-0.2;0.02] (p = .122)	-0.07 [-0.2;0.05] (p = .23)	-0.12 [-0.31;0.06] (p = .196)	-0.04 [-0.18;0.1] (p = .58)	-0.12 [-0.25;0.02] (p = .092)	-0.18 [-0.39;0.04] (p = .106)	-0.03 [-0.18;0.12] (p = .694)	-0.18 [-0.34;-0.03] (p = .022)*	-0.2 [-0.43;0.02] (p = .074)	-0.23 [-0.4;-0.05] (p = .012)*
A	0.02 [-0.07;0.1] (p = .712)	-0.04 [-0.19;0.1] (p = .536)	0.01 [-0.11;0.14] (p = .834)	0 [-0.09;0.08] (p = .94)	0.06 [-0.06;0.19] (p = .324)	-0.09 [-0.19;0.02] (p = .114)	-0.06 [-0.18;0.05] (p = .286)	-0.1 [-0.29;0.08] (p = .254)	-0.04 [-0.19;0.1] (p = .548)	-0.1 [-0.23;0.03] (p = .128)	-0.18 [-0.38;0.02] (p = .076)	-0.02 [-0.17;0.13] (p = .76)	-0.16 [-0.3;-0.01] (p = .038)*	-0.13 [-0.34;0.07] (p = .2)	-0.23 [-0.4;-0.07] (p = .006)*
EM	0.04 [-0.05;0.14] (p = .384)	-0.01 [-0.16;0.14] (p = .86)	0.03 [-0.1;0.16] (p = .628)	0.01 [-0.08;0.1] (p = .868)	0.07 [-0.06;0.2] (p = .276)	-0.07 [-0.18;0.04] (p = .192)	-0.07 [-0.2;0.06] (p = .278)	-0.09 [-0.29;0.09] (p = .332)	-0.06 [-0.2;0.09] (p = .454)	-0.1 [-0.24;0.04] (p = .172)	-0.18 [-0.39;0.02] (p = .076)	-0.01 [-0.17;0.14] (p = .844)	-0.14 [-0.3;0.01] (p = .07)	-0.13 [-0.35;0.09] (p = .228)	-0.2 [-0.37;-0.02] (p = .026)*
PG	0.03 [-0.06;0.12] (p = .528)	-0.05 [-0.19;0.1] (p = .49)	0.05 [-0.08;0.17] (p = .462)	-0.01 [-0.1;0.07] (p = .776)	0.05 [-0.08;0.17] (p = .474)	-0.09 [-0.19;0.02] (p = .118)	-0.07 [-0.19;0.04] (p = .21)	-0.11 [-0.29;0.06] (p = .216)	-0.06 [-0.19;0.08] (p = .418)	-0.09 [-0.23;0.04] (p = .172)	-0.19 [-0.38;0.01] (p = .064)	0 [-0.15;0.15] (p = .992)	-0.15 [-0.3;-0.01] (p = .038)*	-0.14 [-0.34;0.07] (p = .182)	-0.22 [-0.38;-0.05] (p = .01)*
PR	0.03 [-0.06;0.12] (p = .542)	-0.04 [-0.2;0.11] (p = .552)	0.04 [-0.09;0.17] (p = .53)	-0.01 [-0.1;0.08] (p = .768)	0.05 [-0.08;0.19] (p = .428)	-0.09 [-0.2;0.03] (p = .136)	-0.1 [-0.21;0.02] (p = .098)	-0.14 [-0.32;0.04] (p = .126)	-0.07 [-0.22;0.07] (p = .306)	-0.12 [-0.26;0.01] (p = .064)	-0.22 [-0.43;-0.02] (p = .03)*	-0.03 [-0.18;0.12] (p = .664)	-0.16 [-0.32;0] (p = .05)	-0.15 [-0.36;0.07] (p = .184)	-0.21 [-0.39;-0.03] (p = .024)*
SP	0.03 [-0.06;0.12] (p = .536)	-0.05 [-0.2;0.1] (p = .522)	0.04 [-0.09;0.16] (p = .584)	-0.01 [-0.1;0.07] (p = .736)	0.04 [-0.09;0.16] (p = .548)	-0.08 [-0.18;0.03] (p = .156)	-0.08 [-0.2;0.04] (p = .19)	-0.12 [-0.31;0.06] (p = .168)	-0.06 [-0.2;0.09] (p = .45)	-0.13 [-0.26;0.01] (p = .062)	-0.22 [-0.43;-0.02] (p = .034)*	-0.03 [-0.18;0.13] (p = .722)	-0.16 [-0.3;-0.01] (p = .032)*	-0.15 [-0.35;0.05] (p = .15)	-0.21 [-0.38;-0.05] (p = .01)*

Notes. 95%-credibility intervals are presented in brackets, and the two-sided uncorrected p-values are depicted in parenthesis. Asterisks indicate that *p*-values were not significant after Benjamini-Hochberg correction. The "overall" column contains the coefficients for the overall model and the "reEMP↓" and "reEMP↑" columns contain the coefficients for the model that takes the re-employment expectations into account. Specifically, "reEMP↓" references the effects when re-employment expectations are low and "reEMP↑" when re-employment expectations are high. CWB = cognitive well-being; SA = self-acceptance; A = autonomy, EM = environmental mastery, PG = psychological growth, PR = positive relations with others, SP = sense of purpose

Table S7b

Regression Coefficients of Initial CWB Trait Levels Predicting Unemployment-Related Changes in CWB Trait Levels (Other Reason Sample)

PWB Facet	Life Satisfaction			Family Satisfaction			Household Satisfaction			Income Satisfaction			Leisure Satisfaction		
	Overall	reEMP↓	reEMP↑	Overall	reEMP↓	reEMP↑	Overall	reEMP↓	reEMP↑	Overall	reEMP↓	reEMP↑	Overall	reEMP↓	reEMP↑
SA	0.03 [-0.05;0.1] (*p* = .476)	-0.02 [-0.12;0.09] (*p* = .778)	0.07 [-0.04;0.17] (*p* = .214)	-0.05 [-0.12;0.03] (*p* = .218)	0.02 [-0.08;0.12] (*p* = .672)	-0.09 [-0.19;0.01] (*p* = .088)	-0.03 [-0.13;0.07] (*p* = .622)	0.01 [-0.13;0.14] (*p* = .914)	-0.04 [-0.17;0.09] (*p* = .546)	-0.05 [-0.14;0.04] (*p* = .292)	-0.06 [-0.18;0.06] (*p* = .346)	-0.06 [-0.18;0.06] (*p* = .284)	-0.1 [-0.22;0.03] (*p* = .126)	-0.03 [-0.19;0.12] (*p* = .684)	-0.17 [-0.31;-0.03] (*p* = .018)*
A	0 [-0.06;0.07] (*p* = .938)	-0.03 [-0.13;0.06] (*p* = .526)	0.01 [-0.08;0.1] (*p* = .746)	-0.08 [-0.15;-0.01] (*p* = .028)*	-0.02 [-0.11;0.08] (*p* = .734)	-0.13 [-0.22;-0.03] (*p* = .01)*	-0.04 [-0.14;0.05] (*p* = .374)	-0.01 [-0.14;0.11] (*p* = .818)	-0.03 [-0.16;0.09] (*p* = .584)	-0.05 [-0.14;0.03] (*p* = .228)	-0.05 [-0.17;0.06] (*p* = .354)	-0.07 [-0.19;0.04] (*p* = .21)	-0.09 [-0.21;0.02] (*p* = .102)	-0.02 [-0.17;0.13] (*p* = .824)	-0.17 [-0.3;-0.04] (*p* = .01)*
EM	0 [-0.07;0.06] (*p* = .912)	-0.01 [-0.11;0.1] (*p* = .88)	-0.01 [-0.11;0.08] (*p* = .816)	-0.07 [-0.14;0] (*p* = .042)*	-0.01 [-0.11;0.09] (*p* = .842)	-0.12 [-0.21;-0.02] (*p* = .018)*	-0.06 [-0.17;0.04] (*p* = .234)	-0.03 [-0.17;0.1] (*p* = .666)	-0.08 [-0.22;0.04] (*p* = .204)	-0.04 [-0.13;0.04] (*p* = .318)	-0.06 [-0.18;0.06] (*p* = .286)	-0.06 [-0.17;0.06] (*p* = .344)	-0.13 [-0.25;-0.01] (*p* = .03)*	-0.06 [-0.23;0.09] (*p* = .42)	**-0.21** [-0.34;-0.08] (*p* = .002)
PG	-0.01 [-0.07;0.06] (*p* = .814)	-0.02 [-0.12;0.07] (*p* = .608)	0 [-0.09;0.09] (*p* = .986)	-0.07 [-0.14;0] (*p* = .044)*	0 [-0.1;0.1] (*p* = .974)	-0.11 [-0.2;-0.02] (*p* = .02)*	-0.05 [-0.15;0.05] (*p* = .306)	-0.02 [-0.15;0.11] (*p* = .814)	-0.05 [-0.17;0.08] (*p* = .468)	-0.05 [-0.14;0.04] (*p* = .252)	-0.05 [-0.16;0.07] (*p* = .432)	-0.07 [-0.19;0.04] (*p* = .216)	-0.1 [-0.21;0.02] (*p* = .1)	-0.05 [-0.21;0.1] (*p* = .486)	-0.16 [-0.29;-0.02] (*p* = .02)*
PR	0 [-0.07;0.07] (*p* = .952)	0 [-0.11;0.1] (*p* = .978)	0 [-0.1;0.1] (*p* = .986)	-0.08 [-0.16;0] (*p* = .038)*	-0.01 [-0.12;0.1] (*p* = .87)	-0.12 [-0.22;-0.02] (*p* = .022)*	-0.04 [-0.15;0.06] (*p* = .398)	0.02 [-0.12;0.16] (*p* = .744)	-0.05 [-0.18;0.08] (*p* = .448)	-0.06 [-0.15;0.03] (*p* = .17)	-0.07 [-0.19;0.05] (*p* = .264)	-0.08 [-0.2;0.04] (*p* = .186)	-0.13 [-0.25;-0.01] (*p* = .034)*	-0.08 [-0.25;0.08] (*p* = .312)	-0.19 [-0.33;-0.05] (*p* = .006)*
SP	-0.03 [-0.09;0.04] (*p* = .452)	-0.03 [-0.13;0.06] (*p* = .5)	-0.02 [-0.11;0.07] (*p* = .676)	-0.07 [-0.14;0] (*p* = .038)*	-0.01 [-0.11;0.09] (*p* = .808)	-0.12 [-0.21;-0.02] (*p* = .018)*	-0.06 [-0.16;0.03] (*p* = .184)	-0.03 [-0.17;0.1] (*p* = .598)	-0.06 [-0.18;0.06] (*p* = .352)	-0.06 [-0.15;0.02] (*p* = .158)	-0.06 [-0.18;0.06] (*p* = .318)	-0.08 [-0.2;0.04] (*p* = .196)	-0.11 [-0.22;0] (*p* = .058)	-0.05 [-0.2;0.1] (*p* = .494)	-0.17 [-0.3;-0.04] (*p* = .008)*

Notes. 95%-credibility intervals are presented in brackets, and the two-sided uncorrected p-values are depicted in parenthesis. Asterisks indicate that *p*-values were not significant after Benjamini-Hochberg correction. The "overall" column contains the coefficients for the overall model and the "reEMP↓" and "reEMP↑" columns contain the coefficients for the model that takes the re-employment expectations into account. Specifically, "reEMP↓" references the effects when re-employment expectations are low and "reEMP↑" when re-employment expectations are high. CWB = cognitive well-being; SA = self-acceptance; A = autonomy, EM = environmental mastery, PG = psychological growth, PR = positive relations with others, SP = sense of purpose

Table S8a

Regression Coefficients of Initial AWB Trait Levels Predicting Unemployment-Related Changes in AWB Trait Levels (Mass Layoff Sample)

PWB Facet	Happy			Awake			Calm		
	Overall	reEMP↓	reEMP↑	Overall	reEMP↓	reEMP↑	Overall	reEMP↓	reEMP↑
SA	-0.07 [-0.2;0.05] (p = .262)	-0.11 [-0.3;0.08] (p = .236)	-0.11 [-0.28;0.07] (p = .224)	-0.05 [-0.18;0.09] (p = .488)	0 [-0.2;0.2] (p = .982)	-0.07 [-0.25;0.11] (p = .422)	-0.04 [-0.15;0.08] (p = .522)	0.03 [-0.14;0.2] (p = .742)	-0.15 [-0.32;0.02] (p = .086)
A	-0.07 [-0.2;0.05] (p = .264)	-0.1 [-0.28;0.08] (p = .268)	-0.12 [-0.29;0.05] (p = .158)	-0.05 [-0.17;0.08] (p = .48)	-0.04 [-0.23;0.16] (p = .69)	-0.06 [-0.23;0.13] (p = .526)	-0.03 [-0.14;0.08] (p = .62)	0.02 [-0.14;0.2] (p = .834)	-0.13 [-0.3;0.04] (p = .122)
EM	-0.05 [-0.17;0.08] (p = .478)	-0.07 [-0.26;0.12] (p = .492)	-0.1 [-0.28;0.09] (p = .288)	-0.05 [-0.17;0.09] (p = .484)	-0.02 [-0.21;0.18] (p = .838)	-0.07 [-0.25;0.11] (p = .42)	-0.01 [-0.12;0.11] (p = .92)	0.05 [-0.12;0.22] (p = .584)	-0.1 [-0.28;0.06] (p = .218)
PG	-0.06 [-0.18;0.06] (p = .35)	-0.08 [-0.26;0.11] (p = .402)	-0.11 [-0.28;0.06] (p = .19)	-0.05 [-0.17;0.08] (p = .476)	-0.02 [-0.2;0.18] (p = .842)	-0.08 [-0.25;0.11] (p = .404)	-0.03 [-0.14;0.08] (p = .562)	0.02 [-0.14;0.2] (p = .772)	-0.13 [-0.3;0.03] (p = .112)
PR	-0.07 [-0.19;0.05] (p = .256)	-0.09 [-0.27;0.1] (p = .342)	-0.13 [-0.3;0.05] (p = .158)	-0.05 [-0.17;0.08] (p = .494)	-0.01 [-0.2;0.18] (p = .888)	-0.07 [-0.25;0.11] (p = .414)	-0.04 [-0.15;0.07] (p = .504)	0.03 [-0.13;0.19] (p = .748)	-0.14 [-0.31;0.02] (p = .092)
SP	-0.05 [-0.17;0.07] (p = .426)	-0.09 [-0.27;0.1] (p = .348)	-0.09 [-0.26;0.08] (p = .292)	-0.04 [-0.17;0.08] (p = .488)	-0.02 [-0.21;0.18] (p = .844)	-0.08 [-0.25;0.11] (p = .4)	-0.03 [-0.14;0.08] (p = .63)	0.03 [-0.13;0.21] (p = .736)	-0.13 [-0.3;0.03] (p = .104)

Notes. 95%-credibility intervals are presented in brackets, and the two-sided uncorrected p-values are depicted in parenthesis. Asterisks indicate that p-values were not significant after Benjamini-Hochberg correction. The "overall" column contains the coefficients for the overall model and the "reEMP↓" and "reEMP↑" columns contain the coefficients for the model that takes the re-employment expectations into account. Specifically, "reEMP↓" references the effects when re-employment expectations are low and "reEMP↑" when re-employment expectations are high. AWB = affective well-being; SA = self-acceptance; A = autonomy, EM = environmental mastery, PG = psychological growth, PR = positive relations with others, SP = sense of purpose

Table S8b

Regression Coefficients of Initial AWB Trait Levels Predicting Unemployment-Related Changes in AWB Trait Levels (Other Reason Sample)

PWB Facet	Happy			Awake			Calm		
	Overall	reEMP↓	reEMP↑	Overall	reEMP↓	reEMP↑	Overall	reEMP↓	reEMP↑
SA	-0.02 [-0.1;0.07] (*p* = .718)	-0.01 [-0.16;0.13] (*p* = .846)	-0.06 [-0.17;0.06] (*p* = .322)	-0.09 [-0.18;0] (*p* = .058)	-0.05 [-0.2;0.11] (*p* = .556)	-0.15 [-0.26;-0.04] (*p* = .01)*	-0.07 [-0.16;0.02] (*p* = .14)	-0.08 [-0.22;0.07] (*p* = .316)	-0.07 [-0.19;0.05] (*p* = .248)
A	-0.01 [-0.09;0.07] (*p* = .82)	-0.01 [-0.15;0.13] (*p* = .888)	-0.04 [-0.15;0.07] (*p* = .45)	-0.06 [-0.15;0.02] (*p* = .146)	-0.03 [-0.18;0.12] (*p* = .672)	-0.12 [-0.23;-0.01] (*p* = .028)*	-0.06 [-0.14;0.04] (*p* = .224)	-0.06 [-0.21;0.08] (*p* = .396)	-0.06 [-0.17;0.06] (*p* = .358)
EM	-0.04 [-0.13;0.05] (*p* = .374)	-0.09 [-0.23;0.05] (*p* = .21)	-0.05 [-0.16;0.06] (*p* = .378)	-0.12 [-0.21;-0.03] (*p* = .008)*	-0.11 [-0.26;0.03] (*p* = .128)	-0.15 [-0.26;-0.04] (*p* = .008)*	-0.09 [-0.18;0.01] (*p* = .07)	-0.12 [-0.27;0.03] (*p* = .106)	-0.06 [-0.18;0.06] (*p* = .31)
PG	-0.01 [-0.09;0.08] (*p* = .892)	-0.01 [-0.15;0.13] (*p* = .894)	-0.04 [-0.15;0.07] (*p* = .432)	-0.06 [-0.15;0.03] (*p* = .168)	-0.03 [-0.18;0.12] (*p* = .672)	-0.11 [-0.22;-0.01] (*p* = .038)*	-0.05 [-0.14;0.04] (*p* = .26)	-0.06 [-0.21;0.08] (*p* = .384)	-0.05 [-0.16;0.07] (*p* = .424)
PR	-0.01 [-0.1;0.07] (*p* = .774)	-0.01 [-0.16;0.13] (*p* = .868)	-0.05 [-0.17;0.06] (*p* = .368)	-0.07 [-0.16;0.02] (*p* = .124)	-0.04 [-0.18;0.11] (*p* = .63)	-0.12 [-0.23;-0.02] (*p* = .024)*	-0.06 [-0.15;0.03] (*p* = .196)	-0.06 [-0.21;0.08] (*p* = .388)	-0.06 [-0.17;0.06] (*p* = .35)
SP	0 [-0.09;0.08] (*p* = .93)	-0.03 [-0.17;0.12] (*p* = .71)	-0.03 [-0.14;0.08] (*p* = .604)	-0.07 [-0.16;0.02] (*p* = .146)	-0.04 [-0.19;0.11] (*p* = .582)	-0.11 [-0.22;0] (*p* = .048)*	-0.06 [-0.15;0.03] (*p* = .204)	-0.09 [-0.23;0.06] (*p* = .238)	-0.04 [-0.16;0.08] (*p* = .488)

Notes. 95%-credibility intervals are presented in brackets, and the two-sided uncorrected p-values are depicted in parenthesis. Asterisks indicate that *p*-values were not significant after Benjamini-Hochberg correction. The parameter are printed in bold, when the corrected *p*-value was smaller than .05. The "overall" column contains the coefficients for the overall model and the "reEMP↓" and "reEMP↑" columns contain the coefficients for the model that takes the re-employment expectations into account. Specifically, "reEMP↓" references the effects when re-employment expectations are low and "reEMP↑" when re-employment expectations are high. AWB = affective well-being; SA = self-acceptance; A = autonomy, EM = environmental mastery, PG = psychological growth, PR = positive relations with others, SP = sense of purpose

Figure S1

Distribution of Re-Employment Expectation Variable Across all Episodes of Unemployment

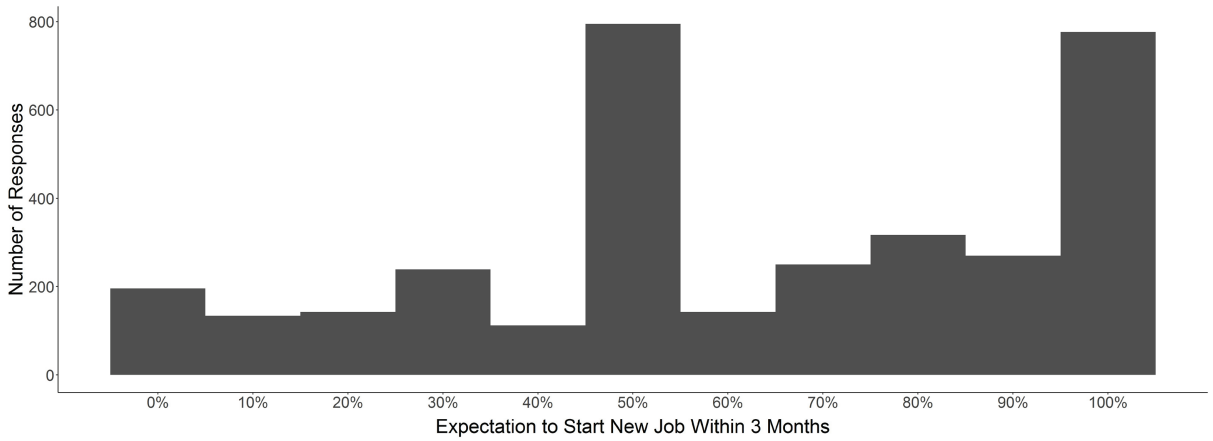
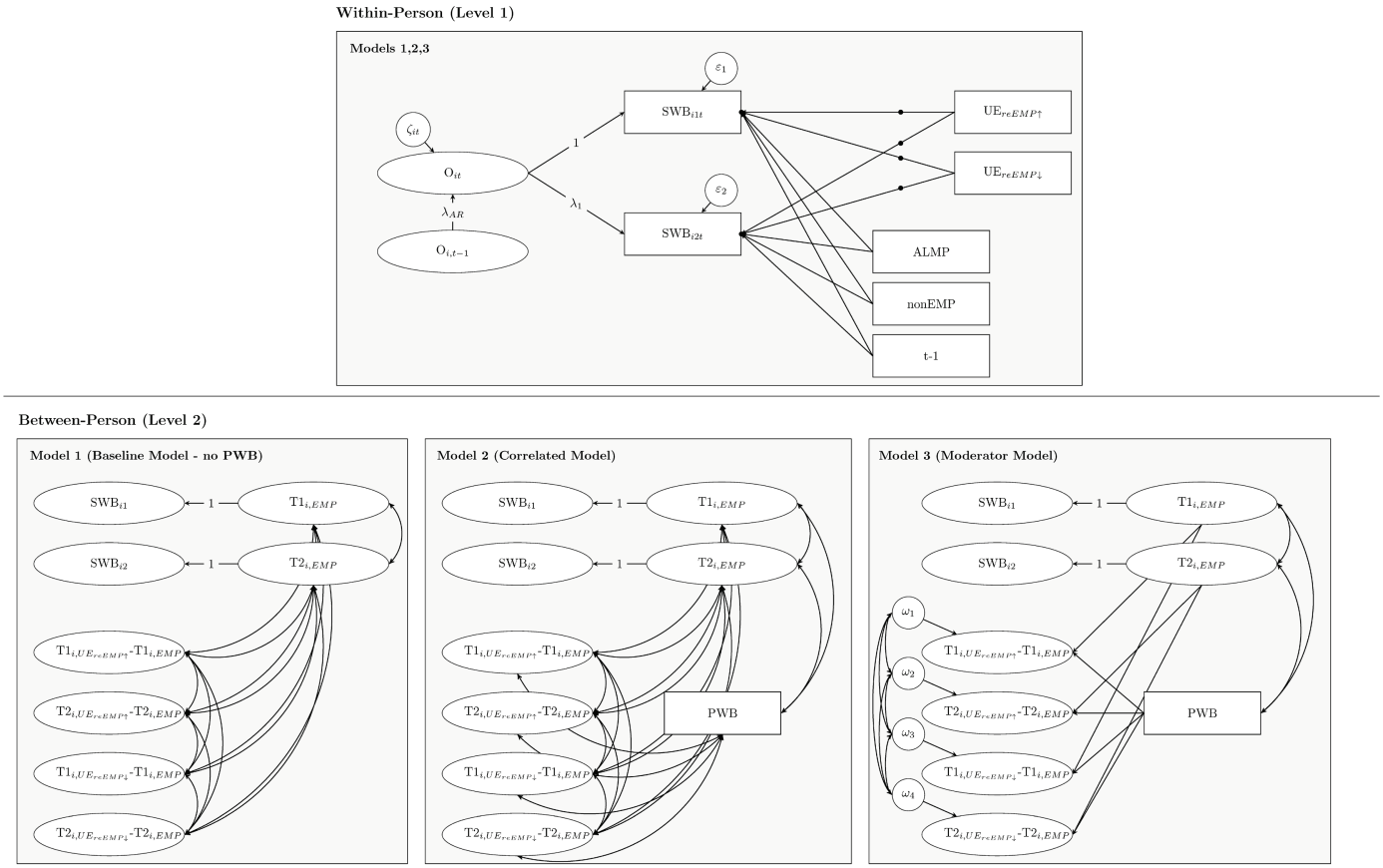


Figure S2

Differentiated ME-TSO Model Taking Re-Employment Expectations Into Account for Two Indicators



Note. SWB_{i1t} and SWB_{i2t} are observed subjective well-being scores of person *i* at time *t*. ε_1 and ε_2 are residuals of these well-being indicators. O_{it} is the occasion-specific residual variable with a residual variance of ζ_{it}. λ_{AR} is the autoregressive effect of $O_{it\text{-}1}$ on O_{it}, which we restricted to be equal across individuals and over time. The factor loading of the first well-being indicator on O_{it} is set to 1 in order to identify the model; the factor loadings of the other well-being indicators were freely estimated. The unemployment-related SWB trait changes (i.e., $T1_{i,UE\_reEMP\downarrow}\text{-}T1_{i,EMP}$, $T1_{i,UE\_reEMP\uparrow}\text{-}T1_{i,EMP}$, $T2_{i,UE\_reEMP\downarrow}\text{-}T2_{i,EMP}$, $T2_{i,UE\_reEMP\uparrow}\text{-}T2_{i,EMP}$) were modelled as random effects at the between-person level. The regression coefficients of the binary situation variables belonging to the situations *participating in an ALMP (ALMP)* and *being in other non-employment (nonEMP)* as well as the linear time effect (*t-1*) were fixed across individuals. Moreover, the latent trait variables corresponding to the reference situation (i.e., $T1_{i,EMP}$, $T2_{i,EMP}$) were modeled as random variables on the between-person level (see Castro-Alvarez, Tendeiro, de Jonge, et al., 2021; Geiser et al., 2015). PWB depicts the scale score of a dimension of psychological well-being. In Model 3, ω_1, ω_2, ω_3, and ω_4 represent the residuals of the latent difference variables. Variances and intercepts of the variables are not depicted to improve the readability of the figure.

Appendix C

Supplementary Materials of Study III

Supplementary Materials of Study III

Material S1: Questionnaire Items

Self-Reported Stress

Last week… [„In der vergangen Woche…“]

1. I felt overburdened [„habe ich mich überlastet gefühlt.“]
2. I felt stressed [„habe ich mich gestresst gefühlt.“]

Scale: rarely or none of the time (less than 1 day) (1), some or a little of the time (1-2 days) (2), occasionally or a moderate amount of time (3-4 days) (3) and most or all of the time (5-7 days) (4).

Employment Status

Source: ‘The Value of Work’ (see Knabe et al., 2010)

Which of the following main occupations applies to you? (Please choose only one option!) [“*Welche der nachfolgenden Haupttätigkeiten trifft auf Sie zu?*”]

- Part-time or full-time work with at least 15 working hours per week [“Teilzeit- oder Vollzeitbeschäftigung mit mindestens 15 Stunden pro Woche”]
- Part-time work with less than 15 working hours per week [“Teilzeitbeschäftigung mit unter 15 Stunden pro Woche”]
- Self-employed with at least 15 working hours per week [“Selbständig mit mindestens 15 Stunden pro Woche”]
- Public employment measure (e.g., One-euro job) [“öffentliche Beschäftigungsmaßnahme (z.B. Ein-Euro-Job)”]
- Registered as unemployed (and not participating in a support scheme) [“Arbeitslos gemeldet (und nicht in einer Fördermaßnahme)”]
- Seeking employment and participating in an educational programme or other support scheme [“Arbeitssuchend und in einer Fortbildungs- oder sonstigen Fördermaßnahme”]
- Early retirement/ old-age pensioner [“Vorruhestand/Altersrentner”]
- In training/studying [“in Ausbildung/Studium”]
- Other form of non-employment [“sonstige Nicht-Erwerbstätigkeit”]

Re-Employment Expectations

Source: SOEP (for original items see TNS Infratest Sozialforschung, 2015):

How likely is it that the following changes to your professional life will occur within the next three months? [Wie wahrscheinlich ist es, dass innerhalb der nächsten drei Monate die folgenden beruflichen Veränderungen für Sie eintreten]

2. Start a paid job? [“Dass Sie eine bezahlte Beschäftigung aufnehmen?“]

Scale: 11-point-scale from 0%, 10%, 20%, ... to 100%

Table S1

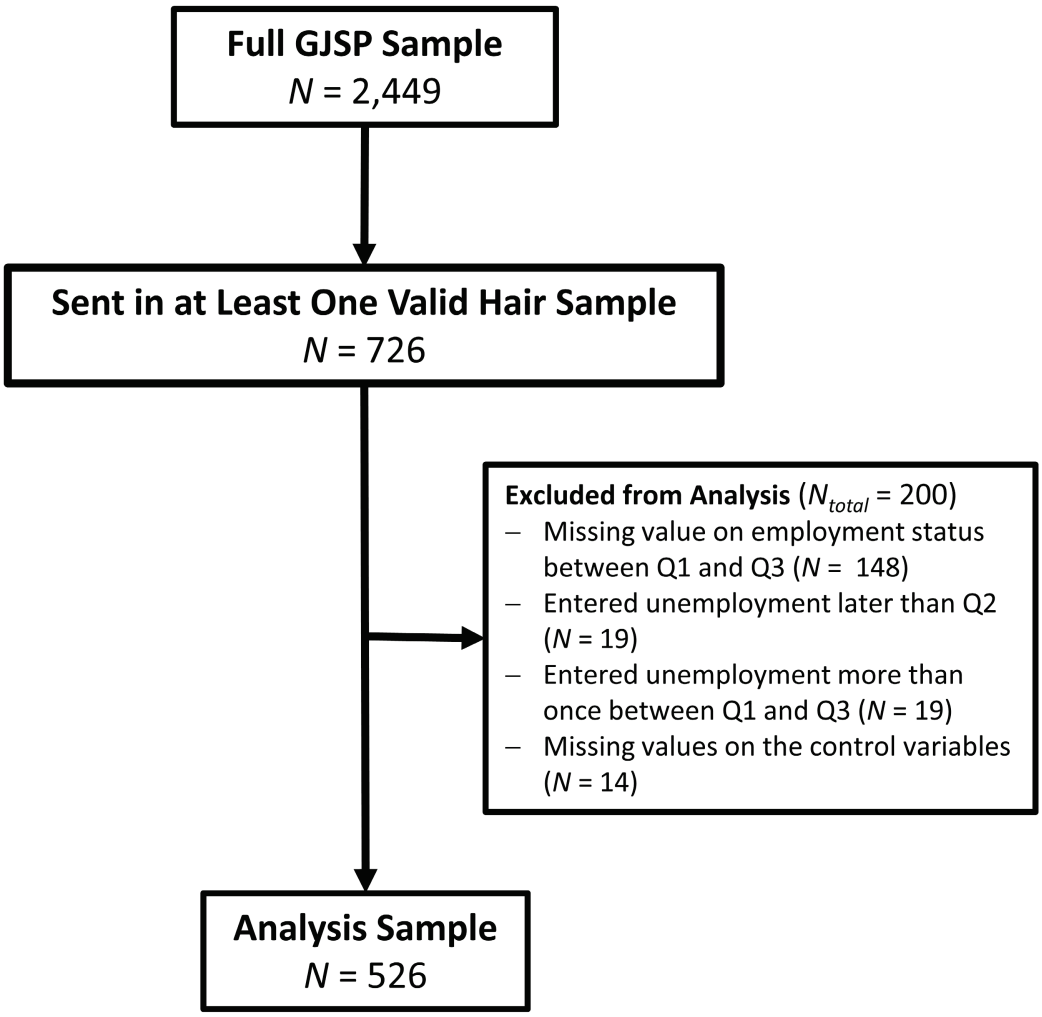
Descriptive Statistics for HCC across the Five Collection Points for Complete Cases

					Re-Test Correlations			
Measurement Occasion	N_{Obs}	Mean(HCC_t)	Var(HCC_t)	Var(HCC_t - HCC_1)	HCC_1	HCC_2	HCC_3	HCC_4
Q1	131	1.62	0.45					
Q2	131	1.4	0.47	0.52	.43			
Q3	131	1.38	0.49	0.45	.53	.66		
Q4	131	1.37	0.34	0.41	.49	.33	.49	
Q5	131	1.48	0.44	0.45	.5	.57	.54	.49

Notes. HCC: hair cortisol concentration (in pg per mg hair); N_{Obs}: Number of valid hair samples per measurement occasion; Mean(HCC_t): Mean of winsorized and log-transformed HCC values across measurement occasions; Var(HCC_t): Variance of winsorized and log-transformed HCC values across measurement occasions; Var(HCC_t - HCC_1): Variance of winsorized and log-transformed HCC changes between the first measurement occasion (Q1) and measurement occasion *t*;

Figure S1

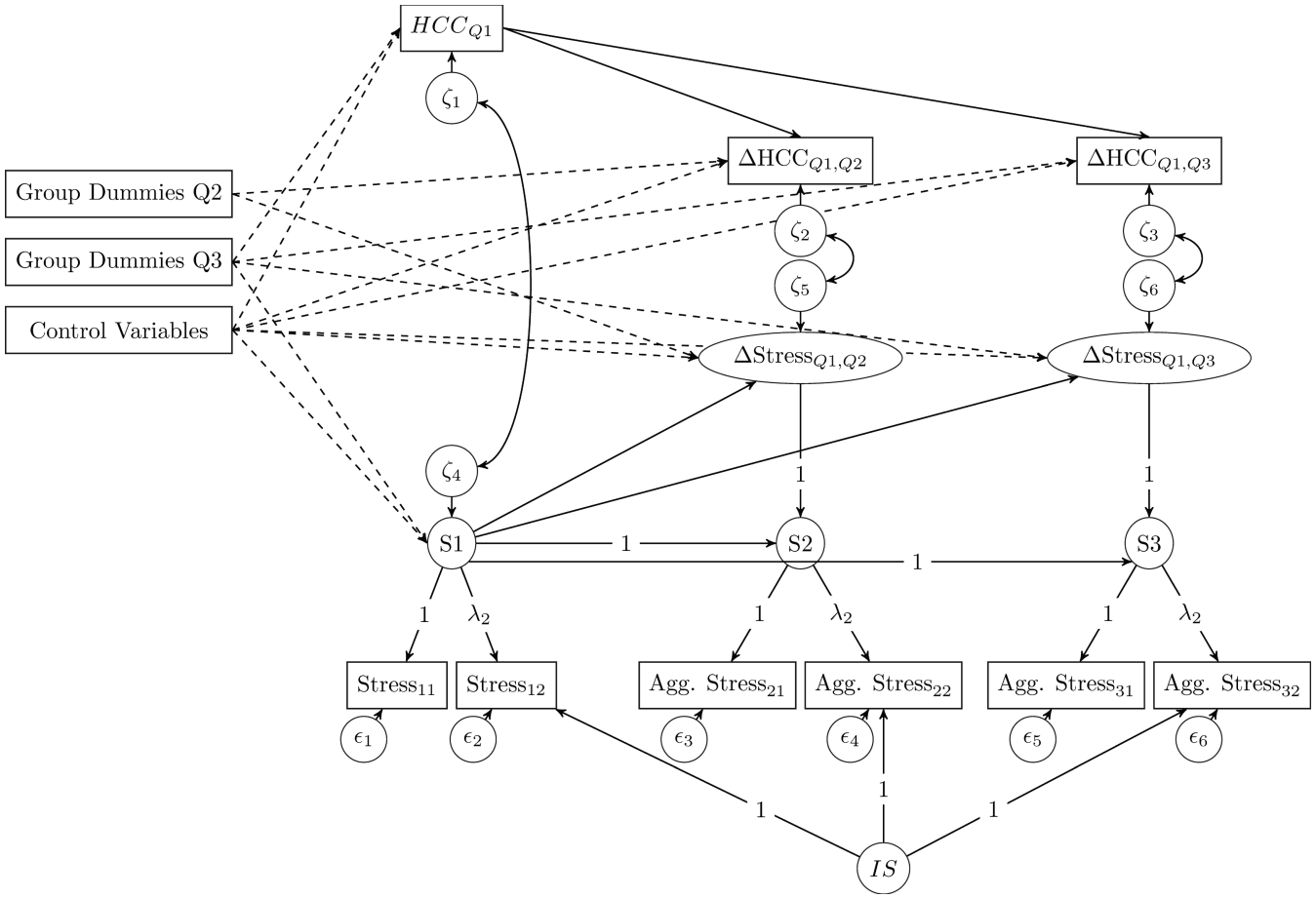
Participant Flow Chart



Note. GJSP: German Job Search Panel; Q1: first hair collection wave; Q3: third hair collection wave.

Figure S2

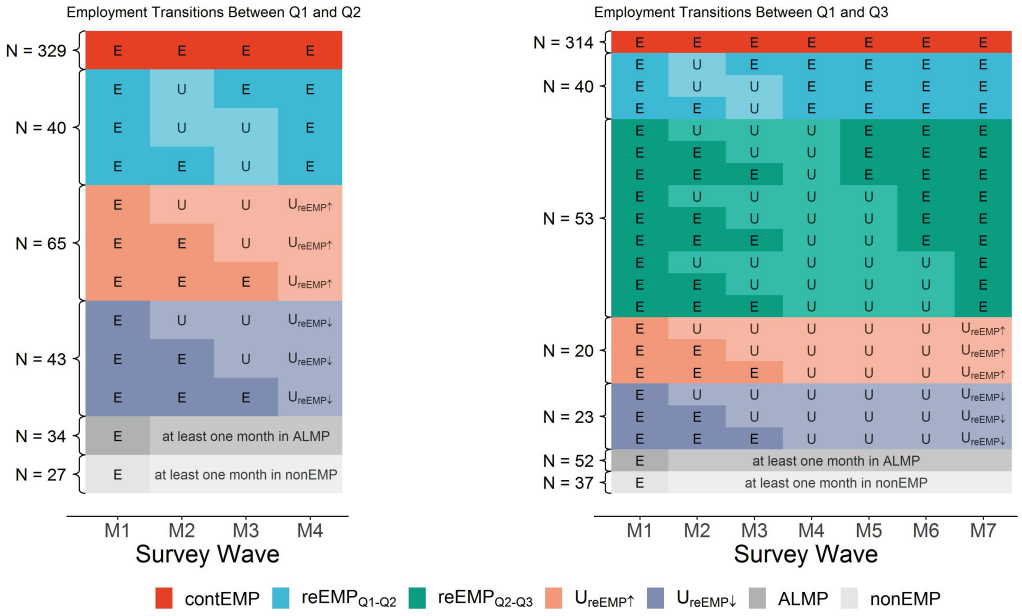
Analysis Model



Note. The figure depicts the path model of the baseline change analysis. $Stress_{11}$ and $Stress_{12}$ represent the stress items measured at Q1. *Agg. Stress*$_{21}$ and *Agg. Stress*$_{22}$ represent the aggregated stress items measured at the survey measurement occasions 2, 3 and 4. *Agg. Stress*$_{31}$ and *Agg. Stress*$_{32}$ represent these items measured at the survey measurement occasions 5, 6 and 7. ε_1- ε_6 denote the measurement error of the (aggregated) stress items. *IS* is an indicator-specific factor for the second stress item. Factors *S1-S3* are the stress levels at Q1-Q3. The factors $\Delta Stress_{Q1,Q2}$ and $\Delta Stress_{Q1,Q3}$ capture changes in stress levels between Q1 and Q2 as well as Q1 and Q3, respectivly. HCC_{Q1} references the winsorized and log-transformed hair cortisol levels at Q1. $\Delta HCC_{Q1,Q2}$ and $\Delta HCC_{Q1,Q3}$ resemble changes in HCC levels between Q1 and Q2 as well as Q1 and Q3, respectivly. Group dummies indicate the different employment groups (see Figure S3 and S4). The included control variables are described in the text. ζ_1 – ζ_6 depict residual variables of the stress and HCC levels as well as changes not predicted by the baseline measures, control variables or group dummies. The Regression coefficients and variances are not depicted, full model results can be found at https://osf.io/pjh46/.

Figure S3

Employment Patterns for the Different Employment Groups (with re-employment expectations)



Note. E: Employed; U: Unemployed; M1 – M7: monthly survey waves; Cont. EMP: continously employed (reference group); $reEMP_{Q1\text{-}Q2}$: entered unemployment between Q1 and Q2 and became re-employed between Q1 and Q2; $reEMP_{Q2\text{-}Q3}$: entered unemployment between Q1 and Q2 and became re-employed between Q2 and Q3; $U_{reEMP\uparrow}$: still employed in Q2/Q3 with high re-employment expectations; $U_{reEMP\downarrow}$: still employed in Q2/Q3 with low re-employment expectations. ALMP: individuals who participated in an active labour market program between Q1 and Q2/Q3; nonEMP: individuals who were categorized as being in other non-employment (e.g., retirement) between Q1 and Q2/Q3. The sample sizes of each group are presented next to the braces.

References

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Appendix D

Individual Contribution to Empirical Studies

Individual Contribution to Empirical Studies

Based on the CRediT Taxonomy (https://credit.niso.org/), the contributions of the authors for each of the three empirical studies of this dissertation is presented below.

The Impact of Unemployment on Cognitive, Affective, and Eudaimonic Well-Being Facets: Investigating Immediate Effects and Short-Term Adaptation (Study I)

Mario Lawes:	data curation (lead), formal analysis (lead), investigation (lead), project administration (lead), visualization (lead), writing of original draft (lead), methodology (equal).
Clemens Hetschko:	conceptualization (lead), methodology (supporting), supervision (supporting), funding acquisition (equal), investigation (equal), project administration (equal), reviewing and editing the draft (equal)
Ronnie Schöb:	project administration (supporting), reviewing and editing the draft (supporting), conceptualization (equal), funding acquisition (equal)
Gesine Stephan:	project administration (supporting), reviewing and editing the draft (supporting), conceptualization (equal), funding acquisition (equal)
Michael Eid:	supervision (lead), conceptualization (equal), funding acquisition (equal), methodology (equal), project administration (equal), reviewing and editing the draft (equal)

Interindividual Differences in Unemployment-Related Changes in Subjective Well-Being: The Role of the Reason for the Job Loss, Re-Employment Expectations and Psychological Well-Being (Study II)

Mario Lawes:	data curation (lead), formal analysis (lead), investigation (lead), project administration (lead), visualization (lead), writing of original draft (lead), methodology (equal).
Clemens Hetschko:	conceptualization (lead), funding acquisition (equal), investigation (equal), project administration (equal), reviewing and editing the draft (supporting)

Ronnie Schöb:	project administration (supporting), reviewing and editing the draft (supporting), conceptualization (equal), funding acquisition (equal)
Gesine Stephan:	project administration (supporting), reviewing and editing the draft (supporting), conceptualization (equal), funding acquisition (equal)
Michael Eid:	supervision (lead), conceptualization (equal), funding acquisition (equal), methodology (equal), project administration (equal), reviewing and editing the draft (equal)

Unemployment and Chronic Stress: Longitudinal Evidence from Hair Samples (Study III)

Mario Lawes:	data curation (lead), formal analysis (lead), investigation (lead), project administration (lead), visualization (lead), writing of original draft (lead), methodology (equal).
Clemens Hetschko:	conceptualization (lead), funding acquisition (equal), investigation (equal), project administration (equal), reviewing and editing the draft (equal)
Ronnie Schöb:	project administration (supporting), reviewing and editing the draft (equal), conceptualization (equal), funding acquisition (equal)
Gesine Stephan:	project administration (supporting), reviewing and editing the draft (supporting), conceptualization (equal), funding acquisition (equal)
Michael Eid:	supervision (lead), conceptualization (equal), funding acquisition (equal), methodology (equal), project administration (equal), reviewing and editing the draft (equal)

Appendix E

Eidesstattliche Erklärung

Eidesstattliche Erklärung

Hiermit versichere ich, dass ich die vorgelegte Arbeit selbstständig und ohne unerlaubte Hilfe verfasst habe. Die Arbeit ist in keinem früheren Promotionsverfahren angenommen oder abgelehnt worden.

Berlin, 2022 Mario Lawes

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Datum Unterschrift