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Published in:
Journal of Applied Psychology

DOI:
[10.1037/apl0000859](https://doi.org/10.1037/apl0000859)

IMPORTANT NOTE: You are advised to consult the publisher's version (publisher's PDF) if you wish to cite from it. Please check the document version below.

Document Version
Final author's version (accepted by publisher, after peer review)

Publication date:
2021

[Link to publication in University of Groningen/UMCG research database](#)

Citation for published version (APA):

Reh, S., Wieck, C., & Scheibe, S. (2021). Experience, vulnerability, or overload? Emotional job demands as moderator in trajectories of emotional well-being and job satisfaction across the working lifespan. *Journal of Applied Psychology*, 106(11), 1734–1749. <https://doi.org/10.1037/apl0000859>

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**Experience, vulnerability, or overload? Emotional job demands as moderator
in trajectories of emotional well-being and job satisfaction across the working lifespan**

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This article is in press at the *Journal of Applied Psychology*. It is a post-review pre-publication version of the manuscript. Please cite as:

Reh, S., Wieck, C., & Scheibe, S. (in press). Experience, vulnerability, or overload? Emotional job demands as moderator in trajectories of emotional well-being and job satisfaction across the working lifespan. *Journal of Applied Psychology*. doi: 10.1037/apl0000859

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The results of the study reported in this manuscript have been presented at 8th conference of the European Association of Work and Organizational Psychology (2019), the Healthy Aging Symposium at the University of Groningen (2018), and the Annual Meeting of The Gerontological Society of America (2018).

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**Experience, vulnerability, or overload? Emotional job demands as moderator
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Abstract

Employees exert emotional effort in order to perform their work effectively, albeit to varying degrees based on their occupation. These emotional job demands (EJDs) affect employees' well-being, yet evidence is mixed as to whether these effects are positive or negative. One limiting factor in extant studies is that they investigated short-term effects or cross-sectional relationships between EJDs (usually assessed at the employee level) and work outcomes. The present study used an accelerated longitudinal design with a ten-year timespan of data (effectively covering the whole working lifespan) to test the effects of EJDs at the occupational level on long-term trajectories of well-being. Drawing on the model of strengths and vulnerabilities integration (SAVI) from the lifespan psychology literature, we tested three competing effects: an experience effect (EJDs predict increased well-being), a vulnerability effect (EJDs predict diminished well-being), and an overload effect (a non-linear relationship in which very high levels lead to more unfavorable trajectories). Using data of $N = 2,478$ working adults in Germany drawn from the Socioeconomic Panel Study (SOEP), in tandem with data on EJDs from the Occupational Information Network (O*NET), we found an overload effect of EJDs on trajectories of positive affect and job satisfaction. However, EJDs did not influence trajectories of negative affect. We discuss the implications of our findings for theory and practice.

Keywords: job satisfaction, emotional well-being, emotional job demands, age, SAVI

Many contemporary jobs impose emotional demands on workers (Glomb et al., 2004; Vegchel et al., 2004). These demands often arise when employees interact with others (e.g., clients, customers, coworkers) or face emotion-eliciting situations such as (un)friendly customer interactions (Diefendorff et al., 2016). Whereas service-oriented professions related to caregiving (e.g., teachers or nurses) impose high emotional job demands (EJDs) on workers, people who interface with fewer individuals at work such in IT or manufacturing jobs face lower EJDs. In many professions, fulfilling these EJDs bears the potential for employees' need fulfillment (Bhave & Glomb, 2016). Yet, the unpleasant nature of many emotionally demanding job situations might entail emotional costs for employees (Burzynska & Grandey, 2002; Zapf et al., 2001). Thus, an important question for organizations is how EJDs shape workers' well-being.

Studies have found both positive and negative effects of EJDs on employee well-being (Humphrey et al., 2015) as well as job satisfaction (Zapf, 2002). Unfortunately, extant research has mostly investigated the immediate effects of EJDs on employee well-being (see Hülshager et al., 2010 for an exception). Little is known about how EJDs affect workers' well-being over the course of their working life. Thus, the purpose of this study is to test the longitudinal effects of EJDs on trajectories of workers' emotional well-being and job satisfaction.

To investigate these long-term effects, one has to account for the intraindividual changes that occur within individuals over their working lifespan (Hertel & Zacher, 2015; Scheibe & Zacher, 2013). Drawing on theories from lifespan psychology—in particular, the model of strength and vulnerability integration (SAVI, Charles, 2010)—we develop three competing hypotheses on how EJDs impact trajectories of well-being. An *experience effect* would occur when employees learn how to better deal with EJDs over time, which would be reflected in more positive trajectories of well-being for higher EJDs. In addition, continuous exposure to high and

uncontrollable EJDs could deplete workers' resources and make them more vulnerable over time because negative experiences accumulate and the workplace restricts employees in how they deal with EJDs. Such a *vulnerability effect* would be reflected in higher EJDs leading to more negative well-being trajectories. Combining both strengths and vulnerabilities, an *overload effect* would suggest that the negative effects of EJDs outweigh their positive effects only for high levels of EJDs which would be reflected in a non-linear effect of EJDs on well-being in which high levels of EJDs lead to more negative trajectories. Using an accelerated longitudinal design¹ (Sliwinski et al., 2010), we test these three competing hypotheses in a study of employed adults in which each participant provides ten years of data, such that all participants' data together cover the working lifespan. We supplement this data with information on EJDs at the occupational level from the Occupational Information Network (O*NET, Peterson et al., 2001) and test the effects of EJDs on trajectories of both job-related well-being (i.e., job satisfaction) and general emotional well-being (i.e., positive and negative affect).

Our study contributes to the discussion on the potential benefits and costs of EJDs (Judge et al., 2009) by investigating the long-term effects of EJDs beyond the effects on employees' short-term well-being. As such, our study also contributes to research on the long-term effects of job demands that often focused on contextual moderators (e.g., job control) to predict when the effects of job demands are beneficial or harmful (Gonzalez-Mulé & Cockburn, 2017). By focusing on the intraindividual process of aging (i.e., within-person changes), our study provides a new theoretical lens to investigate the long-term interplay between EJDs and work outcomes.

¹ An *accelerated longitudinal design* follows individuals from sequential cohorts for a certain time period, with each participant providing a segment of a longer time span, assuming that between-person age differences and within-person age changes converge onto a common trajectory. We used age as time variable to capture the whole age range of participants to cover the full working lifespan from age 20 to age 69 (see results section for more details).

By using information on EJDs from the O*NET, our study tests the effects of EJDs at the occupational level rather than as an individual perception, and thus complements previous studies using self-report methods. We are thereby able to analyze the effects of EJDs that occur due to the objective characteristics of the job rather than those that occur due to individual differences in the perception of EJDs or employees' use of certain emotion regulation strategies to meet the EJDs (Glomb & Tews, 2004). We also contribute knowledge on how the work context shapes individuals' emotional development across their working lifespan, which can help explain interindividual differences in emotional development (Sliwinski & Scott, 2014).

Theoretical Background

Emotional Job Demands and Well-Being

EJDs are those aspects of a job that entail frequent interactions with the public, require employees to induce certain emotions in others, or require employees to manage or control their own emotions (Grandey et al., 2013; Hochschild, 1983). Jobs with high EJDs can be broadly classified into *customer service* jobs (e.g., waiters) in which employees often need to show positive emotions and friendliness and suppress negative emotions such as anger, *caring professions* (e.g., nurses) that require employees to be sensitive to other's feelings and show sympathy or concern, and *social control jobs* (e.g., police officers) that may require to show dominance, or even negative emotions while quelling positive emotions (Grandey et al., 2013; Humphrey et al., 2008). Moreover, some jobs require employees to regulate their own emotion in response to emotionally charged events (Diefendorff et al., 2016). For instance, employees in a hospice who see people dying likely experience sadness; call-center employees who get insulted by disrespectful customers likely feel anger, and police agents who are being called to a crime scene likely feel anxiety. Yet, EJDs may also elicit positive emotions and contribute to

employees' job satisfaction. For instance, registrars or midwives may experience happiness in their job in response to their clients getting married or having a baby, and friendly and positive interactions with satisfied customers likely contribute to employees' job satisfaction.

EJDs comprise both the external, objective requirements imposed by the environment and employees' subjective perception of such requirements (Griffin & Clarke, 2011). Here, we focus on objective EJDs to investigate how they interact with the normatively occurring intraindividual changes that employees experience over the course of their working lifespan.

This study's goal was to understand how EJDs impact long-term well-being. With well-being, we refer to employees' hedonic well-being which describes the experience of feeling good (Sonnentag, 2015). This involves both maximizing pleasurable feelings such as happiness and satisfaction while minimizing negative feelings such as pain (Ryan & Deci, 2001). As such, well-being consists not only of the presence of positive states but also the absence of negative states (Diener, 2000). EJDs are likely to impact well-being, as they have been shown to influence both positive and negative states (e.g., Chu et al., 2012; Scott & Barnes, 2011). We expect EJDs to affect employees' trajectories of both job-related (i.e., job satisfaction) and general emotional well-being (i.e., positive and negative affect, Diener, 2000; Watson et al., 2008). Job satisfaction is "a pleasurable or positive emotional state resulting from an appraisal of one's job or job experiences" (Locke, 1976, p. 1304) whereas emotional well-being is defined as "feeling a preponderance of pleasant rather than unpleasant affect in one's life overall" (Diener & Larsen, 1993, p. 406).

EJDs not only influence job-related well-being such as job satisfaction (Kammeyer-Mueller et al., 2013), but also well-being more generally (Wang et al., 2013), as research on affective spillover processes from work to after-work hours underlines (Ilies et al., 2009;

Sonnentag, 2012). Respective work suggests that job experiences do affect people's well-being also during off-work time (e.g., Ilies et al., 2009). For instance, a daily diary study on customer mistreatment revealed that these lead to rumination and negative affect in the evening after work and even the next morning (Wang et al, 2013).

However, EJDs seem to be neither entirely good nor bad for everyone (Brotheridge & Lee, 2002; Judge et al., 2009; Schaubroeck & Jones, 2000). Studies typically find that surface acting – a strategy used to meet EJDs – is associated with lower well-being than deep acting (Hülshager & Schewe, 2011). Yet, other studies have found a positive relationship between frequent social interactions at work (a core part of EJDs) and job satisfaction (Krueger & Schkade, 2008), as well as between occupation-level EJDs and job satisfaction (Bhave & Glomb, 2016). Holman and colleagues (2008) reason that their effects on well-being should be a function of the extent to which employees' resources grow or diminish with these demands. EJDs can increase job satisfaction and positive affect via frequent interpersonal interactions that fulfill employees' need for affiliation (Baumeister & Leary, 1995; Humphrey et al., 2007) or the feeling of task significance when employees help coworkers or customers (Grant, 2008). EJDs can increase negative affect via the depletion of employees' resources or perceived inauthenticity when required and expressed emotions conflict (Holman et al., 2008; Hülshager & Schewe, 2011). Moreover, the effects of job demands vary based on whether they are interpreted as a challenge or as a hindrance (Cavanaugh et al., 2000; Searle & Auton, 2015) and whether they are accompanied by higher or lower levels of job control (Gonzalez-Mulé & Cockburn, 2017).

Importantly, the long-term effects of EJDs on well-being can differ from their short-term effects (Ford et al., 2014). Such considerations require a temporal perspective on how individuals at work deal with EJDs. Yet, extant studies mostly focus on between-person differences and

short time intervals. They also do not account for the intraindividual changes that occur as time passes and individuals grow older. Across the working lifespan, individuals experience ample physical, cognitive, and emotional changes that may affect their thoughts, feelings, and behaviors in response to workplace demands (Hertel & Zacher, 2015; Scheibe & Zacher, 2013).

SAVI as a Framework to Understand Trajectories of Well-Being

The model of strength and vulnerabilities integration, SAVI, explicates how certain circumstances influence age-related changes in overall levels of emotional well-being across the adult lifespan (Charles & Luong, 2013). Although originally developed in the lifespan development literature, the model has been recently applied to understand age differences in work-related stress and self-regulation (e.g., Diefendorff et al., 2015; Doerwald et al., 2016). According to SAVI, as people approach important end points in life, such as the end of their working life (Carstensen, 2006; Zacher & Frese, 2009), they become more motivated to maintain their emotional well-being. Besides being motivated to maximize positive and emotionally meaningful experiences, older adults are also better able to reach their emotional goals due to their accumulated life experience on how to effectively deal with or avoid emotionally challenging situations (Scheibe & Carstensen, 2010). In other words, SAVI suggests that life experience serves as an important resource in emotional regulation (Charles, 2010). For example, older people were found to divert their attention away from negative stimuli (Reed et al., 2014), reappraise unpleasant situations more positively (Charles & Carstensen, 2008), and need less cognitive effort to regulate negative emotions (Scheibe & Blanchard-Fields, 2009).

At the same time, SAVI draws attention to older adults' physiological and biological vulnerabilities (e.g. neurological dysregulation) that can make it more difficult for them to use their emotion regulation abilities under certain circumstances. A typical circumstance that

challenges older adults' well-being is the long-term exposure to situations with highly arousing and recurring stressors. This exposure will diminish older adults' capacities due to the depletion of resources that are required to cope successfully with such situations (Ashkanasy, 2002). More concretely, when faced with complex and recurring stressors, people are typically in a state of constant emotional arousal – a state predicted to be costlier for older, more physiologically vulnerable systems. In addition, due to the realities of physical aging, older individuals may need greater recovery times from stressors (Wrzus et al., 2014). Accordingly, SAVI poses that strengths of aging in the motivation and experience to maintain emotional well-being will be attenuated or even disappear due to older people's greater physiological vulnerabilities under certain boundary conditions.

Empirical evidence as to how employees' well-being develops over the working lifespan is mixed (Mäkikangas et al., 2016). Some studies show that older adults are able to maintain high levels of emotional well-being and job satisfaction and even show benefits compared to younger adults (Ng & Feldman, 2008; Scheibe et al., 2019). Other studies find that well-being remains stable or decreases over time (Charles et al., 2001; Griffin et al., 2006; Kunzmann et al., 2013). Since most people work throughout most of their adulthood and thus spend a considerable share of their time at the workplace, job demands likely influence well-being trajectories. Workplaces create a continuous stream of tasks, opportunities, and stressors that may interact with the intraindividual changes that normatively occur with employees aging. Research on cognitive aging found that the workplace can simultaneously improve and impair cognitive functioning, based on whether it supplies enrichment or stress effects (Burzynska et al., 2019). In the following, we delineate three possible effects that EJDs could have on intraindividual trajectories of well-being (see Figure 1).

Experience effect. Based on the strengths pathway outlined in SAVI, one may assume that EJDs positively affect trajectories of emotional well-being and job satisfaction through an *experience effect*. The underlying rationale is that EJDs stimulate a learning process that allows employees to deal more effectively with EJDs over time.

Workers are continuously exposed to the varying emotional demands that arise from their job requirements (Glomb et al., 2004). These provide them with ample situations to practice and develop their emotional competencies such as knowledge, skills, and routines to manage EJDs (Charles, 2010; Scheibe & Carstensen, 2010). For example, increased experience with various emotionally demanding situations allow workers to gather and process relevant cues in order to predict the emotions of others successfully in social encounters. Another way of learning may take place through feedback as to whether employees navigated an emotionally challenging situation successfully. For instance, service employees who are approached by an angry customer will often know whether the customer calmed down afterwards. Over time, employees may develop a set of strategies that work well for them. Dealing with EJDs should then become less effortful (Scheibe & Blanchard-Fields, 2009). At the same time, becoming more competent and expert in dealing with customers, clients, or patients should lead to more positive and less negative experiences and feedback (Chan et al., 2015; Johnson et al., 2013), which may initiate an upward spiral of positive interpersonal relationships (Zapf & Holz, 2006). Aligned with SAVI, these processes should translate into an increase in job satisfaction and positive affect and a decrease in negative affect over time when being confronted with minor and foreseeable emotional demands at work.

Several studies indeed suggest that employees are better able to deal with emotionally demanding situations as they gain experience. For instance, older in comparison to younger

employees are less affected in their occupational well-being when they have to display neutral emotions (Scheibe et al., 2015). Older employees also resolve or avoid conflicts more effectively (Beitler et al., 2016) and feel less cynical towards their job when confronted with disliked customers (Johnson et al., 2013). Moreover, research about the long-term consequences of cognitive job demands has shown that such demands positively influence people's cognitive functioning later in life (Carr et al., 2019; Fisher et al., 2014; Oltmanns et al., 2017; Schooler et al., 1999) because cognitively complex work stimulates people to develop and maintain their intellectual capacities. We apply this reasoning to propose that emotionally challenging jobs set workers on more positive trajectories of emotional well-being and job satisfaction.

Hypothesis 1: EJDs moderate the relationship between age and emotional well-being / job satisfaction so that the age slope for positive (negative) well-being indicators is more positive (negative) at high in comparison to low levels of EJDs.

Vulnerability effect. While increases in work experience and knowledge over time could stimulate positive trajectories of well-being, SAVI could also be used to explain what we term a *vulnerability effect*. EJDs often require employees to suppress undesired (negative) emotions, or express neutrality or positivity instead of the emotion that they genuinely feel (Zapf, 2002), a conflict termed emotional dissonance (Abraham, 1998). Emotional dissonance is a source for person-role conflict, relates to stress and strain (Burzynska & Grandey, 2002; Kinman, 2009), and leads to exhaustion (Peng et al., 2013). Strain reactions may crystallize over time into more serious problems such as psychosomatic complaints, depression or burnout (Almeida et al., 2005; Zapf et al., 2001) through a process of wear and tear (Ford et al., 2014; Sliwinski & Scott, 2014). Studies have also shown that negative affective reactivity which may also arise from EJDs, and recovery time affect individuals' mental and physical health even ten years later

(Charles et al., 2013; Leger et al., 2018). These findings suggest that the effects of EJDs may have long-term negative consequences for employees beyond immediate and short-term effects.

Importantly, the undesirable processes arising from EJDs may get stronger with increasing worker age because the organizational context restricts workers' reactions to EJDs. Preferred strategies of older employees such as letting the situation pass in response to interpersonal conflicts (Charles, et al., 2001), shifting attention away from negative information (Scheibe, Sheppes, et al., 2015) or avoiding highly distressing emotional situations (Folkman et al., 1987) are often not possible at work because respective situations are part of the day-to-day routine of these jobs. According to SAVI, this is problematic in light of the physical and biological decline that accompanies aging, as older people experience stressful and unremitting situations more intensely, need more time to recover, and often endure longer physical arousal than younger people (Lau et al., 2001; Wrzus et al., 2014). If stressful situations occur frequently and repeatedly in the work context, and older individuals are unable to use their disengagement strategies effectively or have not enough time to recover between consecutive episodes, it is more difficult for them to reappraise the situation in a positive way than for younger workers (Wrzus et al., 2015). Together, these processes can lead to decreases in positive affect and job satisfaction over the working life while increasing negative affect.

Hypothesis 2: EJDs moderate the relationship between age and emotional well-being / job satisfaction so that the age slope for positive (negative) well-being indicators is more negative (positive) at high in comparison to low levels of EJDs.

Overload effect. A third way in which EJDs may affect trajectories of well-being is through an *overload effect*. This is a pattern where EJDs lead to stable trajectories of well-being, until a point where they overtax workers' resources and the age-related vulnerabilities outweigh

the beneficial effects of knowledge gained through life experience.

We reason that the dynamics of the experience and vulnerability effect may unfold in a curvilinear pattern because the co-occurrence of gains and losses creates the possibility for one process to be stronger than the other, especially as EJDs increase. Fittingly, it seems that older people experience higher levels of stress and physical arousal when situations become too emotionally demanding and exceed individuals' resources (Wrzus et al., 2013). Since older individuals also need more time to recover from stressors (Wrzus et al., 2014, 2015), their well-being can suffer even more when situations are not only intense, but also occur frequently, for instance, in healthcare professions where employees have to care for an increasing number of patients in small time intervals.

In sum, we argue that employees are able to deal with EJDs up to a certain degree, which would be reflected in stable well-being trajectories for low or moderate EJDs. Yet when employees face a high or very high level of EJDs that overtax their resources and tap into age-related vulnerabilities, trajectories of well-being and job satisfaction would be more negative, with trajectories becoming increasingly steeper, the higher the employees' EJDs (see Figure 1).

Hypothesis 3: There is a quadratic moderation effect of EJDs on the relationship between age and emotional well-being / job satisfaction so that the age slope for job satisfaction and positive affect is more negative at very high in comparison to medium or low levels of EJDs and the age slope for negative affect is more positive at very high in comparison to medium or low levels of EJDs.

Method

We tested the influence of EJDs on trajectories of emotional well-being and job satisfaction using two publicly available data sets. First, we gathered information from the Socio-

Economic Panel Study (SOEP) study in Germany, which captures people's trajectories of emotional well-being and job satisfaction across adulthood. We combined that data with data on EJDs from the Occupational Information Network Database (O*NET; United States Department of Labor/ Employment and Training Administration, 2001) from the United States.

The SOEP is a yearly household survey run by the German Institute for Economic Research since 1984 (Wagner et al., 2007). In 2016 approximately 16,000 households with almost 58,000 individuals took part in the yearly survey. Among the many variables captured by the survey (e.g., work, finances, or health), the SOEP assesses people's occupation, job satisfaction, and from 2007 onwards, their emotional well-being.

The O*NET (<https://www.onetonline.org>) is a public online database that was developed during the 1990s. It systematically collects information about job characteristics by regularly surveying occupation analysts, occupation experts, and workers from various professions. It is continuously updated and provides information about work activities (e.g., getting information) and features of the work context (e.g., contact with others). O*NET uses a common language of descriptors for all occupations, which allows comparisons across occupations. For instance, in comparing an organizational psychologist with a bartender in the O*NET terminology, the two jobs rate differently on certain aspects such as "getting information", while both have high ratings for "establishing and maintaining interpersonal relationships". Previous research has identified several features of the workplace, captured by the O*NET, that represent EJDs (Glomb et al., 2004). We matched the SOEP with the O*NET data via participants' occupational code and translated the Standard Occupational Classification (SOC) codes in the O*NET to the International Standard Classification of Occupations (ISCO88) codes in the SOEP using crosswalk tables provided by the Institute for Structural Research (Hardy et al., 2018).

This is the first use of the databases (SOEP and O*NET) by all of this manuscript's authors. Further use of the data for the specific set of variables presented in this study is not planned. The SOEP data can be requested via <https://www.diw.de/soep>. An overview of the research projects published using the SOEP data can be found on the website of the German Institute for Economic Research (DIW, <https://www.diw.de/en/>) or under the following link: https://www.diw.de/en/diw_02.c.239928.en/publications_with_soep_data.html

Sample

A core prerequisite for our sample was that participants were working for the whole period of investigation (i.e., from 2007 until 2016). Of the 13,267 SOEP participants who were part of the working population in 2016, a total of 2,845 were continuously working from 2007 to 2016 and 2,818 of them also had an occupational (ISCO88) code. Of these participants, 81% were full-time employed ($n = 2,295$) and 19% were part-time employed ($n = 523$). In the next step, we matched participants with the O*NET database via their occupational classification code, leading to a final sample of $N = 2,478^2$. Some SOEP participants could not be matched with O*NET data, mainly because their ISCO88 code could not be converted into an O*NET SOC code or if their job fell into a so-called “other category” (e.g., “legal professionals, not elsewhere classified”) for which the O*NET does not provide data.

The final sample consisted of 43% ($n = 1,071$) women and the mean starting age (in 2007) was 43 years ($SD = 8$, range = 20-69) and, accordingly, 53 years at the last measurement point (range = 30-79). All participants contributed ten years of data points. At the final measurement point in 2016, participants' mean organizational tenure was 20 years ($SD = 11$) and

² Some participants had missing data on one or more of the outcome variables, resulting in a lower number of data points in the models that test our hypotheses (Table 3) than suggested by the original sample size.

their mean occupational tenure was 14 years ($SD = 5$). On average, participants worked 41 hours per week ($SD = 9$) over the 10 years with an average monthly gross income of 3,439€ ($SD = 2,312$ €). Almost a third of them had a leadership position (31%, $n = 778$). Based on the ISCED 2011 classification of education levels (OECD, European Union, UNESCO Institute for Statistics, 2015), 48% of participants ($n = 1,007$) reported upper secondary education as their highest level of education, followed by a Bachelor's or equivalent degree (21%, $n = 507$) and a Master's or equivalent degree (11%, $n = 266$). Moreover, 10% of participants ($n = 259$) had a direct or indirect migration background and 70% ($n = 1,735$) were married and living together with their partner.

Measures

Emotional well-being. We derived participants' general emotional well-being via self-report assessing the frequency of their positive and negative affective experiences. Positive affect was captured by the question "How often have you felt happy during the last four weeks?" Using single-item measures of emotional well-being is common in large-scale, representative panel studies to reduce participant burden (e.g., Stone et al., 2010). Negative affect was captured by three questions that asked participants "How often have you felt angry/worried/sad during the last four weeks?" ($\alpha = .69$). Both measures were answered on a 5-point Likert scale ranging from 1 = *rarely* to 5 = *very often*.

Job satisfaction. Current job satisfaction was measured by the item "How satisfied are you with your job? (0 = *completely dissatisfied* to 10 = *completely satisfied*)". Previous research supports the idea that job satisfaction can be measured with single-item measures (Wanous et al., 1997). For the four items for emotional well-being, ten data points were available in the SOEP data. Even though more data points were available for job satisfaction, we used the same waves

here in order to ensure comparability.

Emotional Job Demands. We derived participants' EJDs from the Occupational Information Network database (O*NET, www.onetonline.org, Peterson et al., 2001)³. In contrast to commonly used self-report measures, O*NET provides objective information; as such, it is less prone to common-method bias. Previous research by Glomb and colleagues (2004) identified those work characteristics that represent EJDs. Importantly, they showed via factor analytical procedures that these demands are distinct from other job demands (e.g., cognitive, physical, and managing). These characteristics came from the broader O*NET categories of *work activities* and *work context* and comprised “Assisting and caring for others”, “Performing for/working with the public”, “Deal with external customers”, “Frequency in conflict situations”, and “Deal with angry/unpleasant people”.⁴ The importance of these characteristics for the job

³ To address the question whether the O*NET from the United States sufficiently represents German jobs, we consulted another publicly available dataset from Germany. This dataset is the first wave of the BAuA working time survey in 2015 (*BAuA-AZB2015_1*, 2015) that was run by the German Federal Institute for Occupational Safety and Health (BAuA, www.baua.de/EN/). The BAuA is a federal agency that belongs to the Federal Ministry of Labour and Social Affairs and its main responsibilities are occupational safety and health. The BAuA working time survey in 2015 (Brauner et al., 2015) sampled around 20,000 working adults in Germany and assessed a questionnaire measuring a broad range of work topics via computer assisted telephone interviews. Two of the items in this survey capture aspects of EJDs, namely they ask participants how frequently they (a) have to hide their feelings/emotions at work and (b) are confronted with the problems and the suffering of other persons. We averaged them to one measure of EJDs ($\alpha = .77$) and aggregated it to the level of the occupation. We then matched these data to the O*NET following a similar procedure as when matching SOEP and O*NET data. Since the BAuA dataset assigns participants 3-digit ISCO08 codes (instead of the most precise 4-digit codes), we aggregated job codes in the O*NET to the next higher subcategory. In total, 120 jobs (out of 148 jobs in total) could be matched with the O*NET. Most jobs that could not be matched belonged to some sort of “other category”. We then calculated the correlation between the two EJDs variables, which was $r = .75$ and highly significant ($p < .001$), suggesting that O*NET EJDs represent EJDs in Germany well. We also compared which jobs are highest, medium, and lowest in emotional demands in both datasets and while the rank order is not exactly the same, differences are mostly small.

⁴ Glomb et al. (2004) identified an additional, sixth item that represents EJDs (“Providing a service to others”). However, this item was not included anymore in the most recent version of

was rated on a scale from 1 (*lowest*) to 5 (*highest*). We averaged these items to form one scale ($\alpha = .85$) and tested it for both linear and quadratic effects. We included the quadratic term to test for a potential overload effect; as described earlier, an overload effect assumes a curvilinear relationship between EJDs and well-being indicators. Jobs with the highest EJDs in our sample comprised police officers and inspectors as well as detectives ($>2SD$). Jobs with high EJDs ($>1SD$ & $<2SD$) comprised professions such as nurses, doctors, judges, lawyers, prison officers, salespersons, and social workers. On the other end, jobs with the lowest EJDs ($<-2SD$) comprised various machine operators or statisticians. Jobs with low EJDs ($>-2SD$ & $<-1SD$) comprised chemists, various engineers, various technicians, and agricultural jobs.

Age. We took participants' year of birth from the SOEP dataset and subtracted it from the year of the measurement to determine age at each time point. Given that many aspects of adult development proceed in a non-linear fashion (e.g., cognitive functioning and emotional experience, Carstensen et al., 2011; Hartshorne & Germine, 2015), we included both linear and quadratic age terms in our analyses.

Covariates. Based on previous research suggesting that gender differences exist in emotional experience (Kunzmann et al., 2013), we included participants' gender (0 = male, 1 = female) as a covariate. We also accounted for participants' average number of weekly working hours because they determine the time that participants were exposed to EJDs (i.e., their *quantity*). Moreover, we wanted to ensure that the influence of the work context (in the form of job demands) on the development of workers' well-being is unique to EJDs rather than arising from other types of job demands (e.g., cognitive, managing, or physical demands that may covary with EJDs). For instance, Glomb and colleagues' (2004) analysis of the O*NET revealed a

the O*NET database and could thus not be used for the EJDs measure in this study.

significant positive correlation between emotional and cognitive job demands. Therefore, we included scores for cognitive, physical, and managing demands that Glomb and colleagues identified in the O*NET as additional covariates. Since our items for emotional well-being were context-free and could thus be influenced by factors beyond participants' EJDs, we included the hours that participants daily spend on childcare and caregiving as a proxy for the emotional demands in their private life as additional covariate. Finally, we accounted for each participant's individual average net income over the ten years of investigation. A higher net income may help participants to better cope with and recover from demanding jobs and, by extension, positively influence their well-being. Relatedly, previous research has shown that income predicts well-being, at least up to a certain level (Diener et al., 1993).

Results

Table 1 depicts the descriptive statistics and intercorrelations among all study variables.

Statistical Models

To test the role of EJDs in trajectories of emotional well-being and job satisfaction, we calculated separate multilevel models for positive and negative affect as well as for job satisfaction. We adopted an *accelerated longitudinal design* perspective, an approach that is frequently used in lifespan psychology (Sliwinski et al., 2010). The underlying idea is that individuals from sequential cohorts (i.e., with different starting ages) are followed for a certain period of time (e.g., for ten years, as in our study) and each participant provides a segment of a longer age span. It is assumed that between-person age differences and within-person age changes converge onto a common trajectory. In practice, this means that a 20 year-old participant followed for ten years becomes the 30 year-old participant, the 30 year-old participant becomes the 40 year-old, and so on. We used age as time variable to capture the whole age range of

participants. Thus, while each individual participant provided only 10 years of data, all participants collectively covered the working lifespan from age 20 to age 69 (see also Carstensen et al., 2011) at the first, and the period of 30 to 79 years at the last measurement.

At the between-subjects level (Level 2), we included participants' gender, their average weekly working hours, their average net income, their physical, cognitive, and managing job demands derived from the O*NET, and the number of hours they spend on caregiving and childcare as time-invariant predictors. All variables (except for gender) were grand-mean centered before entering them into the model. At the within-subjects level (Level 1), we specified linear and quadratic age terms. Since participants grew older over the course of the ten measurement points, and, thus, their age increased (varied) over time, the effect of age was set to be random. EJDs were included at both levels since participants differed in the jobs they performed relative to other participants (Level 2) but also changed their jobs over the course of the ten-year study period (as represented by different ISCO88 codes over time). The linear and quadratic EJDs terms at Level 2 were grand-mean centered. At Level 1, EJD scores were person-mean centered and set to be random (see Table 2 for model specifications).

We specified each multilevel model as a random intercept model with a random slope for age and EJDs at the within-person level, to allow for interindividual differences in intraindividual change. We then specified two cross-level interactions in which the linear and quadratic EJDs term at the between-person level predict within-person age-related changes in the outcome (i.e., the age slope). Since the SOEP tries to survey multiple members of each household, participants in our sample are nested within households; therefore, we included participants' household number as a Level 3 cluster variable in each of our models, though we did not add any household-level predictors.

Preliminary Analyses

Measurement invariance. We tested for measurement invariance for the three-item measure for negative affect across ten time points using confirmatory factor analysis. Supporting metric invariance, a model with factor loadings constrained to be equivalent across time points revealed good model fit, $\chi^2 = 328.20$, $df = 243$, $p < .001$, CFI = .99, RMSEA = .01, SRMR = .02, and did not differ significantly from a model in which factor loadings were free to vary across time points, $\Delta\chi^2 = 25.19$, $\Delta df = 18$, $p = ns$.

Age convergence. Our accelerated longitudinal design rests on the assumption of age convergence, which holds when “individuals at any point in time differ from individuals who are 4 years older by an amount that is exactly equal to the amount of change that they experience over the same interval” (Sliwinski et al., 2010; p. 49). Statistically, this can be translated into the within-person age slope equaling the between-person age slope. We tested this assumption across the three outcome variables by running three multilevel models in which we predicted the outcome using age as a predictor at the within- and between-person level and with participants’ household ID as a level 3 cluster variable. Using the *model constraints* command in MPlus, we tested whether the difference between the within- and between age slope is significantly different from zero. The results suggest that age convergence holds for job satisfaction ($\gamma_{\text{age between}} = -.004$, $p = ns$, $\gamma_{\text{age within}} = -0.007$, $p = ns$, $\text{diff} = -0.004$, $p = ns$), but not for positive and negative affect (PA: $\gamma_{\text{age between}} = -0.01$, $p < .001$, $\gamma_{\text{age within}} = ; -0.002$, $p = ns$, $\text{diff} = 0.008$, $p < .05$; NA: $\gamma_{\text{age between}} = 0.009$, $p < .001$, $\gamma_{\text{age within}} = ; -0.007$, $p < .001$, $\text{diff} = -0.015$, $p < .001$). In other words, participants in our sample converge on a common age trajectory when it comes to their job satisfaction, but not when it comes to their positive and negative affect. Additional robustness checks taking into account the partial lack of age convergence and implications for the

interpretation of results are described below.

Hypotheses Testing

Table 2 summarizes the results of the three multilevel models that tested the linear and quadratic effects of age and EJDs, their cross-level interactions, and the effects of the covariates on trajectories of emotional well-being and job satisfaction. For positive affect, there was a reduction of 10.32% in residual variance at the between-person level and of 3.87% at the within-person level when entering predictors in comparison to a null-model. For negative affect, this reduction in residual variance was 11.54% at the between- and 5.7% at the within-person level and for job satisfaction, the reduction in residual variance was 11.61% at the between- and 9.89% at the within-person level.

On average, participants' levels of negative affect ($\gamma = -0.004, p < .01$) and positive affect ($\gamma = -0.005, p < .001$) decreased as they got older, whereas their level of job satisfaction ($\gamma = -0.006, ns$) remained stable over time. That said, there was significant variation in the random slope effects of age ($var_{\text{NegativeAffect}} = 0.001, p < .001$; $var_{\text{PositiveAffect}} = 0.001, p < .001$; $var_{\text{Job Satisfaction}} = 0.008, p < .001$), which suggests the existence of inter-individual differences in how participants' emotional well-being and job satisfaction develop. This finding justifies our effort to test interaction effects that could explain these differences.

For an experience effect to occur, EJDs should have a significant positive effect on the trajectory of emotional well-being and job satisfaction, such that the positive affect and job satisfaction trajectories are more positive (or less negative) and the negative affect trajectory is more negative (or less positive). For a vulnerability effect to occur, we would expect the same pattern, but in the opposite direction. That is, EJDs should have a significant negative effect on the trajectories of positive affect and job satisfaction, such that their trajectories are more

negative (or less positive), and the negative affect trajectory is more positive (or less negative), at higher levels of EJDs. Lastly, for an overload effect to occur, EJDs should have a significant quadratic effect on the trajectory of the outcomes. That is, low or moderate levels of EJDs would not affect trajectories of emotional well-being and job satisfaction, but high levels of EJDs should lead to a steeper decrease in the frequency of experiencing positive affect and job satisfaction, and a steeper increase in the frequency of experiencing negative affect compared to medium or low levels of EJDs.

The cross-level interaction effects between age and the linear EJDs term were not significant for any of the outcome variables (positive affect: $\gamma = 0.001$; $p = .0.899$; negative affect: $\gamma = -0.004$; $p = .122$; job satisfaction: $\gamma = -0.01$; $p = .129$), suggesting that neither an experience nor a vulnerability effect was supported by the data. Yet, there was a significant cross-level interaction between age and the quadratic EJDs term on positive affect ($\gamma = -0.010$, $p = .010$) and job satisfaction ($\gamma = -0.027$, $p = .009$). This cross-level interaction was not significant for negative affect ($\gamma = 0.002$; $p = .676$). To further explore the two significant cross-level interaction effects, we ran simple slopes tests and plotted participants' positive affect and job satisfaction levels (as a function of their age) at different levels of EJDs. These levels correspond to the mean EJDs (medium) and plus/minus one (high/low) and two (very high/low) standard deviations from the mean score.

For positive affect, all age slopes except for the one at very low EJDs ($\gamma_{-2SD} = -0.001$, $p = 0.761$) were significantly different from zero; the higher the EJDs term, the more negative the slope ($\gamma_{-1SD} = -0.004$, $p = .023$; $\gamma_{Mean} = -0.007$, $p < .001$; $\gamma_{+1SD} = -0.010$, $p < .001$; $\gamma_{+2SD} = -0.013$, $p < .001$). For job satisfaction, the pattern was similar even though the slopes for both very low ($\gamma_{-2SD} = 0.004$, $p = .584$) and low EJDs ($\gamma_{-1SD} = -0.004$, $p = .315$) were not significantly different

from zero. The other three slopes were all significant, with more negative slopes aligning with a higher EJDs term ($\gamma_{\text{Mean}} = -0.013, p < .001$; $\gamma_{+1SD} = -0.021, p < .001$, $\gamma_{+2SD} = -0.029, p < .001$).

As Figure 2 illustrates, positive affect and job satisfaction remained relatively stable or decreased only slightly over the working lifespan for very low, low, medium, and even high quadratic EJDs. However, when people face very high EJDs (+ 2 *SD* above the mean), their decrease in positive affect and job satisfaction is steeper. In sum, these results support an overload effect for positive affect and job satisfaction.

To account for the significant difference between the between- and within-person age effects for positive and negative affect, we reran the two models with participants' mean age over the study period as an additional Level-2 covariate to rule out that findings result from participants' starting age. Results of these two models remain virtually unchanged. As a further test for the robustness of our findings, we ran three sets of multilevel models in which we used each of the three other job demand types in place of the emotional job demand variables (linear and squared terms) and their respective interaction terms with age. None of the interaction terms with physical, cognitive, and managing demands were significant suggesting that the effects that we find are unique to EJDs vis-à-vis other types of job demands.

Discussion

This study tested how EJDs at the occupational level influence the long-term trajectories of emotional well-being and job satisfaction. To account for the time-related, intraindividual changes that coincide with employees growing older at work, we adopted the SAVI theoretical framework from lifespan psychology (Charles, 2010). Specifically, we tested for potential experience, vulnerability, and overload effects in an accelerated longitudinal design with a sample of working adults over ten years that, together, represent the whole working lifespan. The

quadratic effects of EJDs on age trajectories of positive affect and job satisfaction point to an overload effect on the positive facet of well-being: Higher levels of EJDs lead to increasingly steep decreases in positive affect and job satisfaction over the working lifespan. At the same time, EJDs did not affect the age trajectories of negative affect.

Theoretical Implications

The results of this study contribute to the ongoing debate about the potential costs and benefits of EJDs. The literature on emotional labor has discussed the dangers of requiring workers to adhere to display rules and confront emotion-eliciting situations (e.g., Zapf & Holz, 2006), yet, without clear consensus on whether EJDs impair well-being. In response, researchers have adopted different well-being outcomes in order to produce a more nuanced view on the effects of EJDs (Hülshager & Schewe, 2011). These efforts include accounting for the emotion regulation strategy (surface acting vs. deep acting; Grandey, 2003), and distinguishing between EJDs at the level of the occupation and at the level of individual perception (Bhave & Glomb, 2016). Despite these insights, the field has lacked longitudinal investigations of the effects of EJDs. To the best of our knowledge, this study is the first to cover the whole working lifespan when investigating the relationship between EJDs and employees' well-being. The next longest longitudinal study used a 1.5-year time lag to test the effect of EJDs on work engagement (Xanthopoulou et al., 2013). Other studies used a shorter time lag, ranging from one (Côté & Morgan, 2002) to two (Hülshager et al., 2010) months to one year (Philipp & Schüpbach, 2010).

Overall, the longitudinal effects of EJDs on employee well-being identified in our study were either neutral or negative. High or very high levels of EJDs appeared to prompt reductions in the frequency of experiencing positive affect and in job satisfaction over the working lifespan. However, EJDs seemed to leave workers' frequency of experiencing negative affect largely

unaffected. Whereas many emotionally demanding work situations can elicit negative emotions, these experiences do not seem to have coalesced into higher levels over time. These findings thus raise the question whether regulating positive and negative experiences may constitute two separate processes. Possibly, employees learn to better regulate negative emotions arising from high EJDs, leading to a null-effect of EJDs on age-related trajectories of negative affect. This might take place through disengagement from their work which could also explain why employees, at the same time, seem to lose their enthusiasm for their job (reflected in negative trajectories for positive affect and job satisfaction). Eventually, the experience and vulnerability pathways outlined earlier may cancel each other out for negative affect. At the same time, employees may fail to maintain their positive emotions, as suggested by the overload effect. More research is needed to understand what causes the negative effect of EJDs on trajectories of positive affect and job satisfaction.

Our findings also contribute to research on occupational-level EJDs. So far, the bulk of research in this area has only addressed the employee level (e.g., Hülshager & Schewe, 2011; Morris & Feldman, 1996). One exception, a recent study by Bhave and Glomb (2016), found a positive relationship between EJDs (using an almost identical measure as our study) and job satisfaction in a large and diverse sample of employees in the United States. In our German sample, by contrast, the effect of EJDs on the job satisfaction intercept was non-significant. These differences could be explained by the nationality of the sample, the organizational context (i.e., a university for Bhave and Glomb (2016) versus a variety of organizations in our study), or the different measures for job satisfaction (their four-item scale covering satisfaction with work, coworkers, supervision, and promotion opportunities compared to our single-item, global measure). It is possible, for instance, that the United States and Germany offer different salaries

for certain jobs, which may partly explain the different relationships in the two samples.

Additionally, our study contributes to research on emotional aging by testing the role of the work context for adults' emotional development. The idea that adult development is contextually embedded and shaped by the environments in which people live is a core proposition of lifespan theory (Baltes, 1987). Specifically, the SAVI model (Charles, 2010) holds that differences in life circumstances determine whether one can expect positive or negative age effects on emotional well-being. The overload effect for positive affect and job satisfaction suggests that EJDs tap into employees' age-related vulnerabilities, and that these vulnerabilities can outweigh the age-related strengths that individuals may build through their life and work experience. Moreover, we found a slight decrease in positive affect over time, which emerged independent of EJDs and aligns with other longitudinal studies (Charles et al., 2001; Griffin et al., 2006). The underlying rationale is that individuals' resources decrease and losses increase over the lifespan. As a consequence, individuals tend to disengage more often from their goals (Heckhausen et al., 2010). Since these processes impair goal attainment (Lazarus, 1991), positive affect is assumed to decrease.

Lastly, our study contributes to the occupational health and stress literature by assessing the negative effect of EJDs on trajectories of positive affect and job satisfaction. Our study considered several theoretical models about the effects of stressors on employee well-being—such as the challenge-hindrance framework (Searle & Auton, 2015) and the allostatic load model (McEwen, 1998)—albeit in the context of EJDs. Our results provide support for both the stressors-as-hindrance argument (which suggests that stressors reduce well-being; Cavanaugh et al., 2000) and the allostatic load model (which suggests that stressors initiate a process of wear-and-tear and thereby impair well-being; McEwen, 1998). Of course, the conclusions drawn from

this study are limited with regards to the stressor in focus (i.e., EJDs) and also do not capture the full range of outcomes that these models address (e.g., stress and burnout).

Limitations and Future Research Directions

In light of the large sample size (> 2,000) and relatively small coefficients in our models (see Table 2), the question of practical significance arises. It should be noted that the coefficients reported refer to changes in one age-unit (one year). Over a 10-year period, the decreases for participants in a job with high EJDs (+1SD) would add up to -0.10 for positive affect and -0.21 for job satisfaction. For the whole working lifespan of approximately 40 years, these decreases would add up to -0.40 (positive affect) and -0.81 (job satisfaction), around two thirds of a standard deviation in each outcome. Lagged effect sizes also tend to be smaller than cross-sectional ones and decrease in magnitude after a period of about seven years (see meta-analysis by Ford et al., 2014). Moreover, relationships with objective person characteristics (e.g., age, as in our study) tend to be smaller than the conventionally used benchmarks (Bosco et al., 2015). It is thus not surprising that the effect sizes in our study with two objective indicators and a time span of ten years are rather small, not to mention that both positive affect and job satisfaction are phenomena that are influenced by a lot of factors. For organizations, these findings are still meaningful in light of the importance of job satisfaction for job performance (Judge et al., 2001), employee health (Faragher et al., 2005), and turnover (Cotton & Tuttle, 1986).

In focusing on the occupational level, one limitation is that we cannot account for variations in EJDs that occur at the organizational or subjective level. For example, the O*NET assigns people working as bartenders the same level of EJDs irrespective of whether they are a barkeeper at a 5-star hotel or in a shabby pub in a deprived area. These different venues likely produce different types of interactions, which might affect participants' perceptions of the job's

EJDs. Yet, using the more objective EJDs from the O*NET allowed us to avoid the problems of common-method variance and to assess the effect of the objective work environment independent from subjective perceptions that may be colored by, for instance, individual differences. Consequently, we consider our study to be a rather conservative test of our theory. Notably, previous research has found that O*NET ratings converge with other self-ratings (McGonagle et al., 2015), and our analyses of the O*NET data with the BAuA survey data (Brauner et al., 2015) point to a strong relationship with self-rated EJDs. Future research could test how subjective and objective EJDs interact, for instance, whether the perception of EJDs as a challenge or hindrance demand (Lepine et al., 2005) moderates their effects with more desirable trajectories of well-being when EJDs are perceived as a challenge rather than a hindrance.

Another limitation is that we could not confirm the age convergence assumption underlying the accelerated longitudinal design for two of our outcome variables (positive and negative affect). In response, we ran our analyses with and without further controlling for between-person age differences, and found the same results. Furthermore, results for job satisfaction (for which age convergence holds) and positive affect show the same pattern. Nevertheless, caution is warranted when it comes to interpreting the effects of EJDs on positive and negative affect for the whole working lifespan. Certain processes that we described in our theory would also play out over the ten-year period of our study, such as the learning process in the experience effect or the accumulation of the negative effects of emotional dissonance in the vulnerability effect. However, other processes such as motivational shifts or the decrease in physiological flexibility likely manifest themselves over larger timespans. For positive and negative affect, testing those would thus require significantly more data for each individual.

A final limitation of note is the lack of mediator testing in the relationship between EJDs

and well-being trajectories. The hypothesized experience and vulnerability effect rest on the assumption that EJDs affect employees' well-being trajectories because they elicit a learning process for emotional competencies and a wear and tear process that aggravates as employees grow older. Due to the nature of our data, we could not directly test these processes. Future research could therefore investigate the effects of EJDs on employees' trajectories of emotional competencies and physiological stress reactivity. In this regard, an interesting factor is represented by employees' emotion regulation strategies. As prior research indicates that deep acting is more beneficial for employee well-being than surface acting (Grandey, 2003), future research may want to treat employees' strategies as a moderator. Potentially, the overload effect could be exacerbated for employees who primarily use surface acting, whereas deep acting might alleviate this effect. Relatedly, there was significant variance in trajectories of EJDs over time suggesting that individuals change to jobs that are higher or lower in EJDs. Future research could investigate what explains individuals' choices to remain in or switch jobs based on their EJDs.

Practical Implications

Many societies face two interlocking trends: an increasingly older workforce and a rise in the emotional demands of contemporary jobs. Because job satisfaction predicts job performance (Judge et al., 2001), organizations should have a vested interest in the well-being of their employees (Lyubomirsky et al., 2005), and thus need to understand the interplay between age and EJDs. This study suggests that jobs with high and very high levels of EJDs threaten employees' experience of positive affect and job satisfaction over their working lives.

Organizations could implement work redesign interventions (see Knight & Parker, 2019 for a review) that alleviate the negative effects of EJDs. For instance, they can attempt to create working conditions that allow employees to capitalize on the adaptive emotion regulation

strategies they gain as they age (Hertel et al., 2015; Scheibe et al., 2016). Parker and Andrei (2020) introduce meta-strategies for mature workers, one of them including the adaptation and redesign of work to meet the needs of older workers. Managers could attempt to reduce the quantity and frequency of very emotionally effortful work, for instance, through job and task rotation (Campion et al., 1994). Alternating between more and less emotionally demanding tasks would give older employees more time to recover from emotionally stressful episodes (see Wrzus et al., 2015 on recovery times for older vs. younger individuals). Related, they could grant employees more job autonomy as meta-analytic evidence suggests a negative relationship between job autonomy and emotional dissonance (Bono et al., 2005).

Organizations can further invest in measures to improve their service (e.g., by hiring enough personnel) and thereby reduce employees' frequent exposure to negative customer interactions. Additionally, managers can make accomplishments more visible—for instance, by highlighting even small progress. Positive interactions with customers in which employees perceive that customers benefit from their efforts foster task significance (Grant, 2008) should help employees maintain their job satisfaction (Grant, 2008; Humphrey et al., 2007), given that task significance is a core motivational job characteristic (Parker et al., 2016). Moreover, employees are likely to engage in functional emotion regulation strategies (e.g., positive refocus) when they experience pleasant customer interactions (Totterdell & Holman, 2003). Further, organizations could introduce intervention groups or peer mentoring (Hegeman et al., 2007; Parker et al., 2008) for employees to talk about their emotionally demanding episodes at work, put negative encounters into perspective, and get feedback and support from their colleagues. In sum, these steps could help employees maintain their enthusiasm in emotionally demanding jobs.

Conclusion

Many contemporary professions hinge on interactions with other people, both in terms of quantity (i.e., work hours) and quality (i.e., importance). Performing one's work effectively requires meeting these EJDs with emotional effort. Our study points to the double-edged nature of EJDs for employees' long-term trajectories of well-being. In short, the findings speak to an overload effect whereby occupation-related EJDs undermine employees' long-term positive affect and job satisfaction, but do not necessarily foster more negative affect.

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Table 1

Descriptive Statistics and Intercorrelations among Study Variables

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10	11	12
1. Gender	-	-	-											
2. Age	47.87	7.95	.06**	-										
3. Working hours	41.34	8.91	-.47***	-.01	-									
4. Net income	2.20	1.36	-.37***	.13***	.47***	-								
5. Childcare	0.89	2.17	.14***	-.29***	-.23***	-.11***	-							
6. Caregiving	0.09	0.69	.08***	.05*	-.04	-.06*	.10***	-						
7. Cognitive job demands	3.13	0.33	-.06***	.001	.13***	.37***	.002	-.03	-					
8. Physical job demands	2.17	0.70	-.36***	-.06**	.10***	-.13***	-.05**	-.03	-.34***	-				
9. Managing job demands	2.91	0.41	.02	.04*	.12***	.25***	.03	-.04	.70***	-.23***	-			
10. Emotional job demands	3.13	0.49	.36***	.05*	-.15***	-.02	.12***	.04	.29***	-.30***	.45***	-		
11. Negative Affect	2.32	0.56	.23**	.01	-.11***	-.17***	.10***	.08***	-.08***	-.07***	-.05**	.07***	-	
12. Positive Affect	3.57	0.56	-.01	-.17***	-.01	.07**	.10***	-.04	.03***	-.03	.03	.04	-.42***	-
13. Job satisfaction	7.08	1.36	-.02	-.03	.01	.15***	.03	-.03	.07	-.07***	.10***	.02	-.49***	.44***

Note. N = 2,478. Variables represent average values across the ten-year study period. Gender: 0 = male, 1 = female. Net income in thousand euros. Childcare and caregiving in hours per day. * $p < .05$. ** $p < .01$. *** $p < .001$.

Table 2

Multilevel Models Predicting Mean Levels and Age-related Changes in Emotional Well-being and Job Satisfaction.

	Negative Affect (N = 20,824)					Positive Affect (N = 20,776)					Job Satisfaction (N = 22,355)				
	γ	SE	z	p	95% CI	γ	SE	z	p	95% CI	γ	SE	z	p	95% CI
Intercept	2.229	0.021	107.88	0.001	2.189; 2.27	3.547	0.021	168.1	0.001	3.501; 3.583	7.073	0.051	135.22	0.001	6.949; 7.153
Level 1 (within)															
Age (slope)	-0.004	0.001	-2.87	0.004	-0.007; -0.001	-0.005	0.002	-2.85	0.004	-0.007; -0.001	-0.006	0.004	-1.42	0.154	-0.013; 0.002
Age ²	0.001	0.001	1.71	0.087	-0.001; 0.001	0.001	0.002	2.92	0.004	0.0001; 0.001	0.001	0.001	0.29	0.769	-0.001; 0.001
EJDs (slope)	0.039	0.021	1.83	0.068	-0.003; 0.081	-0.001	0.022	-0.10	0.917	-0.046; 0.042	-0.004	0.062	-0.24	0.811	-0.137; 0.107
Level 2 (between)															
Gender	0.198	0.030	6.68	0.001	0.14; 0.256	-0.001	0.029	0.001	0.999	-0.048; 0.058	0.051	0.075	0.70	0.481	-0.096; 0.204
Working hours	0.002	0.002	1.02	0.306	-0.001; 0.005	-0.002	0.002	-1.22	0.224	-0.005; 0.001	-0.012	0.004	-2.95	0.003	-0.02; -0.004
Net income	-0.026	0.011	-2.27	0.023	-0.048; -0.004	0.030	0.012	2.65	0.008	0.008; 0.053	0.164	0.029	5.79	0.001	0.11; 0.222
Childcare	0.002	0.003	0.55	0.582	-0.004; 0.007	0.006	0.003	2.02	0.044	0.001; 0.012	-0.015	0.007	-2.09	0.037	-0.029; -0.001
Caregiving	0.025	0.008	2.99	0.003	0.009; 0.041	-0.019	0.009	-2.05	0.041	-0.037; -0.001	-0.017	0.021	-0.85	0.395	-0.06; 0.024
Cognitive JD	-0.090	0.055	-1.64	0.101	-0.197; 0.017	0.002	0.055	-0.001	0.999	-0.108; 0.108	-0.289	0.137	-1.89	0.059	-0.536; 0.01
Physical JD	-0.042	0.021	-2.03	0.042	-0.082; -0.001	-0.006	0.021	-0.32	0.749	-0.047; 0.034	-0.046	0.051	-0.89	0.373	-0.15; 0.056
Managing JD	-0.026	0.042	-0.62	0.538	-0.109; 0.057	0.015	0.002	0.37	0.711	-0.068; 0.099	0.445	0.106	3.78	0.001	0.197; 0.622
EJD	0.019	0.029	0.64	0.525	-0.039; 0.076	0.045	0.029	1.50	0.133	-0.013; 0.102	-0.131	0.074	-1.69	0.092	-0.272; 0.02
EJD ²	0.001	0.041	0.00	0.978	-0.08; 0.082	-0.057	0.041	-1.36	0.174	-0.019; -0.002	0.002	0.105	-0.01	0.998	-0.206; 0.206
Cross-level interactions															
Age x EJD	-0.004	0.002	-1.55	0.122	-0.008; 0.001	0.001	0.002	0.13	0.899	-0.005; 0.005	-0.010	0.006	-1.52	0.129	-0.022; 0.206
Age x EJD ²	0.002	0.004	0.42	0.676	-0.006; 0.009	-0.010	0.004	-2.57	0.01	-0.019; -0.002	-0.03	0.010	-2.68	0.007	-0.049; -0.008
Residual variances															
Outcome level 1	0.248	0.003	92.928	0.001	0.243; 0.253	0.323	0.004	3.408	0.001	0.316; 0.33	1.595	0.018	91.78	0.001	1.555; 1.626
Outcome level 2	0.253	0.009	27.609	0.001	0.234; 0.27	0.252	0.009	26.902	0.001	0.234; 0.271	1.470	0.056	26.703	0.001	1.378; 1.599
Slope (Age)	0.001	0.000	8.939	0.001	0.0006; 0.001	0.001	0.000	8.330	0.001	0.0005; 0.001	0.008	0.001	11.589	0.001	0.007; 0.009
Slope (EJD)	0.051	0.017	3.024	0.002	0.021; 0.093	0.033	0.018	1.827	0.068	0.001; 0.217	0.743	0.148	5.021	0.001	0.553; 1.213

Note. N = 20,824-22,355. Gender was coded as 0 = male and 1 = female. Net income in thousands, childcare and caregiving in hours. JD = job demands, EJD = emotional job demands. All predictor variables except EJD-slope were grand-mean centered before entering them into the analyses.

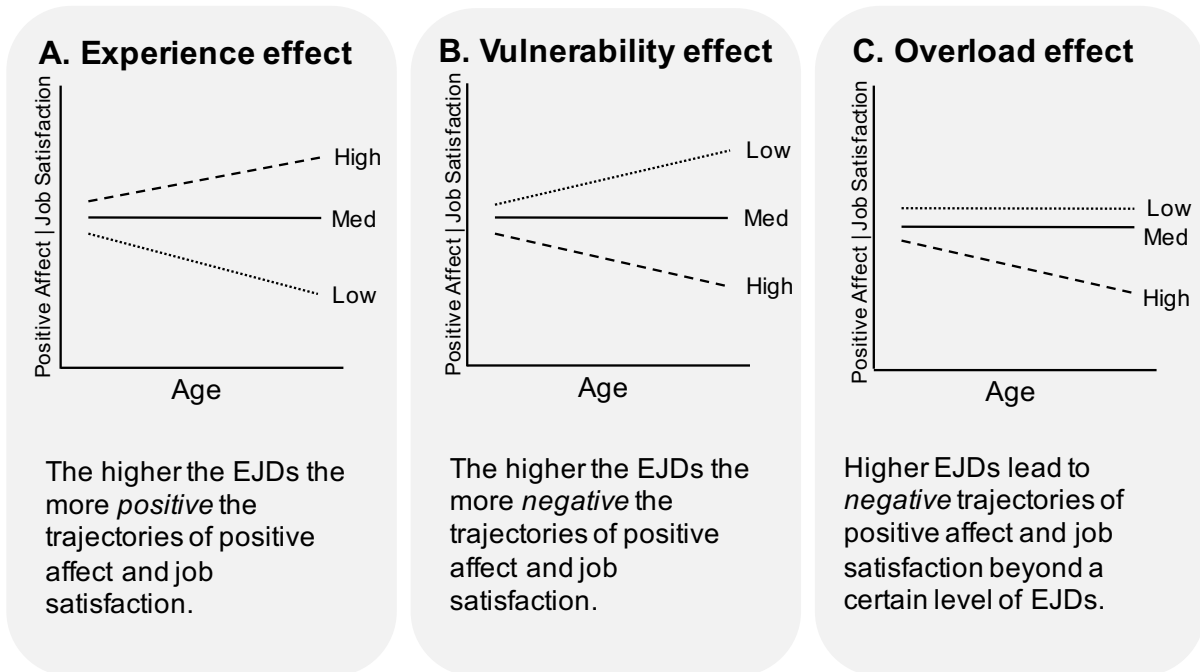


Figure 1.

Graphical representations of hypothetical experience, vulnerability, and overload effect of EJDs on age-trajectories of well-being for an (assumed) stable age main effect. Figures represent trajectories for medium (straight lines), low levels (dotted lines), and high levels (dashed lines) of EJDs for positive affect and job satisfaction (for negative affect the hypothetical slopes would be reversed, e.g., an experience effect would suggest a negative trajectory for high levels of EJDs). Note that the individual trajectories can take on different forms depending on the underlying age main effect (positive vs. negative vs. stable).

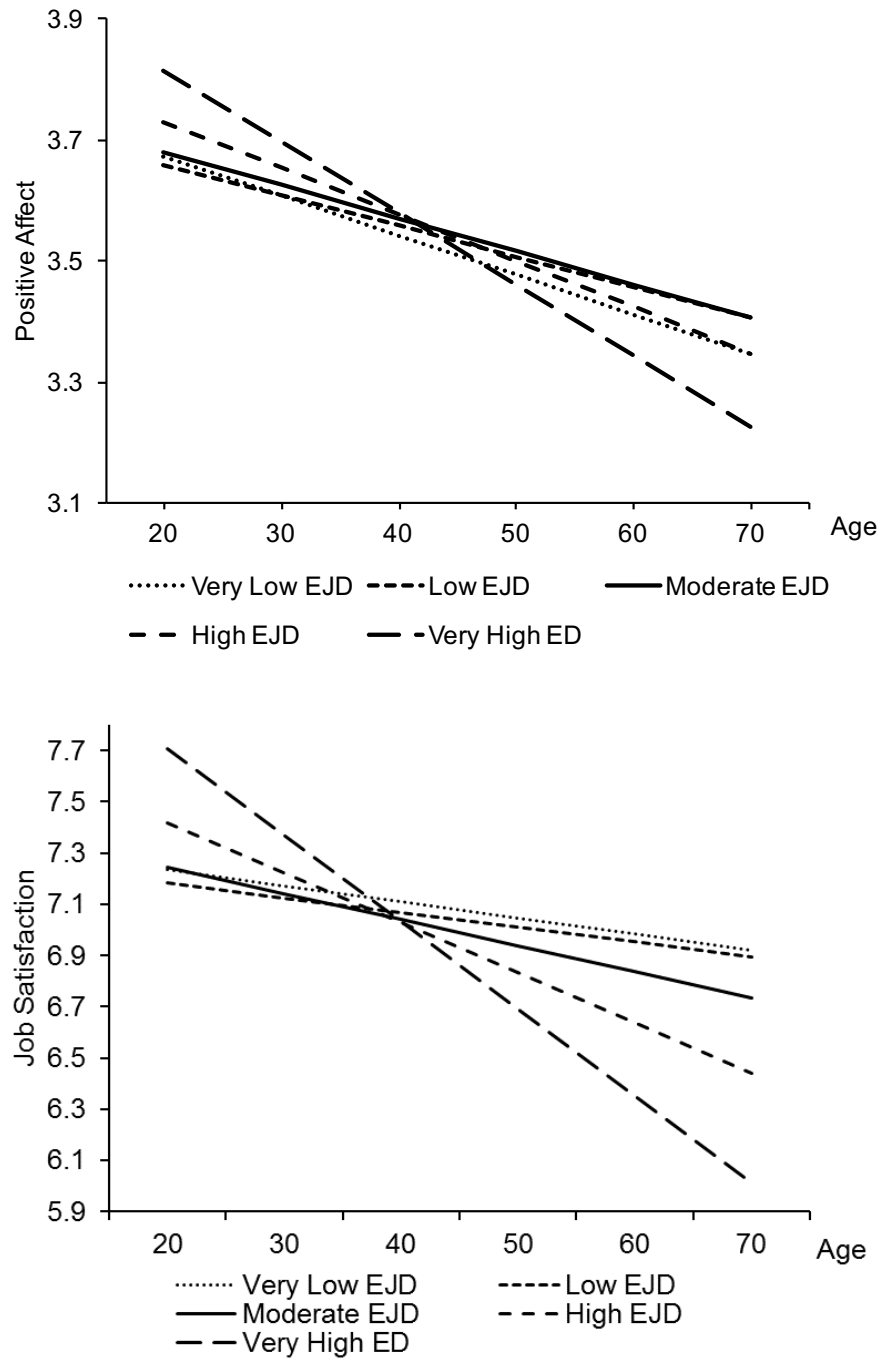


Figure 2

Cross level Interaction Effects of Age and Emotional Job Demands (EJD) on Positive Affect (1 = lowest level, 5 = highest level) and Job Satisfaction (0 = lowest level, 10 = highest level).