Refinement of Theoretical Frameworks on Antecedents of Work Engagement and of Affective Events Theory: A Dynamic Approach

Von der Fakultät Wirtschaftswissenschaften

der Leuphana Universität Lüneburg

zur Erlangung des Grades

Doktorin der Philosophie (Dr. phil.)

genehmigte

Dissertation

von

Antje Schmitt

aus

Bad Hersfeld

Die drei einzelnen Beiträge des kumulativen Dissertationsvorhabens werden wie folgt in wissenschaftlichen Zeitschriften veröffentlicht, beziehungsweise sind zur Veröffentlichung eingereicht:

Schmitt, A., Zacher, H. & de Lange, A. H. (2012). Focus on Opportunities as a Boundary Condition of the Relationship between Job Control and Work Engagement: A Multi-Sample, Multi-Method Study. *European Journal of Work and Organizational Psychology*.

Schmitt, A., Bledow, R., & Frese, M. (manuscript submitted, May 31st, 2012). Extending the Affective Shift Model of Work Engagement: Self-Efficacy as an Antecedent of Effective Affect Regulation.

Ohly, S. & Schmitt, A. (manuscript submitted, May 16th, 2012). What Makes Us Happy, Angry, Content or Worried? Development and Validation of a Work Events Taxonomy Using Concept Mapping Methodology.

ACKNOWLEDGEMENTS

TABLE OF CONTENTS

SYNOPSIS

In recent years, both scientists and practitioners have become interested in the concept of work engagement, and research on work engagement has strongly accumulated (Bakker, Albrecht, & Leiter, 2011; Christian, Garza, & Slaughter, 2011; Macey & Schneider, 2008). Work engagement is a motivational concept and an active psychological state that includes a physical dimension of energy and activation, a positive affective dimension, and a cognitive dimension of identification and involvement. Engaged people invest physical, affective, and cognitive resources in their work tasks and activities (Schaufeli, Salanova, González-Romá, & Bakker, 2002; Sonnentag, Dormann, & Demerouti, 2010), and high levels of work engagement involve positive consequences for the individual and the organization (Rich, Lepine, & Crawford, 2010; Salanova, Agut, & Peiró, 2005). Recent research revealed that work engagement is a unique concept that shows discriminant validity over and above related concepts such as job satisfaction or organizational commitment (Christian, et al., 2011; Hallberg & Schaufeli, 2006). Studying work engagement is part of research on positive psychology which examines human strengths and optimal functioning at work (Bakker, et al., 2011).

The objective of this dissertation is twofold. First, it aims at refining theory on antecedents of work engagement. Study 1 intends to advance the job-demands resources model (Demerouti & Bakker, 2011) by integrating the concept of focus on opportunities as a cognitive-motivational resource that is related to work engagement and functions as a boundary condition of the relationship between job control and work engagement. The goal of Study 2 is to shed light on the boundary conditions of the affective shift model of work engagement (Bledow, Schmitt, Frese, & Kühnel, 2011) which argues for a positive lagged relationship between negative affect and work engagement if negative affect is followed by a shift to positive affect. This study examines self-efficacy regarding a person's work role as a personal resource that can help employees to effectively regulate affective states in a way that shows high levels of work engagement.

Second, based on the relationships between positive and negative affect and work engagement demonstrated in Study 2, the third dissertation study aims at

improving knowledge of the role of specific work events as sources of distinct affective states. Affective events theory (AET) (Weiss & Cropanzano, 1996) provides a general theoretical framework that emphasizes the role of work events as proximal causes of momentary affect, but it does not formulate specific propositions about which kind of work events elicit distinct positive or negative affective states. Knowing about work events as proximal antecedents of affect and distal antecedents of affect-related consequences such as work engagement refines AET. Hence, in the third dissertation study, a comprehensive taxonomy of work events is developed that provides a frame of reference for future studies to more systematically test propositions of AET as a whole. As an overview, Figure 1.1 depicts the concepts and relationships that are integrated in this dissertation. I will now describe the objectives and contributions of the three empirical papers included in this dissertation in more detail.

The aim of the first study *"Focus on Opportunities as a Boundary Condition of the Relationship between Job Control and Work Engagement: A Multi-Sample, Multi-Method Study"* was to extend the job-demands resources model by examining the concept of focus on opportunities both as a motivational antecedent of work engagement and as a boundary condition of the relationship between job control and work engagement. People with a high focus on opportunities, defined as the number of goals, options, and possibilities employees believe themselves to have in their future, think optimistically about their future at work, and concentrate on the options and plans that they can pursue in their work-related future (Zacher & Frese, 2009, 2011).

The job demands-resources model (Demerouti & Bakker, 2011; Korunka, Kubicek, Schaufeli, & Hoonakker, 2009) supposes a motivational process whereby job resources such as job control influence work engagement especially under conditions of high job demands. The aim of this study was to extend knowledge on the boundary conditions of the relationship between job control and work engagement that have been neglected by researchers so far (Demerouti & Bakker, 2011). Because job control and focus on opportunities are assumed to activate similar fundamental processes, we argued that they may compensate for each other in predicting work engagement due to similar energizing effects on motivational processes in employees (Demerouti & Bakker, 2011; Morgeson & Humphrey, 2006). Theoretically, this argument was based on the notion of compensatory resources grounded in the substitution hypothesis by Hobfoll and Lieberman (1987). Employees high in focus on opportunities may more

likely compensate for low job control as they invest more energy to future goals at work and tend to perceive their work as meaningful in spite of low levels of current job control (Karniol & Ross, 1996). Moreover, in line with a social cognitive theory framework which emphasizes the importance of a future-oriented focus for human motivation (Karniol & Ross, 1996; Oettingen & Mayer, 2002), we argued that high levels of focus on opportunities provide employees with a motivational resource that is positively related to work engagement.

We examined the hypotheses by using a cross-sectional survey study with a between-person design based on a sample of blue-collar workers ($N = 174$), and a daily diary study with a within-person design based on a sample of administrative employees ($N = 64$). Whereas the cross-sectional survey study refers to differences between employees in job control and explains variation in their general level of work engagement, the daily diary study accounts for dynamic relationships and addresses the question whether daily fluctuations in job control are related to daily variations of work engagement shown by these employees.

The results of this multi-sample, multi-method study supported most of the hypotheses. In line with the social cognitive theory framework, focus on opportunities acted as predictor for work engagement. In concordance with the notion of compensatory resources (Hobfoll & Leiberman, 1987), job control appears to be less strongly related to work engagement when people's focus on opportunities is high. Overall, these findings extend job-demands resources model by supporting the role of focus on opportunities as a motivational resource and a moderator of the positive relationship between job control and work engagement. Notably, these findings were replicated in two different samples with employees from different occupational backgrounds.

The second study of this dissertation *"Extending the Affective Shift Model of Work Engagement: Self-Efficacy as an Antecedent of Effective Affect Regulation"* builds on and extends the affective shift model of work engagement (Bledow, et al., 2011). The affective shift model focuses on the interplay between positive and negative affect and holds that negative affect can have positive consequences for people's work engagement given that they are able to shift to a positive affective state. However, mechanisms and boundary conditions of the affective shift process - other than the role of affective dispositions - have not yet been examined so far.

This study introduced self-efficacy, defined as a person's belief or expectation to succeed in activities related to the work role (Bandura, 1997; Spreitzer, 1995), as a boundary condition and personal resource that facilitates a shift from negative to positive affect and thus helps employees to effectively regulate affective states. Based on the literature on self-regulation (Bledow, et al., 2011; Kuhl, 2000) and self-efficacy as cognitive resource in the regulation of motivation (Bandura, 1997; Spreitzer, 1995), we posit that self-efficacy influences work engagement through two mechanisms that relate to the dynamics of positive and negative affect. Self-efficacy is hypothesized to moderate the lagged effect of negative affect on work engagement, and to enable people to up-regulate positive affect during a work day when positive affect is low so that people can initiate an intended course of action and show high engagement.

To test the hypotheses we conducted an experience sampling study by utilizing a sample of 111 full-time employees who completed daily online questionnaires on affective experiences and work engagement over ten working days. Self-efficacy was examined as a between-person characteristic on daily processes. Hierarchical linear modeling analyses confirmed the hypotheses. The positive relationship between negative affect and work engagement manifests itself after a time lag when people manage to effectively down-regulate their level of negative affect and it is also dependent on people's general level of self-efficacy. Further, the results confirm that people high in self-efficacy are more successful in instigating an affective shift through up-regulating positive affect. Hence, the key mediating mechanism is the potential of self-efficacy to up-regulate positive affect.

In conclusion, this second dissertation study adds to the literature by showing that self-efficacy plays a critical role in the affective shift process and enables people to regulate affective states in a way that promotes daily work engagement. This study leaves the question unanswered what external work events impact positive and negative affective states which in turn influence people's level of work engagement. Study 3 is intended to shed light on this question.

The third dissertation study *"What Makes Us Happy, Angry, Content or Worried? Development and Validation of a Work Events Taxonomy Using Concept Mapping Methodology"* is not directly linked to the concept of work engagement but takes a deeper look at positive and negative work events that - according to AET (Weiss

& Cropanzano, 1996) – act as proximal antecedents of distinct affective states and as distal antecedents of job attitudes and affective consequences such as work engagement.

In general, AET emphasizes the importance of appraising work events as a mechanism by which the work environment impacts affect, attitudes and behavior (Ellsworth & Scherer, 2003; Weiss & Cropanzano, 1996). However as a limitation, AET does not provide any information on what kind of work events elicit positive or negative affective states. Also, there is no systematic classification of the nature of events that occur frequently in the workplace. Gaining knowledge about the occurrence and consequences of affective events has meaningful implications for theory and research about consequences of affective states on work related attitudes, behaviors and motivational concepts such as work engagement.

The main purpose of this third dissertation study was thus to develop a comprehensive taxonomy of positive and negative work events to provide a frame of reference for future research to build on. Further, this study intended to examine the appraisal dimension needs satisfaction that was assumed to determine the occurrence of affective work events. According to cognitive appraisal theories and the relevance of psychological needs for the appraisal of events (cf. Deci & Ryan, 2000; Ellsworth & Scherer, 2003), we proposed that positive affective events occur when there is a high potential for the fulfillment of psychological needs whereas negative affective events occur when a situation is appraised as hindering the satisfaction of needs.

We established the taxonomy based on work events mentioned in three daily diary studies by an overall of 218 employees. Using concept mapping methodology to analyze the events gathered through open-ended questionnaires (Jackson & Trochim, 2002), we detected four positive and seven negative work event clusters. In addition, this study provided evidence for the validity of our taxonomy by testing the relationships of the 11 event clusters with distinct positive and negative activating and deactivating affective states of the affective circumplex.

This study contributes to the refinement and extension of AET by shedding light on specific work events as sources of distinct affective states and by taking into account the appraisal dimension of needs satisfaction that determines the perception of affective work events. As this study extends knowledge regarding work events as specific sources of affective states, future research can conduct more fine-grained analyses and test AET more systematically by differentially investigating relationships between external work

characteristics, specific work events, distinct affective states and affective consequences such as work engagement. Also, future research can more thoroughly pay attention to distinct positive and negative work events as external antecedents of the affective shift process that leads to an increase in work engagement.

In conclusion, the three empirical studies of this dissertation contribute to the literature on work engagement, self-regulation at work and affective events theory. As Macey and Schneider (2008) point out, research on antecedents of work engagement is at early stages in its development and needs to be more thoroughly conducted. The first and second empirical studies of this dissertation help to advance knowledge on antecedents of work engagement and on theoretical models in which work engagement is embedded. We provide evidence for focus on opportunities as a cognitive-motivational predictor of work engagement and a personal resource that buffers for low levels in employees' job control. Further, we provide evidence that self-efficacy facilitates affect regulation and enables people to show high levels of work engagement on days when they experience negative affective states. The third dissertation paper refines propositions of AET (Weiss & Cropanzano, 1996) by taking a detailed look at positive and negative work events that elicit distinct affective states and thus function as more distal antecedents of work engagement.

This dissertation suggests ideas for future research and provides practical implications regarding work design, the development of positive environmental conditions at work, and human resource practices that are based on the empirical findings reported. One advantage of these three empirical studies is that they capture the dynamic and temporal aspects of work engagement and its antecedents such as affective states and job control. Apart from the cross-sectional study of the multi-sample, multi-method study in the first dissertation paper, the dissertation studies look at within-person processes and explain variance in work engagement and affective states through time-variant states as well as more stable between-person differences. This is in line with recent recommendations by Bakker et al. (2011) and Sonnentag et al. (2010) to more strongly consider the dynamic facets of the work engagement concept. Further, this approach complies with propositions of AET that considers variability in affect and affective consequences to be dependent on the occurence of work events. Work events are in principle conceptualized as time-variant in that they occur during a certain period of time on a day-to-day basis (cf. Judge & Kammeyer-Mueller, 2012; Weiss &

Cropanzano, 1996). Hence, the daily diary study designs utilized in this dissertation represent a dynamic method and are well suited for answering the research questions, as they allow for measurements that are closer to participants' actual experiences of work events, affective states, job control and work engagement and are less biased by retrospective recall (Bolger, Davis, & Rafaeli, 2003).

Between-person level

Self-efficacy

Within-person level

Positive Work Events
- Goal attainment, problem solving, task-related success
- Praise, appreciation, positive feedback
- Perceived competence in or through social interactions
- Passively experienced, externally determined positive experiences

Fulfillment of/ Threat of Basic Psychological Needs

Negative Work Events
- Hindrances in goal attainment, obstacles in completing work tasks, overload
- Conflicts and communication problems
- Technical difficulties, problems with work utensils and equipment
- Managerial and internal problems, organizational climate
- Ambiguity, insecurity, loss of control
- Health problems and private issues
- Problems in interactions with clients or patients

Positive Affect

Negative Affect

Work Engagement

Job Control

Between-person level

Focus on Opportunities

Figure 1.1 *Overview of the concepts and relationships integrated in Studies 1-3*

1.1 References

Bakker, A. B., Albrecht, S. L., & Leiter, M. P. (2011). Work engagement: Further reflections on the state of play. *European Journal of Work and Organizational Psychology, 20*, 74-88.

Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: W. H. Freeman.

Bledow, R., Schmitt, A., Frese, M., & Kühnel, J. (2011). The affective shift model of work engagement. *Journal of Applied Psychology, 96*, 1246-1257.

Bolger, N., Davis, A., & Rafaeli, E. (2003). Diary methods: Capturing life as it is lived. *Annual Review of Psychology, 54*, 579-616.

Christian, M. S., Garza, A. S., & Slaughter, J. E. (2011). Work engagement: A quantitative review and test of its relations with task and contextual performance. *Personnel Psychology, 64*, 89-136.

Deci, E. L., & Ryan, R. M. (2000). The "what" and "why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry, 11*, 227-268.

Demerouti, E., & Bakker, A. B. (2011). The job demands–resources model: Challenges for future research. *South African Journal of Industrial Psychology, 37*, 1-9.

Ellsworth, P. C., & Scherer, K. R. (2003). Appraisal processes in emotion. In R.J. Davidson, K.R. Scherer & H. H. Goldsmith (Eds.), *Handbook of affective sciences* (pp. 572-595). New York: Oxford University Press.

Hallberg, U. E., & Schaufeli, W. B. (2006). "Same same" but different? Can work engagement be discriminated from job involvement and organizational commitment? *European Psychologist, 11*, 119-127.

Hobfoll, S. E., & Leiberman, J. R. (1987). Personality and social resources in immediate and continued stress resistance among women. *Journal of Personality and Social Psychology, 52*, 18-26.

Jackson, K. M., & Trochim, W. M. K. (2002). Concept mapping as an alternative approach for the analysis of open-ended survey responses. *Organizational Research Methods, 5*, 307-336.

Judge, T. A., & Kammeyer-Mueller, J. (2012). Job Attitudes. *Annual Review of Psychology, 63*, 341–367.

Karniol, R., & Ross, M. (1996). The motivational impact of temporal focus: Thinking about the future and the past. *Annual review of psychology, 47*, 593-620.

Korunka, C., Kubicek, B., Schaufeli, W. B., & Hoonakker, P. (2009). Work engagement and burnout: testing the robustness of the job demands-resources model. *The Journal of Positive Psychology, 4*, 243-255.

Kuhl, J. (2000). A functional-design approach to motivation and self-regulation: The dynamics of personality systems interactions. In M. Boekarts, P. R. Pintrich & M. Zeidner (Eds.), *Handbook of self-regulation* (pp. 111-169). San Diego, CA: Academic Press.

Macey, W. H., & Schneider, B. (2008). The meaning of employee engagement. *Industrial and Organizational Psychology, 1*, 3-30.

Morgeson, F. P., & Humphrey, S. E. (2006). The Work Design Questionnaire (WDQ): Developing and validating a comprehensive measure for assessing job design and the nature of work. *Journal of Applied Psychology, 91*, 1321-1339.

Oettingen, G., & Mayer, D. (2002). The motivating function of thinking about the future: Expectations versus fantasies. *Journal of Personality and Social Psychology, 83*, 1198-1212.

Rich, B. L., Lepine, J. A., & Crawford, E. R. (2010). Job engagement: Antecedents and effects on job performance. *The Academy of Management Journal, 53*, 617-635.

Salanova, M., Agut, S., & Peiró, J. M. (2005). Linking organizational resources and work engagement to employee performance and customer loyalty: The mediation of service climate. *Journal of Applied Psychology, 90*, 1217-1227.

Schaufeli, W. B., Salanova, M., González-Romá, V., & Bakker, A. B. (2002). The measurement of engagement and burnout: A two sample confirmatory factor analytic approach. *Journal of Happiness Studies, 3*, 71-92.

Sonnentag, S., Dormann, C., & Demerouti, E. (2010). Not all days are created equal: The concept of state work engagement. In A. B. Bakker & M. P. Leiter (Eds.), *Work engagement: Recent developments in theory and research* (pp. 25-38). New York: Psychology Press.

Spreitzer, G. M. (1995). Psychological empowerment in the workplace: Dimensions, measurement, and validation. *Academy of Management Journal, 38*, 1442-1465.

Weiss, H. M., & Cropanzano, R. (1996). Affective events theory: A theoretical discussion of the structure, causes and consequences of affective experiences at work. *Research in Organizational Behavior, 18*, 1-74.

Zacher, H., & Frese, M. (2009). Remaining time and opportunities at work: Relationships between age, work characteristics, and occupational future time perspective. *Psychology and Aging, 24*, 487-493.

Zacher, H., & Frese, M. (2011). Maintaining a focus on opportunities at work: The interplay between age, job complexity, and the use of selection, optimization, and compensation strategies. *Journal of Organizational Behavior, 32*, 291-318.

STUDY 1

Focus on Opportunities as a Boundary Condition of the Relationship between Job Control and Work Engagement: A Multi-Sample, Multi-Method Study

2.1 Abstract

The concept of *focus on opportunities* describes how many new goals, options, and possibilities employees believe to have in their personal future at work. In this multi-sample, multi-method study, the authors investigated relationships between focus on opportunities and general and daily work engagement and the moderating role of focus on opportunities on between- and within-person relationships between job control and work engagement. Based on a social cognitive theory framework on the motivating potential of a future temporal focus, it was hypothesized that focus on opportunities is positively related to work engagement. Further, consistent with the notion of compensatory resources, it was expected that job control is not related to work engagement among employees with a high focus on opportunities whereas job control, as an external resource of the work environment, is positively related to work engagement among employees with a low focus on opportunities. Both a cross-sectional survey study ($N = 174$) and a daily diary study ($N = 64$) supported the hypotheses. The study contributes to research on the job demands-resources model as it emphasizes the role of focus on opportunities as a motivational factor in the relationship between job control and work engagement.

2.2 Introduction

Work engagement is a positive and fulfilling mental state that consists of three core components (Schaufeli, Salanova, González-Romá, & Bakker, 2002). *Vigor* is defined as the willingness to invest effort in one's work, a state of mental resilience, and high levels of energy. *Dedication* is characterized by experiencing enthusiasm, pride, and intense identification with one's job. *Absorption* means being fully concentrated in one's work, and finding it difficult to detach oneself from the task at hand (Schaufeli, et al., 2002). Researchers and practitioners are increasingly interested in work engagement because it is positively associated with meaningful organizational outcomes such as task performance (Bakker & Bal, 2010; Gorgievski, Bakker, & Schaufeli, 2010; Rich, Lepine, & Crawford, 2010), low turnover intentions (De Lange, De Witte, & Notelaers, 2008), and organizational commitment (Hakanen, Bakker, & Schaufeli, 2006; Schaufeli & Bakker, 2004). The goal of this multi-sample, multi-method study is to extend the growing literature on work engagement by investigating the concept of *focus on opportunities* both as a predictor of work engagement and as a boundary condition of the positive relationship between job control and work engagement. Specifically, we intend to contribute to the literature by showing that focus on opportunities is a motivational factor and a compensatory resource that is positively related to work engagement especially when job control is low.

The concept of focus on opportunities was originally developed by personality and developmental psychologists (Cate & John, 2007; Lang & Carstensen, 2002). It has recently been adapted to the work context and has been validated in previous research (Bal, Jansen, van der Velde, de Lange, & Rousseau, 2010; Gielnik, Zacher, & Frese, 2012; Kooij & Van De Voorde, 2011; Zacher & Frese, 2009, 2011). Focus on opportunities describes how many new goals, plans, options, and possibilities employees believe to have in their personal future at work (Zacher & Frese, 2009, 2011). Compared to other time-related concepts, such as *future orientation* (Shipp, Edwards, & Lambert, 2009; Zimbardo & Boyd, 1999), it is an age-related motivational concept that changes over a time period of several years and decades, and may vary with changes in work characteristics (Seijts, 1998; Zacher & de Lange, 2011; Zacher & Frese, 2009; Zacher, Heusner, Schmitz, Zwierzanska, & Frese, 2010). Focus on opportunities is related to, but conceptually distinct, from self-efficacy, which is defined

as an individual's beliefs about his or her capabilities necessary to attain certain outcomes (Bandura, 1997). Whereas self-efficacy captures people's confidence to create opportunities for themselves (Bandura, 2000), focus on opportunities refers to people's perceptions of their objective opportunities in their future at work (Zacher & Frese, 2011). Further, focus on opportunities differs from trait optimism (Scheier & Carver, 1985), as it involves a more realistic approach to thinking about the future and future opportunities at work (Schneider, 2001; Zacher & Frese, 2011).

Based on a social cognitive theory framework that emphasizes the importance of a future-oriented temporal focus for motivation (Karniol & Ross, 1996; Oettingen & Mayer, 2002), we assume that high levels of focus on opportunities provide employees with an energizing and motivational resource that is related to work engagement. In addition, we investigate focus on opportunities as a moderator of the generally positive relationship between the work characteristic of job control and work engagement. The concept of *job control* involves employees' perceived control over tasks, methods, scheduling, and the number of decision possibilities at work, and specifies the degree of autonomy and personal influence in the workplace (Jackson, Wall, Martin, & Davids, 1993; Morgeson & Humphrey, 2006; Terry & Jimmieson, 1999). Work environments with high levels of job control strengthen employees' willingness to dedicate effort to their jobs and have energizing and motivating effects on employees (Bakker, 2009, 2011; Hackman & Oldham, 1980). However, the boundary conditions of the relationship between job control and work engagement have so far been neglected by researchers (Demerouti & Bakker, 2011). Based on the notion of compensatory resources (Hobfoll & Leiberman, 1987), we argue that a high level of focus on opportunities may compensate for low levels of job control in predicting work engagement, because both focus on opportunities and job control have similar energizing effects on employees. As both concepts have similar effects on motivational processes, it may be possible that they compensate for each other in predicting work engagement. Thus, we propose that job control is not related to work engagement among employees with a high focus on opportunities, whereas job control, as an external resource of the work environment, is positively related to work engagement among employees with a low focus on opportunities.

We further intend to contribute to the literature by investigating the role of focus on opportunities for both between- and within-person relationships between job control

and work engagement in two studies. In the between-person study design (Study 1), we focused on whether differences between employees in their general levels of job control explain variation in their general levels of work engagement. Based on the suggestion that measures of work engagement should also consider the temporal and dynamic dimensions of the concept (Bakker, Albrecht, & Leiter, 2011a, 2011b), Study 2 addresses the question whether daily fluctuations in job control within employees (i.e., across several work days) are associated with daily variation of work engagement within the same employees (Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2009). Daily diary studies represent a method capable of detecting temporal fluctuations and patterns in the variables under study and tend to be better suited when addressing questions of dynamic processes (Bolger, Davis, & Rafaeli, 2003; Ohly, Sonnentag, Niessen, & Zapf, 2010). Hence, our study aims at an integrated approach that comprises both within- and between-person relationships which is necessary to fully understand motivated behavior and engagement at work (Ohly, et al., 2010).

Relationship between job control and work engagement

We first propose that job control is positively related to work engagement (Bakker & Demerouti, 2008; Bakker, Demerouti, & Euwema, 2005). We base this assumption on the job demands-resources model (Bakker & Demerouti, 2007; Demerouti & Bakker, 2011; Korunka, Kubicek, Schaufeli, & Hoonakker, 2009), which assumes a motivational process whereby job resources such as job control influence work engagement. Job resources are supposed to have an intrinsic motivational function as they fulfill basic human needs (cf. Bakker & Demerouti, 2007; Deci & Ryan, 2000). For example, high levels of job control satisfy the need for autonomy (Parker, Jimmieson, & Amiot, 2010). Employees in high-control jobs should have higher levels of work engagement because these jobs provide them with personal autonomy and possibilities for own decision-making. Further, high levels of job control provide a good prerequisite for attachment to one's work role. This is related to the perception of meaningfulness as people like to devote more effort and time in their job (cf. Bakker, 2009; Bakker & Demerouti, 2007; Kahn, 1990). In contrast, employees in low-control jobs should have lower levels of work engagement, as these jobs are very restricted in terms of decision-making possibilities and autonomy (Fay & Kamps, 2006). Hence, the job demands-resources model includes job control as a situational resource that has

motivational or energizing capacity. This is in line with job characteristics theory (Hackman & Oldham, 1976) which highlights the motivational potential of job resources such as autonomy. Empirical evidence for these assumptions comes from field studies across homogenous as well as heterogeneous samples of employees with different job, organizational and occupational backgrounds (Bakker & Bal, 2010; De Lange, et al., 2008).

> *Hypothesis 1:* There is a positive relationship between job control and work engagement.

The role of focus on opportunities

We further argue that employees' focus on opportunities is positively related to their work engagement. We base this assumption on social cognitive approaches on the importance of a future-oriented temporal focus for motivation and the motivating potential of positive thinking about the future (Karniol & Ross, 1996; Lewin, 1943; Oettingen & Mayer, 2002). People with a high focus on opportunities think positively about their personal future at work, they perceive their occupational future as full of possibilities, and they concentrate on the options, plans and goals that they can pursue in their future (Zacher & Frese, 2009, 2011).

Lewin (1943) was the first psychologist to recognize the relevance of one's future temporal focus for motivation. He stated that the future is reflected in people's goals which are relevant for current behavior and motivation (Eccles & Wigfield, 2002; Karniol & Ross, 1996). Hence, high levels of focus on opportunities have a self-regulatory and motivational potential as they contribute to goal selection, goal pursuit, intrinsic work motivation, and work performance (De Lange, Bal, Van der Heijden, De Jong, & Schaufeli, 2011; Gielnik, et al., 2012; Zacher, et al., 2010). People who focus on their future goals, plans, and opportunities may also perceive their work as more meaningful (Zacher & Frese, 2011). Research in positive psychology—the study of conditions that foster optimal functioning of human beings (Seligman & Csikszentmihalyi, 2000)—suggests that people's well-being and motivation are strongly influenced by positive thinking about the future. For example, research showed that writing down future life-goals leads to increased happiness (King, 2001). Consistent with the approaches, we argue that focus on opportunities is positively associated with work engagement.

Hypothesis 2: There is a positive relationship between focus on opportunities and work engagement.

We further suggest that focus on opportunities moderates the strength of the generally positive relationship between job control and work engagement. Specifically, we suggest that job control is not related to the work engagement of employees with a high focus on opportunities, whereas job control as an external resource is positively related to the work engagement of employees with a low focus on opportunities.

Previous research suggests that both job control and focus on opportunities function as motivational resources. Specifically, both concepts have the potential to energize and motivate employees which, in turn, positively impacts on their level of work engagement. Job control has an energizing capacity (Bakker & Demerouti, 2007; Demerouti & Bakker, 2011; Morgeson & Humphrey, 2006). Focus on opportunities represents one's work-related opportunities in the future (Zacher & Frese, 2009) with positive effects on motivation in the present (Karniol & Ross, 1996; Oettingen & Mayer, 2002). Because both concepts are assumed to activate similar fundamental processes, it may be possible that these resources compensate for each other in predicting work engagement. Accordingly, we argue that a high future-oriented focus on opportunities compensates for low levels of current job control in predicting work engagement, such that employees with a high focus on opportunities and low job control exhibit the same level of work engagement as employees with high job control. A high focus on opportunities acts as a future-oriented motivational resource for employees with low levels of job control. In addition, currently high levels of job control should represent an important external resource that enables employees with a low future-oriented focus on opportunities to show enthusiasm and invest energy in their work (Demerouti, Bakker, Nachreiner, & Schaufeli, 2001; Kahn, 1990).

Our argument is based on the notion of compensatory resources that is grounded in the substitution hypothesis by Hobfoll and Lieberman (1987). Resources are defined as objects, conditions, personal characteristics, or skills that are valued by an individual or that serve as a means of obtaining what is valued by an individual (Hobfoll & Shirom, 2001). According to the substitution hypothesis, "when a given resource is absent, a second resource may substitute for it" (Hobfoll & Leiberman, 1987, p. 20). The substitution hypothesis has been investigated in previous research in work and organizational psychology (LePine & Van Dyne, 1998; Speier & Frese, 1997). For

example, Speier and Frese (1997) demonstrated that personal resources may substitute for each other by showing that the relationship between job control and personal initiative was stronger for people with low compared to high levels of self-efficacy. Thus, the positive work situation appeared to compensate for low individual predispositions to act proactively (cf. Bindl & Parker, 2010).

Employees with high levels of focus on opportunities may be better able to compensate for low job control because they allocate more energy and attention to work-related future goals and plans and are more likely to perceive their work as meaningful despite low situational job control (Karniol & Ross, 1996; Strauss, Griffin, & Parker, in press). Further, employees with a high focus on opportunities may be more engaged and motivated to invest energy in their work because the anticipated value of their future goals and opportunities is higher (Karniol & Ross, 1996). Employees with a high focus on opportunities may anticipate an increase in job control in the future which may lead to current work engagement (Karniol & Ross, 1996; Lewin, 1943). Hence, we assume that a high level of focus on opportunities provides employees with additional motivational resources over and above the motivational potential of job control that is important for showing work engagement in the present (Hobfoll & Shirom, 2001; Karniol & Ross, 1996; Strauss, et al., in press). Consistent with the substitution hypothesis (Hobfoll & Leiberman, 1987), we argue that high levels of both job control and focus on opportunities do not lead to an additional increase in work engagement. The lack of both motivational resources, however, should result in low levels of work engagement.

> *Hypothesis 3:* Focus on opportunities moderates the relationship between job control and work engagement, such that the relationship is positive for low levels of focus on opportunities whereas no such positive relationship is expected for high levels of focus on opportunities.

2.3 Method

Study 1 sample and procedure

Our first sample consisted of 174 employees of a manufacturing company in central Germany. Of the participants, 169 (97.1%) were male, ages ranged from 16 to 64 years, and the average age was 36.77 years ($SD = 14.70$). Sixty-three participants (36.2%) had a general education degree, 82 (47.1%) had a middle school degree, 13

(7.5%) had a degree that allows for admission into a technical college (typically two more years of school after the middle school degree), seven (4%) had a high school degree, and nine (5.2%) had a university degree. On average, participants had been employed for 19.72 years in their lives (*SD* = 15.04 years). Participants were blue-collar workers and worked primarily in technical occupations. Frequently named jobs were mechanics, electricians and technicians. The company had 814 employees in total at the time of the study. Due to time constraints arising from shift work and company restrictions, we were not able to invite all employees of the company to participate in our study. Instead, data were collected in three consecutive steps using self-report questionnaires. First, 27 union workplace representatives of the company completed the questionnaire during their monthly meeting. Second, 39 apprentices of the company completed the questionnaire during their annual assembly. Finally, 128 employees out of 249 employees (51%) present during the bi-annual employee assembly organized by the labor union completed the questionnaire, resulting in a total of 194 returned questionnaires. Due to missing data in the central study variables, we were able to use data from 174 employees.

We compared our sample with the population from which it was drawn using data gathered by the German Federal Statistical Office on blue-collar workers (Statistisches Bundesamt, 2005). Overall, 87.9% men and 12.1% women are working in blue-collar jobs, and the average age of employees working in this sector is between 35 and 40 years (Schwan, 2007; Statistik der Bundesagentur für Arbeit, 2010). Thus, our sample is fairly representative in terms of average age but it includes a slightly higher proportion of men compared to the population of blue-collar employees.

Study 2 sample and procedure

The second sample consisted of 64 administrative employees working for a university in central Germany. As a first step of data collection for this study, the management board of the university was contacted and informed about our study. After consent was obtained, we contacted 563 randomly selected administrative employees of the university by e-mail and invited them to participate in the daily diary study. In total, 84 participants agreed to participate in the study (response rate: 14.9%). Of this sample, 64 employees provided complete data and were included in the analyses. Thirty-seven (58%) of the employees were female and 27 (42%) were male. Their age distribution

ranged from 20 to 62 years, and the average age was 41.9 years ($SD = 11.8$). In terms of educational background, four participants (6.3%) had a general education degree, 16 (25.0%) had a middle school degree, 17 (26.6%) had a high school degree, and 26 (40.5%) a university degree. One participant (1.6%) did not provide information on his or her education. Participants held a variety of non-academic service jobs throughout the university such as administrative jobs or professional jobs in the field of technology.

According to data from the German Federal Statistical Office (Schwan, 2007) and the Federal Employment Office (Statistik der Bundesagentur für Arbeit, 2010), 62.6% of German employees working in the public sector are women and 37.4% are men. The average age is 44 years. Hence, our sample is fairly representative with regard to age and gender distributions.

Data collection took place over one work week (Monday to Friday). Participants filled out a general online questionnaire including questions on demographic variables such as education and general level of focus on opportunities on Monday, and two daily online questionnaires from Tuesday to Friday. Focus on opportunities is a motivational concept that changes over longer time periods (e.g., several years or decades) but not on a daily basis (Cate & John, 2007; Zacher & de Lange, 2011), and was therefore assessed only once in the general questionnaire. To maintain anonymity, participants entered a four-digit code each time they answered the questionnaires. The first daily questionnaire was answered around noon (between 11 a.m. and 1 p.m.) and included questions on daily job control. The second daily questionnaire was answered before the end of the work day (between 3 p.m. and 6 p.m.) and included questions on daily work engagement. We deleted those participants from our analyses with missing data in more than four of the daily questionnaires (more than two days) in order to ensure that there was enough within-person variance in the data to be explained. Overall, we received 364 daily responses (5.7 out of 8 possible daily observations) which equates to 182 paired daily questionnaires.

Study 1 measures and analysis

Focus on opportunities. We adapted five items from Carstensen and Lang's (1996, see also Lang & Carstensen, 2002) Future Time Perspective scale by adding the word "occupational" to each item (Gielnik, et al., 2012). The items are "Many opportunities await me in my occupational future", "I expect that I will set many new

goals in my occupational future", "My occupational future is filled with possibilities", "I could do anything I want in my occupational future", "The opportunities that await me in my occupational future are limited". They were answered on a 5-point scale, ranging from 1 (*not true at all*) to 5 (*very true*). Cronbach's alpha of the scale was .90.

Job control was measured with four self-report items from a well-validated and widely-used German scale (Semmer, 1982; Zapf, 1993). A sample item was "Can you yourself decide on which way to carry out your work?" Participants gave their answers on a scale ranging from 1 (*very little*) to 5 (*very much*). Cronbach's alpha of the scale was .79.

Work engagement was assessed with the nine-item short version of the Utrecht Work Engagement Scale (UWES) developed by Schaufeli et al. (2002). The nine items cover the three facets of the work engagement concept: Vigor (sample item: "At my work, I feel bursting with energy", Cronbach's $\alpha = .75$), dedication (sample item: "I am proud of the work that I do", Cronbach's $\alpha = .82$), and absorption (sample item: "I am immersed in my work", Cronbach's $\alpha = .81$). All items were scored on a 7-point scale, ranging from 1 (*never*) to 7 (*always*). We were interested in work engagement as a composite score. Thus, we computed an overall mean score following previous studies (e.g., De Lange, et al., 2008; Sonnentag, 2003; Xanthopoulou, et al., 2009). Cronbach's alpha for the overall scale of work engagement was .92.

Demographic control variables. We controlled for age and education because previous research showed that age and education influence focus on opportunities (Cate & John, 2007; Zacher & Frese, 2009). Participants reported their highest German educational degree achieved (0 = *no degree*, 1 = *general education degree*, 2 = *middle school degree*, 3 = *high school degree*, and 4 = *university degree*). Note that it was not possible to control for gender in this study because the vast majority of participants (97.1%) were male. The results were equivalent when we did not control for participants' age and education.

We conducted a confirmatory factor analysis using the Mplus software (Muthén & Muthén, 2007) to examine whether focus on opportunities, job control and work engagement constitute three distinct factors. The three-factor model with factors that were allowed to covary had an acceptable fit to the data ($\chi^2[136] = 295.961$, CFI = .91, RMSEA = .09). Although the fit indices were slightly below standard (Hu & Bentler, 1999), the three-factor model was superior to the one-factor model which did not fit the

data well (χ^2[138] = 535.728, CFI = .77, RMSEA = .14). We tested our hypotheses by using hierarchical moderated regression analyses. The variables were mean-centered before we entered them into the analyses and before we calculated the interaction terms (Cohen, Cohen, West, & Aiken, 2003).

Study 2 measures and analysis

Focus on opportunities was measured in the general questionnaire with the same five items as in Study 1. Cronbach's Alpha of the scale was .91.

Demographic control variables. We controlled for age, gender (1 = *male*, 2 = *female*), and education (1 = *no degree*, 2 = *general education degree*, 3 = *middle school degree*, 4 = *high school degree*, 5 = *university degree*). Again, the results were equivalent when we did not control for these variables.

Daily job control was assessed in the first daily questionnaire with five items adapted to the daily level from the German version of the Work Design Questionnaire (Morgeson & Humphrey, 2006; Stegmann et al., 2010). A sample item was "Today, the job allows me to plan how I do my work". Items were answered on 5-point scales ranging from 1 (*not true at all*) to 5 (*very true).* Cronbach's α of this scale was .91.

Daily work engagement was measured in the second daily questionnaire with five items adapted to the daily level from Schaufeli et al.'s (2002) nine-item scale (UWES). Items used were "Today, I was enthusiastic about my work" and "Today, my work inspired me" (dedication), "Today, I felt strong and vigorous in my work", "Today at my work, I felt bursting with energy" (vigor), and "Today, I was happily engrossed in my work" (absorption). All items were scored on a 7-point scale ranging from 1 (*not true at all*) to 7 (*very true*). Cronbach's α of the overall scale for daily work engagement was .93.

In Study 2, each participant provided data at the person level (e.g., focus on opportunities) and at the day level (e.g., daily job control, daily work engagement). This constituted a nested data structure as daily measures were nested within persons (Raudenbush & Bryk, 2002). To test our hypotheses, we used Hierarchical Linear Modeling which allowed us to simultaneously model within- and between-person relations among the variables of interest. Repeated measures of job control were person-mean centered in order to ensure that the relations among the within-person level

variables were unconfounded by between-person variance (Enders & Tofighi, 2007). Focus on opportunities as between-person variable was grand-mean centered.

Further, multilevel confirmatory factor analysis of the daily job control and daily work engagement items with person-mean centered scores was applied. Model fit indicators provided by Mplus (Muthén & Muthén, 2007) supported a two-factor model solution with daily job control and daily work engagement as two distinct yet related factors ($\chi^2[90] = 1380.84$, CFI = .89, RMSEA = .09, SRMR[within] = .08, SRMR[between] = .14). However, we need to acknowledge that these values fall somewhat below conventional standards for cutoff criteria of fit indices (Hu & Bentler, 1999).

2.4 Results

Study 1

Table 2.1 shows the descriptive statistics and inter-correlations of the Study 1 variables. Table 2.2 shows the results of a hierarchical moderated regression analysis. Consistent with Hypothesis 1, there was a positive and significant relationship between job control and work engagement ($\beta = .21$, $p < .01$, see Table 2.2). Supporting Hypothesis 2, the relationship between focus on opportunities and work engagement was positive and significant ($\beta = .40$, $p < .01$). Hypothesis 3 states that focus on opportunities moderates the relationship between job control and work engagement, such that the relationship is positive for employees with a low focus on opportunities and non-significant for employees with a high focus on opportunities. As can be seen in Table 2.2 (Model 2), the interaction between job control and focus on opportunities was significant ($\beta = -.20$, $p < .01$). Consistent with our expectations, the simple slope for employees with a low focus on opportunities ($\beta = .47$, $p < .01$) was positive and significant whereas the simple slope for employees with a high focus on opportunities was non-significant ($\beta = .10$, *ns.*). This significant interaction effect is displayed in Figure 2.1. Altogether, these findings support Hypothesis 3. [1]

---

[1] Although we were primarily interested in work engagement as a composite score (Schaufeli, Bakker, & Salanova, 2006; Sonnentag, 2003), we conducted additional analyses in order to test our hypotheses for the three dimensions separately. With regard to Hypothesis 1, the relationship between job control and work engagement was significant for all three dimensions ($\beta = .28$, $p < .01$ for dedication; $\beta = .21$, $p < .01$ for vigor; $\beta = .29$, $p < .01$ for absorption). Further, Hypothesis 2 was also supported for the three dimensions respectively ($\beta = .43$, $p < .01$ for dedication; $\beta = .37$, $p < .01$ for vigor; $\beta = .38$, $p < .01$ for absorption). Supporting Hypothesis 3, focus on opportunities moderated the relationship of job control with dedication ($\beta = -.23$, $p < .01$), vigor ($\beta = -.21$, $p < .01$), and absorption ($\beta = -.18$, $p < .05$.).

Table 2.1

Means (M), standard deviations (SD), and inter-correlations of variables (Study 1)

Variable	M	SD	1	2	3	4	5
1. Age	36.77	14.70	-				
2. Education	2.94	1.03	.02	-			
3. Job control	3.16	0.83	.23**	.10	-		
4. Focus on opportunities	3.04	1.01	-.59**	.18*	.03	-	
5. Work engagement	4.38	1.09	.00	.16*	.27**	.31**	-

Note. $N = 174$. $^{*} p < .05$. $^{**} p < .01$.

Table 2.2

Results of hierarchical moderated regression analysis with work engagement as dependent variable (Study 1)

Variable	Work engagement					
	Model 1			Model 2		
	B	SE	β	B	SE	β
Intercept	4.38	0.08		4.39	0.07	
Age	0.01	0.02	.19*	0.01	0.07	.17
Education	0.07	0.08	.07	0.08	0.07	0.08
Focus on opportunities	0.43	0.10	.40**	0.41	0.10	.38**
Job control	0.28	0.10	.21**	0.32	0.09	.24**
Job control x Focus on opportunities				-.27	0.09	-.20**
R^2		0.19			0.23	
ΔR^2					0.04	

Note. $N = 174$. $^{*} p < .05$. $^{**} p < .01$. All independent and control variables were mean-centered.
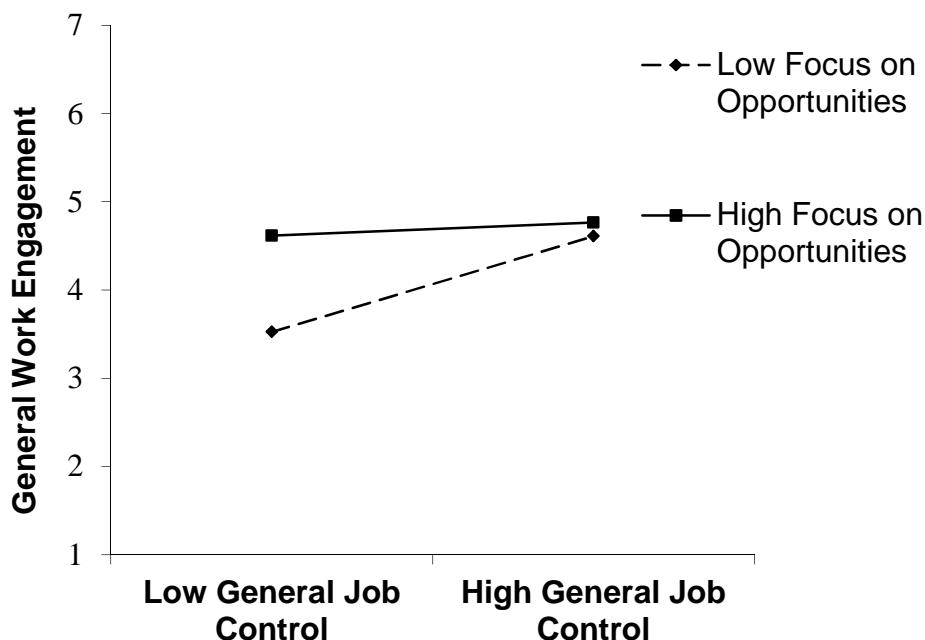
Figure 2.1

Focus on opportunities as a moderator of the between-person relationship between job control and work engagement (Study 1)

Study 2

The descriptive statistics and inter-correlations of the Study 2 variables are presented in Table 2.3. Before testing our hypotheses, we investigated whether systematic within- and between-person variance existed in the dependent variable by estimating a null model with random effects. The analyses showed that 43.7% of the variance in daily work engagement was within-person variance and 56.3% was between-person variance. For job control as our independent variable, 64.9% of the variance was within-person variance and 35.1% was between-person variance. Thus, the application of multilevel analysis was appropriate (Bliese, 2000; Bryk & Raudenbush, 1992).

Table 2.3

Means (M), standard deviations (SD), and inter-correlations of variables (Study 2)

Variable	*M*	*SD*	1	2	3	4	5	6
Between-person level								
1. Gender	1.58	0.50	-					
2. Age	41.86	11.80	-.06	-				
3. Education	4.16	1.13	-.14	.06	-			
4. Focus on opportunities	2.59	0.90	-.17	-.49**	.03	-		
Within-person level								
5. Daily job control	3.58	0.86	.08	-.04	.05	.11	-	.17*
6. Daily work engagement	3.92	1.21	-.19	-.18	.06	.37**	.19	-

Note. Gender (1 = male; 2 = female). Correlations and descriptive statistics represent the between-person level (*N* = 64). We calculated between-person correlations by aggregating variables across measurement occasions. Correlations above the diagonal represent the within-person level (*N*= 182). We standardized the variables prior to calculating the coefficients in order to have standardized coefficients on the within-person level. * $p < .05$. ** $p < .01$.

Hypothesis 1 argues for a positive within-person relationship between daily job control and work engagement. Multilevel regression results showed that the relationship was non-significant ($\gamma = 0.14$, *SE* = 0.11, *ns.*, see Model 1 in Table 2.4). Thus, Hypothesis 1 was not supported in this study. Hypothesis 2 states that focus on opportunities is positively related to work engagement. Consistent with this hypothesis, we found a positive and significant within-person relationship between focus on opportunities and daily work engagement ($\gamma = 0.37$, *SE* = 0.15, $p < .05$, see Model 1 in Table 2.4).

Hypothesis 3 states that focus on opportunities moderates the within-person relationship between daily job control and daily work engagement. We tested Hypothesis 3 with a cross-level interaction model by adding focus on opportunities as a predictor of the within-person relationship between daily job control and daily work engagement. Before testing the cross-level interaction, we examined whether the slope variance was significant for the daily job control-daily work engagement relationship

(Bliese & Ployhart, 2002; Hofmann, 1997). To this end, we estimated a model that regressed daily work engagement on daily job control at the within-person level and estimated the pooled within-person parameters at the between-person level without including any between-person predictors. Results showed that the Chi square test of the variance in the within-person slopes was significant (χ^2[63] = 114.96; p < .01). Hence, we could subsequently investigate whether focus on opportunities predicts variability in the slopes of the daily job control-work engagement relationship.

Table 2.4 (Model 2) shows the results of the cross-level moderation analysis using HLM. Focus on opportunities significantly predicted the slope of the within-person relationship between daily job control and work engagement (γ = -0.20, SE = 0.09, p < .05). This interaction is plotted in Figure 2.2. We conducted a simple slope test developed for HLM (Preacher, Curran, & Bauer, 2006). Similar to Study 1, results indicated that the relationship between daily job control and daily work engagement was positive and significant for employees with a low (i.e., one SD below the mean) level of focus on opportunities (γ = 0.32, t = 2.34, p < .05), and non-significant for employees with a high level (i.e., one SD above the mean) of focus on opportunities (γ = -0.04, t = -0.32, $ns.$). Further, we tested the improvement of Model 2 above Model 1 by computing the difference between the two respective likelihood ratios. The likelihood ratio test compares the deviance (-2*log likelihood) of the two models. The difference is based on a chi-square distribution with the number of degrees of freedom equal to the number of different parameters in the two models. Model 2, which in addition to the demographic control variables and the main effects of daily job control and focus in opportunities included the interaction effect, showed a better model fit than Model 1 (Δ -2*log = 4.17, Δ df = 1, p < .05). Altogether, these findings support Hypothesis 3.

Table 2.4

Results of multilevel analysis with daily work engagement as dependent variable (Study 2)

Variable	Work engagement								
	Null model			Model 1			Model 2		
	γ	*SE*	*t*	γ	*SE*	*t*	γ	*SE*	*t*
Intercept	3.93	0.13	30.89[**]	3.93	0.12	33.47[**]	3.93	0.12	33.49[**]
Between-person level									
Gender				-.24	.25	-0.96	-.24	0.25	-0.96
Age				-0.00	.01	-0.21	0.00	0.01	-0.24
Education				0.04	0.11	0.38	0.04	0.10	0.42
Focus on opportunities				0.37	0.15	2.42[*]	0.37	0.15	2.42[*]
Within-person level									
Daily job control				0.14	0.11	1.31	0.14	0.10	1.34
Cross-level interaction									
Daily job control × Focus on opportunities							-0.20	0.09	-2.06[*]
Between-person intercept variance	0.80	0.18		0.65	0.16		0.65	0.16	
Within-person intercept variance	0.63	0.08		0.62	0.08		0.60	0.08	
$R^2_{between}$					0.183			0.181	
R^2_{within}					0.016			0.049	
-2*log (lh)		529.42			517.39			513.22	
Δ -2*log					12.03[*]			4.17[*]	
Δ df					5			1	

Note. γ = unstandardized HLM regression coefficient; *SE* = standard error; *N* = 182 observations nested within 64 participants. Gender (1 = male; 2 = female). Within-person level variables were person mean-centered, and between-person level variables were grand-mean centered. $R^2_{between}$ = Between-person variance explained by the predictors was calculated by using the formula: (τ null model $-$ τ fixed-effect model) / τ null model; R^2_{within} = Within-person variance explained by the predictors was calculated by using the formula: (σ^2 null model $-$ σ^2 fixed-effect model) / σ^2 null model (Hofmann, Griffin, & Gavin, 2000); log (lh) = likelihood ratio. [*] $p < .05$. [**] $p < .01$.
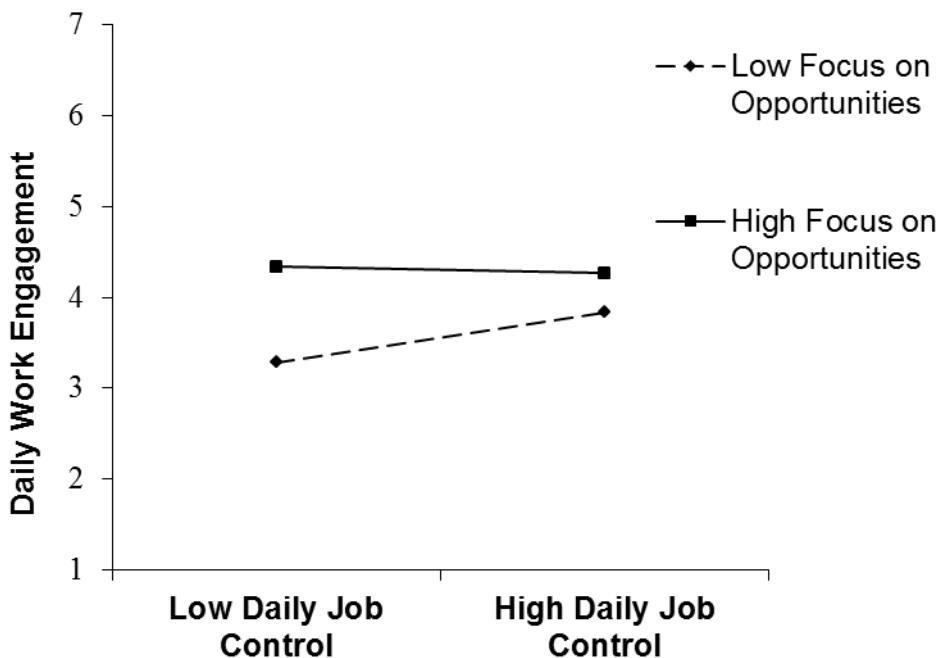
Figure 2.2

Focus on opportunities as a moderator of the within-person relationship between daily job control and daily work engagement (Study 2)

2.5 Discussion

We aimed to contribute to the work engagement literature by investigating the role of focus on opportunities as a predictor of work engagement and as a moderator of the relationship between job control and work engagement. We examined our hypotheses using a cross-sectional survey study with a *between*-person design based on a sample of blue-collar workers, and in a daily diary study with a *within*-person design based on a sample of administrative employees. The results supported most of our hypotheses. As expected, in Study 1 job control and focus on opportunities were positively related to work engagement, and focus on opportunities moderated the positive between-person relationship between job control and work engagement. Specifically, the relationship was positive and significant for employees with a low focus on opportunities and weak and non-significant for employees with a high focus on opportunities.

In Study 2, we replicated two of the findings from Study 1 on the daily level. First, focus on opportunities positively predicted daily work engagement. Second, we found a cross-level interaction between focus on opportunities and daily job control, such that daily job control was positively and significantly related to daily work engagement when focus on opportunities was low, but not when it was high. However, contrary to Hypothesis 1, daily job control was not generally positively related to daily work engagement in Study 2. This finding might be due to the characteristics of our study design. Asking participants to report general levels of job control and work engagement in Study 1 is prone to memory biases and a lack of accuracy. Daily experiences that capture within-person perceptions and experiences in situ provide insights over and above reports gathered through between-person approaches (Ohly, et al., 2010). Hence, our finding is consistent with earlier research showing that relationships between variables can vary strongly depending on a between- or a within-person approach (cf. Schalk, van der Heijden, de Lange, & van Veldhoven, 2011). Nevertheless, previous diary studies found strong support for the relationship between job control and work engagement (see for example Bakker & Bal, 2010; Xanthopoulou, et al., 2009). However, Bakker and Bal (2010) studied job resources and work engagement on a weekly basis by referring to job control and work engagement experienced during the last week and by assessing both the independent and the dependent variable at one measurement occasion. Our study included a time lag between the assessment of job control at noon and work engagement at the end of the workday. This limits the potential for common method bias (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003), but may have influenced our results.

Furthermore, the non-significant effect of daily job control on work engagement in Study 2 may be explained by the significant interaction of job control with focus on opportunities. Hence, the relationship between daily job control and daily work engagement may be more likely to occur under certain moderating conditions or may even be indirect based on psychological mechanisms that we did not assess in our study. For instance, previous research has emphasized the mediating role of personal resources such as self-efficacy, optimism, and positive mood states in the relationship between job characteristics and work engagement (Xanthopoulou, et al., 2009).

Our findings extend the literature on work engagement in several ways. First, we contribute to research on the job demands-resources model by taking into account focus

on opportunities as a boundary condition of the relationship between job control and work engagement (Bakker, 2009; Demerouti & Bakker, 2011). In line with the substitution of resources hypothesis (Hobfoll & Leiberman, 1987), job control appears to be less strongly related to work engagement when people's focus on opportunities is high. Conceptually, focus on opportunities is a representation of people's future possibilities for control, decision making possibilities, plans, and goals (Zacher & Frese, 2009). We argued and found that focus on opportunities compensates for low current job control and results in higher work engagement if people anticipate having many work-related opportunities in the future. However, when people's focus on opportunities is low, job control is positively related to work engagement. Thus, job control motivates employees even in times when they believe that they have no future opportunities. Consistent with the substitution hypothesis (Hobfoll & Leiberman, 1987), we found that high levels of both job control and focus on opportunities that involve people's perceptions of work-related opportunities do not lead to an additional increase in work engagement. Overall, our findings reveal that it is important to investigate combinations of resources instead of investigating a single resource of interest because similar resources can substitute one another (Hobfoll, Freedy, Lane, & Geller, 1990).

Second, our study contributes to the literature by following the suggestion by Bakker, et al. (2011a, 2011b) to more strongly consider the dynamic facets of the work engagement concept and focus on within-person fluctuations. So far, most research on work engagement and job control has employed between-person study designs (cf. Bakker, 2009). By investigating these variables on the daily level we can more closely examine short-term processes and everyday experiences within people (Bakker, et al., 2011a; Sonnentag, Dormann, & Demerouti, 2010). Study 2 showed that a large amount of variance in work engagement and job control can be explained by within-person variation.

Third, a main contribution is that we were able to replicate our findings in two different samples with employees from different occupations. Independent of the specific occupation, we found compensatory effects that suggest that focus on opportunities is particularly beneficial for people's work engagement when levels of general or daily job control are low. Finally, drawing on a social cognitive theory framework, this study emphasizes the important role of a future-oriented focus on opportunities as a motivational factor. Our study also highlights that job control serves

an important function for work engagement when employees' focus on opportunities is restricted. Hence, our study underpins previous theory and research which suggest that time represents a crucial variable in understanding and explaining human motivation (Schmidt & DeShon, 2007; Steel & König, 2006).

Limitations and future research

Study 1 had three major limitations. First, job control and work engagement were reported at the same time, thus raising the potential problem of artificially inflated correlations due to common method variance (Podsakoff, et al., 2003). Second, study participants were blue-collar workers from one manufacturing company in Germany and 97.1% of them were male. This raises potential concerns about the generalizability of our results. Finally, work engagement has originally been conceptualized as a fluctuating concept (Bakker, et al., 2011b; Kahn, 1990; Sonnentag, et al., 2010), whereas our between-person design study neglects the temporal nature of the job control–work engagement relation. It remains unclear for which time period employees assessed their level of work engagement and the validity of general questionnaire measures is threatened due to the possibility of retrospection bias (Alliger & Williams, 1993).

We addressed these limitations of Study 1 by conducting a second study. We used a daily diary design (Ohly, et al., 2010) because diary studies are better suited for addressing questions of daily experiences and dynamic episodes. Further, we measured daily job control in the morning and daily work engagement in the evening. Finally, we attempted to replicate the findings of Study 1 in a white-collar sample. Despite these strengths, Study 2 also had some limitations.

First, with 64 participants and an overall of 364 daily responses our sample size and the number of observations was relatively small. However, according to multilevel power calculations presented by Scherbaum and Ferreter's (2009), our sample sizes on the between- and within person level are sufficient to detect a medium effect size with a power of around .75. Also, the number of participants on the between-person level is well within the range of other recent diary studies (e.g., Beal & Ghandour, 2011; Bissing-Olson, Iyer, Fielding, & Zacher, in press; Bledow, Schmitt, Frese, & Kühnel, 2011) and this overall sample size has a stronger influence on the power than the

number of observations on the within-person level (Scherbaum & Ferreter, 2009; Snijders & Bosker, 1993).

Second, similar to Study 1, we assessed all of the variables with self-report measures. However, we tried to minimize this limitation by separating the measurements of daily job control from measurements of work engagement in order to alleviate concerns of common method bias (Podsakoff, et al., 2003). In addition, one potential problem of daily diary studies is that repeated measurements of variables might induce familiarity with the items which can cause reactivity and thus lead to changes in people's response style (Alliger & Williams, 1993; Bolger, et al., 2003).

Third, we hypothesized a causal relationship between job control and work engagement. However, due to the fact that in diary studies it is impossible to control for all confounding factors, reciprocal linkages cannot be ruled out. We assessed work engagement in the afternoon questionnaire only. While we included a time lag between the measurement of the predictor and criterion variables, controlling for previous assessments of the criterion variable would have enabled us to make stronger inferences about the causal direction of the within-person relationship (cf. Judge & Ilies, 2004). Future research should assess the criterion variable at both measurement points. Moreover, it might be possible to find reciprocal effects if longer time frames are studied (Frese, Garst, & Fay, 2007), and if relations of focus on opportunities with engagement and motivated behavior are examined in standardized, controlled, yet naturalistic experimental settings (Steel & König, 2006).

Fourth, in both studies the response rate was very low, raising concerns about the validity of our results. For example, it may be possible that employees with generally low levels of work engagement decided not to participate in our study. Self-selection bias is more likely to exist when study participants can entirely decide for themselves whether or not they like to participate in a study and is more strongly prevalent in diary study designs due to their intrusive nature. We compared our samples to statistics from the German Federal Statistical Office (Schwan, 2007; Statistisches Bundesamt, 2005) and the Federal Employment Office (Statistik der Bundesagentur für Arbeit, 2010) that are available on blue-collar workers and administrative employees from the public sector. We found that both samples were fairly representative in terms of average age and the proportion of females and males – at least for Study 2. Our sample in Study 1 comprised a slightly higher proportion of men compared to the

population of blue-collar workers. However, blue-collar occupations include not only employees from the metalworking industry but also from different industries. This may limit this comparison. Overall, then, generalizations of our findings must be done carefully, keeping in mind a threat of internal validity due to possible self-selection bias (Ohly, et al., 2010).

Fifth, we argued that the proximal mediators by which job control and focus on opportunities affect work engagement may be the same. Both job control and focus on opportunities were assumed to be energizing and activating which positively impacts one's level of work engagement. So far, our studies have not examined the underlying mechanisms. Hence, the empirical investigation of these underlying mechanisms that account for the compensatory effect should be subject of future research.

Similarly, we argued for motivating effects of thinking about the future such that employees tend to attain future-oriented goals and activities when they report being high in focus on opportunities (Karniol & Ross, 1996). However, we did not measure processes of individuals' goal selection, attainment, and goal commitment in our study and thus do not have detailed information on which goals are pursued and whether goals are future-oriented or not. Hence, we recommend future research to asses individuals' goals along with the difficulty and specificity of the adopted goals as these characteristics have proven to influence the intensity and persistence of effort exerted to goal-oriented behavior (Locke & Latham, 1990).

In addition, we argue that more intensive research on the concept of focus on opportunities is necessary. For instance, future research should examine how focus on opportunities relates to other cognitive-motivational constructs that were not considered in this study. For example, the motivational orientation of promotion focus from Higgins' (1998) regulatory focus theory can be expected to somewhat overlap with focus on opportunities (Zacher & de Lange, 2011). They may both act as self-guides for behavioral regulation and approach-oriented strivings by reflecting internal standards and focusing on achieving personally important aspirations and ambitions. Whereas promotion focus can be both a chronic disposition, as well as a motivational state evoked by situational signals (Higgins, 1998), focus on opportunities may change over a time period of several years and decades (Zacher & de Lange, 2011).

Future research might also investigate the relationship between focus on opportunities and optimism. Whereas optimism is defined as a general disposition to

expect positive outcomes (Scheier & Carver, 1985), focus on opportunities can be described as a more realistic job-related form of optimism that changes with increasing age and changing work characteristics (Zacher & Frese, 2009, 2011). Future empirical studies on focus on opportunities should include optimism as control variable in the analyses in order to investigate the effects of focus on opportunities over and above individuals' level of optimism.

Moreover, future research could investigate the drivers of temporal changes in focus on opportunities. For instance, it remains unknown whether changes in focus on opportunities may also be a result of career transitions such as promotions, job rotation, or organizational mobility (Feldman & Ng, 2007). With regard to job characteristics as antecedents of focus on opportunities, Zacher and Frese (2011) showed that job complexity was not significantly related to focus on opportunities in a homogeneous sample of blue-collar workers. Similarly, in the current study, we used two relatively homogeneous samples with regard to work tasks and responsibilities. Thus, it can be assumed that the variability in job complexity was rather low. However, other research with more heterogeneous samples revealed weak but positive relationships between job complexity and focus on opportunities (e.g., Zacher & Frese, 2009; Zacher, et al., 2010). This suggests that future research using heterogeneous samples should consider controlling for job complexity.

Practical implications and conclusion

Based on the notion of compensatory resources that is grounded in the substitution hypothesis (Hobfoll & Leiberman, 1987), our findings provide another theoretical case to realize practical interventions and suggestions in order to improve engagement at work (Bakker, et al., 2011a). The finding that job control does not affect work engagement of all employees alike has implications for job design and human resource management. On the one hand, our results suggest that in order to engage employees, organizations would benefit from job level interventions such as increasing employees' job control – this would be especially necessary for employees with a low focus on opportunities. Job control as a work resource seems to be a crucial motivating factor for employees when they perceive their future goals, plans and opportunities to be low. On the other hand, our findings suggest that employees with a high focus on opportunities do neither gain nor suffer from high levels of job control. It seems as if

these employees are provided with a strong inner motivational impetus that affects motivation and engagement independent of job characteristics such as control. Hence, with regard to focus on opportunities as a motivational construct, it might be interesting for organizations to establish ways and implement tools developed to select for and increase employees' focus on opportunities – especially when it is impossible to elevate levels of job control. One possible way to do so may be to promote an organizational culture of opportunities to learn and grow (cf. Bakker, et al., 2011a; Buckingham & Coffman, 1999). Organizations need to provide employees from all educational backgrounds with adequate development opportunities as well as vertical and horizontal career options focusing on future work goals, plans and possibilities. Additionally, interventions such as mentoring activities of leaders, coaching and appraisal interviews that adhere to employees' developmental options, and goal setting might be useful. Because focus on opportunities is negatively related to age, promoting an organizational culture of opportunities to learn and grow may be especially important in order to maintain motivation and engagement of older employees who are staying in the labor market for longer periods of time than ever before (Schalk et al., 2010). In line with Bakker, et al. (2011a), we propose that future work needs to be done in order to evaluate the effectiveness of job-level and individual-level interventions mentioned.

In conclusion, this multi-sample, multi-method study contributes to the work and organizational psychology literature on work engagement by showing that employees' focus on opportunities—defined as the goals, plans, and possibilities employees believe to have in their personal future at work —is positively related to work engagement and moderates the relationship between job control and work engagement. Focus on opportunities is a motivational factor and a compensatory resource that is positively related to work engagement especially when current job control is low. However, job control seems to be an important motivating factor for employees when they perceive their future goals, plans and opportunities to be low. Future research is now needed to replicate and extend the current findings, in order to gain a better understanding of the interactive effects of future-oriented focus on opportunities as a person characteristic and work characteristics such as job control on employees general and daily work engagement.

2.6 References

Alliger, G., & Williams, K. (1993). Using signal-contingent experience sampling methodology to study work in the field: A discussion and illustration examining task perceptions and mood. *Personnel Psychology, 43*, 525-549.

Bakker, A. B. (2009). Building engagement in the workplace. In R. J. Burke & C. L. Cooper (Eds.), *The peak performing organization* (pp. 50-72). Oxon, UK: Routledge.

Bakker, A. B. (2011). An evidence-based model of work engagement. *Current Directions in Psychological Science, 20*, 265-269.

Bakker, A. B., Albrecht, S. L., & Leiter, M. P. (2011a). Key questions regarding work engagement. *European Journal of Work and Organizational Psychology, 20*, 4-28.

Bakker, A. B., Albrecht, S. L., & Leiter, M. P. (2011b). Work engagement: Further reflections on the state of play. *European Journal of Work and Organizational Psychology, 20*, 74-88.

Bakker, A. B., & Bal, M. (2010). Weekly work engagement and performance: A study among starting teachers. *Journal of Occupational and Organizational Psychology, 83*, 189-206.

Bakker, A. B., & Demerouti, E. (2007). The job demands-resources model: State of the art. *Journal of Managerial Psychology, 22*, 309-328.

Bakker, A. B., & Demerouti, E. (2008). Towards a model of work engagement. *Career Development International, 13*, 209-223.

Bakker, A. B., Demerouti, E., & Euwema, M. C. (2005). Job resources buffer the impact of job demands on burnout. *Journal of Occupational Health Psychology, 10*, 170-180.

Bal, P. M., Jansen, P. G. W., van der Velde, M. E. G., de Lange, A. H., & Rousseau, D. M. (2010). The role of future time perspective in psychological contracts: A study among older workers. *Journal of Vocational Behavior, 76*, 474-486.

Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: W. H. Freeman.

Bandura, A. (2000). Cultivate self-efficacy for personal and organizational effectiveness. In E. A. Locke (Ed.), *Handbook of principles of organizational behavior* (pp. 120-136). Oxford, UK: Blackwell.

Beal, D. J., & Ghandour, L. (2011). Stability, change, and the stability of change in daily workplace affect. *Journal of Organizational Behavior, 32*, 526–546.

Bindl, U. K., & Parker, S. K. (2010). Proactive work behavior: Forward-thinking and change-oriented action in organizations. In S. Zedeck (Ed.), *APA handbook of industrial and organizational psychology*. Washington, DC: American Psychological Association.

Bissing-Olson, M. J., Iyer, A., Fielding, K. S., & Zacher, H. (in press). Relationships between daily affect and pro-environmental behavior at work: The moderating role of pro-environmental attitude. *Journal of Organizational Behavior*.

Bledow, R., Schmitt, A., Frese, M., & Kühnel, J. (2011). The affective shift model of work engagement. *Journal of Applied Psychology, 96*, 1246-1257.

Bliese, P. D. (2000). Within-group agreement, non-independence, and reliability: Implications for data aggregation and analysis. In K. J. Klein & S. W. Kozlowski (Eds.), *Multilevel Theory, Research, and Methods in Organizations* (pp. 349-381). San Francisco, CA: Jossey-Bass, Inc.

Bliese, P. D., & Ployhart, R. E. (2002). Growth modeling using random coefficient models: Model building, testing, and illustrations. *Organizational Research Methods, 5*, 362-387.

Bolger, N., Davis, A., & Rafaeli, E. (2003). Diary methods: Capturing life as it is lived. *Annual Review of Psychology, 54*, 579-616.

Bryk, A. S., & Raudenbush, S. W. (1992). *Hierarchical linear models: Application and data analysis methods*. Newbury Park: CA: Sage.

Buckingham, M., & Coffman, C. (1999). *First break all the rules: What the world's greatest managers do differently*. New York: Simon and Schuster.

Carstensen, L. L., & Lang, F. R. (1996). *Future Time Perspective Scale*. Stanford University.

Cate, R. A., & John, O. P. (2007). Testing models of the structure and development of future time perspective: Maintaining a focus on opportunities in middle age. *Psychology and Aging, 22*, 186-201.

Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2003). *Applied multiple regression/correlation analysis for the behavioral sciences* (3rd ed.). Mahwah, NJ: Erlbaum.

De Lange, A. H., Bal, P. M., Van der Heijden, B. I. J. M., De Jong, N., & Schaufeli, W. B. (2011). When I'm 64: Psychological contract breach, work motivation and the moderating roles of future time perspective and regulatory focus. *Work & Stress, 25*, 338-354.

De Lange, A. H., De Witte, H., & Notelaers, G. (2008). Should I stay or should I go? Examining the longitudinal relation between job resources and work engagement for stayers versus movers. *Work & Stress, 22*, 201-223.

Deci, E. L., & Ryan, R. M. (2000). The "what" and "why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry, 11*, 227-268.

Demerouti, E., & Bakker, A. B. (2011). The job demands–resources model: Challenges for future research. *South African Journal of Industrial Psychology, 37*, 1-9.

Demerouti, E., Bakker, A. B., Nachreiner, F., & Schaufeli, W. B. (2001). The job demands-resources model of burnout. *Journal of Applied Psychology, 86*, 499-512.

Eccles, J. S., & Wigfield, A. (2002). Motivational beliefs, values, and goals. *Annual Review of Psychology, 53*, 109-132.

Enders, C. K., & Tofighi, D. (2007). Centering predictor variables in cross-sectional multilevel models: A new look at an old Issue. *Psychological Methods, 12*, 121-138.

Fay, D., & Kamps, A. (2006). Work characteristics and the emergence of a sustainable workforce: Do job design principles matter? *Gedrag & Organisatie, 19*, 184-203.

Feldman, D. C., & Ng, T. W. H. (2007). Careers: Mobility, embeddedness, and sucess. *Journal of Management, 33*, 350-377.

Frese, M., Garst, H., & Fay, D. (2007). Making things happen: Reciprocal relationships between work characteristics and personal initiative (PI) in a four-wave longitudinal structural equation model. *Journal of Applied Psychology, 92*, 1084-1102.

Gielnik, M. M., Zacher, H., & Frese, M. (2012). Focus on opportunities as a mediator between business owners' age and venture growth. *Journal of Business Venturing, 27*, 127-142.

Gorgievski, M. J., Bakker, A. B., & Schaufeli, W. B. (2010). Work engagement and workaholism: comparing the self-employed and salaried employees. *The Journal of Positive Psychology, 5*, 83 - 96.

Hackman, J. R., & Oldham, G. R. (1976). Motivation through the design of work: Test of a theory. *Organizational Behavior and Human Performance, 16*, 250-279.

Hackman, J. R., & Oldham, G. R. (1980). *Work redesign*. Reading, MA: Addison-Wesley.

Hakanen, J. J., Bakker, A. B., & Schaufeli, W. B. (2006). Burnout and work engagement among teachers. *Journal of School Psychology, 43*, 495-513.

Higgins, E. T. (1998). Promotion and prevention: Regulatory focus as a motivational principle. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 30, pp. 1-46). New York: Academic Press.

Hobfoll, S. E., Freedy, J., Lane, C., & Geller, P. (1990). Conservation of social resources: Social support resource theory. *Journal of Social and Personal Relationships, 7*, 465-478.

Hobfoll, S. E., & Leiberman, J. R. (1987). Personality and social resources in immediate and continued stress resistance among women. *Journal of Personality and Social Psychology, 52*, 18-26.

Hobfoll, S. E., & Shirom, A. (2001). Conservation of resources theory: Applications to stress and management in the workplace. In R. T. Golembiewski (Ed.), *Handbook of organizational behavior*. New York: Dekker.

Hofmann, D. A. (1997). An overview of the logic and rationale of Hierarchical Linear Models. *Journal of Management, 23*, 723-744.

Hofmann, D. A., Griffin, M. A., & Gavin, M. B. (2000). The application of hierarchical linear modeling to organizational research. In K. J. Klein & S. W. J. Kozlowski (Eds.), *Multilevel theory, research, and methods in organizations* (pp. 467–511). San Francisco, CA: Jossey-Bass.

Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling, 6*(1), 1-55.

Jackson, P. R., Wall, T. D., Martin, R., & Davids, K. (1993). New measures of job control, cognitive demand, and production responsibility. *Journal of Applied Psychology, 78*, 753-762.

Judge, T. A., & Ilies, R. (2004). Affect and job satisfaction: A study of their relationship at work and at home. *Journal of Applied Psychology, 89*, 661-673.

Kahn, W. A. (1990). Psychological conditions of personal engagement and disengagement at work. *Academy of Management Journal, 33*, 692-724.

Karniol, R., & Ross, M. (1996). The motivational impact of temporal focus: Thinking about the future and the past. *Annual review of psychology, 47*, 593-620.

King, L. A. (2001). The health benefits of writing about life goals. *Personality and Social Psychology Bulletin, 27*, 798-807.

Kooij, D., & Van De Voorde, K. (2011). How changes in subjective general health predict future time perspective, and development and generativity motives over the lifespan. *Journal of Occupational and Organizational Psychology, 84*, 228-247.

Korunka, C., Kubicek, B., Schaufeli, W. B., & Hoonakker, P. (2009). Work engagement and burnout: testing the robustness of the job demands-resources model. *The Journal of Positive Psychology, 4*, 243-255.

Lang, F. R., & Carstensen, L. L. (2002). Time counts: Future time perspective, goals, and social relationships. *Psychology and Aging, 17*, 125-139.

LePine, J. A., & Van Dyne, L. (1998). Predicting voice behavior in work groups. *Journal of Applied Psychology, 83*, 853-868.

Lewin, K. (1943). Defining the "Field at a Given Time". *Psychological Review, 50*, 292-310.

Locke, E. A., & Latham, G. P. (1990). *A theory of goal setting and task performance*. Englewood Cliffs, NJ: Prentice Hall.

Morgeson, F. P., & Humphrey, S. E. (2006). The Work Design Questionnaire (WDQ): Developing and validating a comprehensive measure for assessing job design and the nature of work. *Journal of Applied Psychology, 91*, 1321-1339.

Muthén, L. K., & Muthén, B. O. (2007). *Mplus User's Guide*. Los Angeles, CA: Muthén & Muthén.

Oettingen, G., & Mayer, D. (2002). The motivating function of thinking about the future: Expectations versus fantasies. *Journal of Personality and Social Psychology, 83*, 1198-1212.

Ohly, S., Sonnentag, S., Niessen, C., & Zapf, D. (2010). Diary studies in organizational research: An introduction and some practical recommendations. *Journal of Personnel Psychology, 9*, 79-93.

Parker, S., Jimmieson, N. L., & Amiot, C. E. (2010). Self-determination as a moderator of demands and control: Implications for employee strain and engagement. *Journal of Vocational Behavior, 76*, 52-67.

Podsakoff, P. M., MacKenzie, S. B., Lee, J.-Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology, 88*, 879-903.

Preacher, K. J., Curran, P. J., & Bauer, D. J. (2006). Computational tools for probing interactions in multiple linear regression, multilevel modeling, and latent curve analysis. *Journal of Educational and Behavioral Statistics, 31*, 437-448.

Raudenbush, S. W., & Bryk, A. S. (2002). *Hierarchical linear models: Applications and data analysis methods* (2nd ed.). Thousand Oaks, CA: Sage.

Rich, B. L., Lepine, J. A., & Crawford, E. R. (2010). Job engagement: Antecedents and effects on job performance. *The Academy of Management Journal, 53*, 617-635.

Schalk, R., van der Heijden, B., de Lange, A., & van Veldhoven, M. (2011). Long term developments in individual work behaviour: Patterns of stability and change. *Journal of Occupational and Organizational Psychology, 84*, 215-227.

Schalk, R., van Veldhoven, M., de Lange, A. H., De Witte, H., Kraus, K., Roßnagel, C., . . . Zacher, H. (2010). Moving European research on work and ageing forward: Overview and agenda. *European Journal of Work and Organizational Psychology, 19*, 76-101.

Schaufeli, W. B., & Bakker, A. B. (2004). Job demands, job resources, and their relationship with engagement and burnout: A multi-sample study. *Journal of Organizational Behavior, 25*, 293-315.

Schaufeli, W. B., Bakker, A. B., & Salanova, M. (2006). The measurement of work engagement with a short questionnaire: A cross-national study. *Educational and Psychological Measurement, 66*, 701-716.

Schaufeli, W. B., Salanova, M., González-Romá, V., & Bakker, A. B. (2002). The measurement of engagement and burnout: A two sample confirmatory factor analytic approach. *Journal of Happiness Studies, 3*, 71-92.

Scheier, M. F., & Carver, C. S. (1985). Dispositional optimism and physical well-being: The influence of generalized outcome expectancies on health. *Journal of Personality, 55*, 169-210.

Scherbaum, C. A., & Ferreter, J. M. (2009). Estimating statistical power and required sample sizes for organizational research using multilevel modeling. *Organizational Research Methods, 12*, 347-367.

Schmidt, A. M., & DeShon, R. P. (2007). What to do? The effects of discrepancies, incentives, and time on dynamic goal prioritization. *Journal of Applied Psychology, 92*, 928-947.

Schneider, S. (2001). In search of realistic optimism: Meaning, knowledge, and warm fuzziness. *American Psychologist, 56*(3), 250-263.

Schwan, F. (2007). Beschäftigte der öffentlichen Arbeitgeber am 30. Juni 2006 [Employees of public employers, June 30th, 2006]. *Statistisches Bundesamt, Wirtschaft und Statistik*, 1079-1086.

Seijts, G. H. (1998). The importance of future time perspective in theories of work motivation. *Journal of Psychology, 132*, 154-168.

Seligman, M. E., & Csikszentmihalyi, M. (2000). Positive psychology: An introduction. *American Psychologist, 55*, 5-14.

Semmer, N. K. (1982). Stress at work, stress in private life and psychological well-being. In W. Bachmann & I. Udris (Eds.), *Mental load and stress in activity: European approaches* (pp. 42-55). Amsterdam: Elsevier.

Shipp, A. J., Edwards, J. R., & Lambert, L. S. (2009). Conceptualization and measurement of temporal focus: The subjective experience of the past, present, and future. *Organizational Behavior and Human Decision Processes, 110*, 1-22.

Snijders, T. A., & Bosker, R. J. (1993). Standard errors and sample sizes for two-level research. *Journal of Educational Statistics, 18*, 237-259.

Sonnentag, S. (2003). Recovery, work engagement, and proactive behavior: A new look at the interface between nonwork and work. *Journal of Applied Psychology, 88*, 518-528.

Sonnentag, S., Dormann, C., & Demerouti, E. (2010). Not all days are created equal: The concept of state work engagement. In A. B. Bakker & M. P. Leiter (Eds.), *Work engagement: Recent developments in theory and research*. New York, NY: Psychology Press.

Speier, C., & Frese, M. (1997). Generalized self-efficacy as a mediator and moderator between control and complexity at work and personal initiative: A longitudinal field study in East Germany. *Human Performance, 10*, 171-192.

Statistik der Bundesagentur für Arbeit. (2010). Beschäftigungsstatistik, Sozialversicherungspflichtig Beschäftigte nach Wirtschaftszweigen (WZ 2008), Nürnberg, Stichtag 31.12.2010.

Statistisches Bundesamt. (2005). Genesis-Online, Retrieved September, 2011, from https://www-genesis.destatis.de/genesis/online

Steel, P., & König, C. J. (2006). Integrating theories of motivation. *The Academy of Management Review, 31*, 889-913.

Stegmann, S., van Dick, R., Ullrich, J., Egold, N., Wu, T. T. C., Charalambous, J., & Menzel, B. (2010). Der Work Design Questionnaire – Vorstellung und erste Validierung einer deutschen Version. *Zeitschrift für Arbeits- und Organisationspsychologie, 54*, 1-28.

Strauss, K., Griffin, M. A., & Parker, S. K. (in press). Future work selves: How hoped for identities motivate proactive career behaviors. *Journal of Applied Psychology*.

Terry, D. J., & Jimmieson, N. L. (1999). Work control and employee well-being: A decade review. In C. L. Cooper & I. T. Robertson (Eds.), *International review of industrial and organizational psychology* (pp. 96-148). Chichester, UK: Wiley.

Xanthopoulou, D., Bakker, A. B., Demerouti, E., & Schaufeli, W. B. (2009). Work engagement and financial returns: A diary study on the role of job and personal resources. *Journal of Occupational and Organizational Psychology, 82*, 183-200.

Zacher, H., & de Lange, A. H. (2011). Relations between chronic regulatory focus and future time perspective: Results of a cross-lagged structural equation model. *Personality and Individual Differences, 50*, 1255-1260.

Zacher, H., & Frese, M. (2009). Remaining time and opportunities at work: Relationships between age, work characteristics, and occupational future time perspective. *Psychology and Aging, 24*, 487-493.

Zacher, H., & Frese, M. (2011). Maintaining a focus on opportunities at work: The interplay between age, job complexity, and the use of selection, optimization, and compensation strategies. *Journal of Organizational Behavior, 32*, 291-318.

Zacher, H., Heusner, S., Schmitz, M., Zwierzanska, M. M., & Frese, M. (2010). Focus on opportunities as a mediator of the relationships between age, job complexity, and work performance. *Journal of Vocational Behavior, 76*, 374-386.

Zapf, D. (1993). Stress-oriented job analysis of computerized office work. *The European Work and Organizational Psychologist, 3*, 85-100.

Zimbardo, P. G., & Boyd, J. N. (1999). Putting time in perspective: A valid, reliable individual-differences metric. *Journal of Personality and Social Psychology, 77*, 1271-1288.

STUDY 2

Extending the Affective Shift Model of Work Engagement: Self-Efficacy as an Antecedent of Effective Affect Regulation

3.1 Abstract

This experience sampling study examined self-efficacy regarding a person's work role as an antecedent of the affective dynamics underlying work engagement. A sample of 111 employees (52.3% men) completed online questionnaires twice a day over ten working days. Results showed that self-efficacy acted as a cross-level moderator on the lagged relationship between negative affect and work engagement. Negative affect was positively related to work engagement for employees high in self-efficacy. Moreover, the relationship between self-efficacy and work engagement was mediated by positive affect and an increase in positive affect during the day. These results extend the affective shift model of work engagement by showing that self-efficacy is an important personal resource that helps employees to effectively regulate affective states at work.

3.2 Introduction

Work engagement is a positive work-related state that can be described by three facets regarding people's work related experience (Bakker, Albrecht, & Leiter, 2011; Schaufeli, Salanova, González-Romá, & Bakker, 2002): *Vigor* means that people perceive their work as stimulating, invest high levels of energy, and show persistence in the face of difficulties. *Dedication* is characterized by inspiration, pride and meaningfulness of one's work. *Absorption* is a sense of being fully concentrated and happily engrossed in one's work (Schaufeli, et al., 2002). Work engagement is considered a motivational state as its three facets reflect the main psychological components of motivation (cf. Llorens, Schaufeli, Bakker, & Salanova, 2007; Salanova & Schaufeli, 2008). The growing literature on work engagement has shown that it is related to positive outcomes such as proactive work behavior and learning behavior (Sonnentag, 2003), task performance (Bakker & Bal, 2010; Rich, Lepine, & Crawford, 2010), and organizational commitment (Schaufeli & Bakker, 2004). In line with recent research, we conceptualize work engagement as a temporary motivational state that fluctuates within individuals over time (Kühnel, Sonnentag, & Bledow, 2011; Sonnentag, Dormann, & Demerouti, 2010).

Whereas there is a close link between the presence of positive affect and work engagement, the relationship between negative affect and work engagement is not well understood. [2] Negative affect as an antecedent of motivated work behavior in general and work engagement in particular has received only sparse attention. The available evidence suggests that this relationship is complex and that negative affect can have positive or negative consequences for work engagement. According to the affective shift model of work engagement (Bledow, Schmitt, Frese, & Kühnel, 2011), there is a positive lagged relationship between negative affect and work engagement if negative affect is followed by a shift to positive affect. However, research has not yet examined factors other than affective dispositions that enable this affective shift process.

This article builds on and extends the affective shift model of work engagement by introducing self-efficacy as a personal resource that facilitates a shift from negative to positive affect. We posit that self-efficacy influences work engagement through two

---

[2] The umbrella term affect comprises both discrete emotions and mood states. Whereas discrete emotions are more short-term oriented and strongly related to self-evident causal objectives or events (Frijda, 1993; Weiss & Cropanzano, 1996), mood states are generally longer lasting, unfocused or result from mildly positive or negative events (Morris & Schnurr, 1989).

intertwined mechanisms that relate to the dynamics of positive and negative affect. First, we hypothesize that self-efficacy moderates the lagged effect of negative affect on work engagement. We expect that negative affect has motivating potential that only unfolds if people have high self-efficacy beliefs. Second, we argue that self-efficacy facilitates the experience of positive affect which is a necessary condition for high work engagement. Self-efficacy enables people to maintain high levels of positive affect in the course of a work day and to up-regulate positive affect after episodes of low positive affect. The present article thus contributes to the literature by shedding light on the dynamics of affect underlying self-regulation at work. The conceptual model is depicted in Figure 3.1.
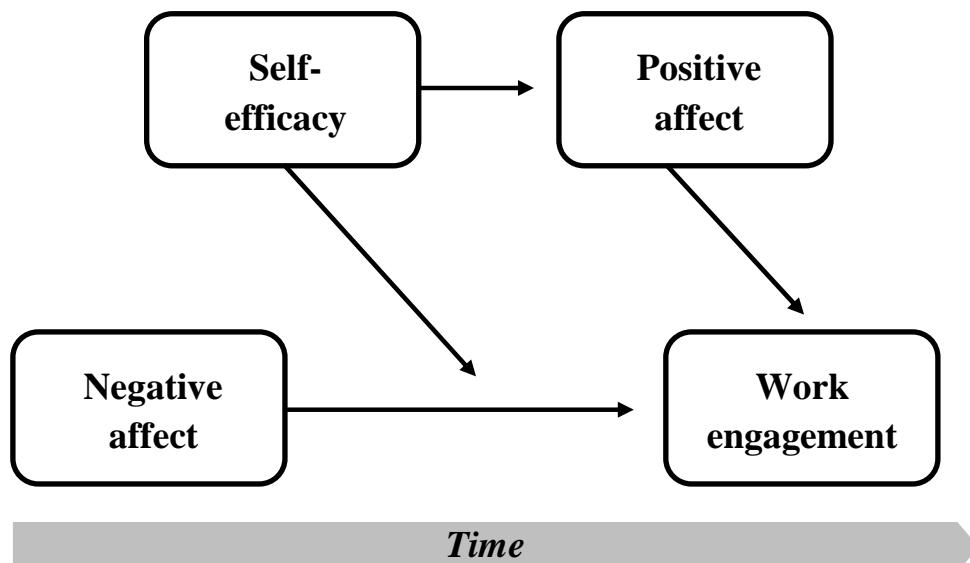

Figure 3.1

Conceptual model

Negative affective states and work engagement

People are inevitably confronted with various negative affective states at work such as frustration, worry, or fear (Miner, Glomb, & Hulin, 2005). Especially anger is an often experienced negative affective state at work (Scherer, Wranik, Sangsue, Tran,

& Scherer, 2004). Empirical evidence indicates that the consequences of negative affect for motivation and behavior are stronger and more persistent than the consequences of positive affect (negativity bias; Baumeister, Bratslavsky, Finkenhauer, & Vohs, 2001; Judge & Ilies, 2004; To, Fisher, Ashkanasy, & Rowe, 2011).

Regarding the relationship between negative affect and work motivation, previous research revealed competing lines of argument (cf. Bindl & Parker, 2010; George, 2011). On the one hand, negative affect signals a threat of personal goals and leads to avoidance behavior and disengagement (Elliot, 2006). Further, negative affect may narrow an individual's attentional scope and behavioral repertoire by focusing on the source of negative affect and thereby leading the attentional focus away from the work task. This makes it more difficult to identify possible solutions in order to solve work-related problems (Beal, Weiss, Barros, & MacDermid, 2005). Hence, due to the "tightening" of mental processes (Derryberry & Tucker, 1994; Fredrickson, Tugade, Waugh, & Larkin, 2005) negative affect is inconsistent with being absorbed in an ongoing activity, feeling vigorous, and being dedicated to a task at any moment in time.

On the other hand, negative affect may elicit a cognitive mode in which people are more sensitive to inconsistencies, pay close attention to details, and engage in more effortful information processing (George & Zhou, 2002; Schwarz & Bless, 1991). Negative affect signals that the current situation is troublesome and it thus prompts people to focus on the problematic state and improve the situation by taking action (George, 2011; George & Zhou, 2002; Schwarz & Clore, 2003). According to a control-theoretical approach, negative affect signals a discrepancy between the current state and the desired state (Carver, 2006; Carver & Scheier, 1990; Pekrun & Frese, 1992). Specifically, Carver's (2006) velocity argument posits that people compare their current rate of goal progress to a standard and in case the rate of progress falls below the standard, negative affect arises. Arising negative affect functions as a signal to adjust the rate of progress such that people direct attentional resources to the situation at hand and increase their level of effort (Carver & Scheier, 1990; Fay & Sonnentag, 2002; George & Zhou, 2002). For instance, an employee who is using a broken maschine might experience negative affect which signals that the situation is dissatisfying and troublesome. As people are motivated to reduce discrepancies, the employee may respond to the experience of negative affect by taking charge and making sure that the machine is repaired (George, 2011; Grant & Ashford, 2008). One way of reducing

discrepancy is by increasing one's engagement and by influencing the situation through one's actions and thereby regaining control over the situation (e.g., Fay & Sonnentag, 2002; Pekrun & Frese, 1992).

The competing lines of reasoning regarding the relationship between negative affect and work engagement can be reconciled if time is taken into account. Although negative affective states such as being annoyed, frustrated or worried are inconsistent with high levels of work engagement at any moment in time, negative affect can have positive delayed effects on work engagement (Bledow, et al., 2011). Research on affect regulation has shown that down-regulation of negative affect is a key intermediary process between the initial negative affective state and subsequent positive consequences (Bledow, Rosing, & Frese, in press; Koole & Jostmann, 2004). Down-regulation of negative affect is related to the activation of cognitive processes that facilitate the enactment of change-oriented intentions. The cognitive processes that are mobilized are characterized by a global mode of information processing and suppress unpleasant and incongruent information which allows people to become engaged in an activity. This process occurs in an implicit manner largely outside of a person's conscious awareness (Baumann, Kaschel, & Kuhl, 2007; Koole & Jostmann, 2004). Thus, if a person experiences negative affect that can be subsequently down-regulated, the person can enact intentions and increase the level of engagement.

The affective shift model further posits that high work engagement requires the presence of positive affect in addition to the down-regulation of negative affect (Bledow, et al., 2011). Down-regulation of negative affect provides the cognitive precondition to show high engagement, however, it is the activation of positive affect that is directly linked to the initiation of intentions, and to the emergence of high work engagement (Bledow, et al., in press; Koole & Jostmann, 2004; Kuhl, 2000). If people experience a decrease in negative affect without a simlutanous increase in positive affect, lower levels of work engagement are to be expected. The critical question this study addresses is what facilitates the affective shift process and enables some people to regulate affective states more effectively than others with respect to work engagement. In the next section, we posit that individual differences in self-efficacy play a critical role in the affective shift process.

Self-efficacy and the affective shift process

Self-efficacy beliefs are a prerequisite for initiating goal-directed behavior in difficult situations and people are more likely to succeed if they are confident that they can effectively deal with a situation and change the status quo (Bandura, 1997). In the present study, we examine self-efficacy regarding a person's work role, that is a person's belief or expectation to succeed in activities related to work (Bandura, 1997; Spreitzer, 1995). Individual differences in self-efficacy can develop over time but are relatively stable as compared to daily fluctuations in affect or work engagement (Luthans, Avolio, Avey, & Norman, 2007; Spreitzer, 1995). Social cognitive theory (Bandura, 1991, 1997) states that self-efficacy functions as a proximal determinant of human motivation. This argument is in line with previous research on the role of self-efficacy for work engagement (e.g., Korunka, Kubicek, Schaufeli, & Hoonakker, 2009; Simbula, Guglielmi, & Schaufeli, 2011). For instance, in a 1.5-year follow-up study Xanthopoulou, Bakker, Demerouti, and Schaufeli (2009) found that self-efficacy is positively related to work engagement and contributes to variability in work engagement over and above the role of job resources. These findings suggest that it is important to feel competent and confident in order to experience dedication, absorption and to show high levels of energy (Llorens, et al., 2007; Spreitzer, 1995).

We extend previous empirical research and view self-efficacy as an important personal resource that enables effective affect regulation at work. More specifically, we argue that self-efficacy facilitates an affective shift and thereby high work engagement (Bledow, et al., 2011). Self-efficacy influences work engagement through two intertwined mechanisms related to the regulation of positive and negative affect: First, self-efficacy should enable people to transform the experience of negative affect to high work engagement as people can more easily down-regulate negative affect. We hypothesize that self-efficacy moderates the lagged effect of negative affect on work engagement such that people high in self-efficacy show high work engagement after the experience of negative affect. Second, self-efficacy enables people to up-regulate positive affect during a work day and to enter or maintain an approach-oriented state of mind which is a necessary condition for high work engagement.

Regarding the relationship between negative affect and work engagement, we argue that people high in self-efficacy can more easily enact intentions to change a situation and to increase the level of effort after the experience of negative affect as

compared to people low in self-efficacy. High self-efficacy implies that people trust in their abilities and internally attribute success. The better people evaluate their ability to solve related tasks and overcome obstacles, the easier they can deal with negative affective states (Bandura, 1997; Hobfoll & Leiberman, 1987; Jerusalem & Schwarzer, 1992). People high in self-efficacy tend to perceive negative situations as challenging opportunities and have positive expectations regarding goal achievement which in turn elicits positive attitudes and motivation (Salanova, Llorens, & Schaufeli, 2011; Skinner & Brewer, 2002). Self-efficacy counteracts the perception that goal achievement is threatened and enables people to have an overview of potential courses of actions that can serve as a remedy for the problematic situation.

In contrast, people who perceive low self-efficacy should not increase their engagement after experiencing negative affect. If one does not trust in one's ability, investing effort and increasing engagement will seem futile (Korunka, et al., 2009; Xanthopoulou, et al., 2009). Decreasing one's engagement and conserving energy resources may appear as the more adaptive coping strategy. The example of an employee who experiences negative affect when working with a broken machine may help to illustrate the proposed effect of self-efficacy. In the case of high self-efficacy, the experience of negative affect may focus the employees' attention on the problematic situation and signal the necessity to take action. The perception of self-efficacy in turn informs the person that the situation can be changed and the person can achieve positive outcomes. As a consequence, employees may show high engagement by fixing the machine or by making sure the machine is being fixed. In contrast, an employee who perceives low self-efficacy is unlikely to invest energy and show engagement to improve the situation and will remain passive.

Hypothesis 1: Self-efficacy moderates the lagged relationship between negative affect and work engagement. For people high in self-efficacy negative affect has a positive lagged effect on work engagement.

According to our theoretical model, the second mechanism through which self-efficacy is related to work engagement is through the regulation of positive affect. We expect that self-efficacy is associated with higher levels of positive affect and that it enables people to up-regulate positive affect and enter an approach-oriented mode when positive affect is low. As work engagement implies the presence of positive affect, up-regulation of positive affect is necessary if positive affect was previously low. Up-

regulation of positive affect activates cognition and behavior so that people can initiate an intended course of action and show high engagement (Kuhl & Kazén, 1999). Up-regulation of positive affect is especially relevant after situations in which negative affect was experienced. The experience of negative affect inhibits and decreases positive affect and a subsequent increase in positive affect is thus critical in order to implement and enact behavioral intentions (Bledow, et al., in press).

Self-efficacy is associated with a higher baseline level of positive affect such that people who feel capable of mastering work tasks and future challenges tend to experience more positive affect (Salanova, et al., 2011; Skinner & Brewer, 2002). As a consequence of higher positive affect, they should also experience more work engagement (cf. Bandura, 1997; Sonnentag & Grant, in press). Although a person with high self-efficacy will experience higher levels of positive affect at work, there will also be episodes of low positive affect. For instance, after a negative event such as a failure or a conflict at work, negative affect will arise and dampen the level of positive affect the person experiences. We argue that feelings of self-efficacy enable the person to restore positive affect subsequently and show high engagement. In constrast, a person with low self-efficacy will linger for a prolonged period of time in a state of low positive affect.

Self-efficacy entails that people perceive control to successfully deal with the demands of their work role. People high in self-efficacy experienced that they can successfully deal with work-related situations, that they can overcome obstacles and change the status quo. This expectation of success and the attribution of trust and self-confidence tend to generalize (Bandura, 1997; Jerusalem & Schwarzer, 1992). As a consequence, people are more likely to up-regulate positive affect and thereby switch to an approach- and action-oriented mindset in work-related situations of low positive affect which is crucial for work engagement. It is important to note that this process should be facilitated by self-efficacy beliefs indepedent of the person's actual knowledge, skills and abilities.

> *Hypothesis 2:* The relationship between self-efficacy and work engagement is mediated by positive affect. Self-efficacy is associated with (a) a higher level of positive affect and (b) an increase of positive affect during the day; both processes facilitate work engagement.

3.3 Method

To test the hypotheses, we used an experience sampling study design, asking participants to report their affective states and work engagement two times a day over a period of ten working days. Participants were instructed to answer the daily online questionnaires at noon between 11 a.m. and 1 p.m. and in the afternoon just before leaving the workplace between 3 p.m. and 6 p.m.. This resulted in a total of 20 possible daily observations for each participant. One week before starting with the daily questionnaires, participants completed a general online questionnaire to measure self-efficacy, demographic and control variables. By using an experience sampling study design we were capable of detecting short-term fluctuations that are close to people's actual experiences and are less likely to be biased by retrospective recall (Bolger, Davis, & Rafaeli, 2003; Ohly, Sonnentag, Niessen, & Zapf, 2010). At the same time, this approach allowed us to examine the influence of self-efficacy as a between-person characteristic on daily processes.

Participants and procedure

The data used in this study came from a sample of 111 full-time employees working in different branches and organizations throughout Germany. The total sample included 53 (47.7%) women and 58 (52.3%) men. Mean age was 39.0 years ($SD = 10.0$ years), ranging from 18 to 61 years. On average, participants had 17.5 years of professional experience ($SD = 10.2$ years), and 11.1 years of professional experience in their current organizations ($SD = 9.1$ years). In terms of educational background, 30 participants (27.0%) had a middle school degree, 35 (31.5%) had a high school degree, 38 (34.2%) had a university degree and six (5.4%) participants held a doctorate degree. Two participants (1.8%) did not provide information on their educational level.

As a first step of data collection, we contacted 280 employees via an e-mail letter that contained information about the study. For inclusion in this study, employees had to meet two criteria: First, they needed constant access to the internet during work. Second, they were required to hold full-time positions in order to be able to respond to the online questionnaires both at noon and in the afternoon. One hundred fourty-seven individuals agreed to participate. To maintain anonymity, participants entered a code each time they answered the online questionnaires. One hundred twenty-five participants completed the initial general questionnaire. One hundred twenty-two of

these individuals then also proceeded with the daily online questionnaires (response rate: 83%). In total, 1792 daily questionnaires were completed during the ten days measurement period. We checked whether participants completed the questionnaires in adequate time frames corresponding to our instructions (11 a.m.-1 p.m. and 3 p.m.-6 p.m.), and excluded questionnaires that were answered at wrong times. On average, participants completed the daily online questionnaires 13.1 times ($SD = 4.0$).

To test the hypotheses, observations could only be included if participants had completed the experience sampling questionnaire both at noon and in the afternoon. Because noon and afternoon observations of each day had to be combined we had to exclude ten participants from the analyses as they had not provided pairs of noon and afternoon observations. This resulted in a final sample size of 111 participants and 600 usable pairs of daily questionnaires to test our hypotheses.

Measures

General online questionnaire measures

Demographic variables. Gender (1 = male, 2 = female), age, and educational level (1 = no degree, 2 = general education degree, 3= middle school degree, 4 = high school degree, 5 = university degree, 6 = doctorate degree), and organizational tenure were assessed with one item each. However, these demographic variables were unrelated to daily work engagement and were thus not included in the analyses.

Trait positive and negative affect were assessed as control variables by using MacKinnon et al.'s (1999) short version of the positive and negative affect scales (PANAS) (Watson, Clark, & Tellegen, 1988). Participants rated five negative affect adjectives (afraid, upset, nervous, scared and distressed) and five positive affect adjectives (inspired, alert, excited, enthusiastic, determined) according to the extent to which each describes the way participants feel in general. All items were scored on a 5-point Likert scale ranging from 1 *(not at all)* to 5 *(extremely)*. Cronbach's alpha was .82 for the trait negative affect scale and .79 for the trait positive affect scale.

Self-efficacy regarding a person's work role was measured by three items of Spreitzer's empowerment scale (Spreitzer, 1995). The items were: "I am confident about my ability to do my job", "I am self-assured about my capabilities to perform my work activities", and "I have mastered the skills necessary for my job". All items were

scored on a 5-point Likert scale ranging from 1 *(not at all)* to 5 *(extremely)*. Cronbach's Alpha of the scale was .85.

Daily online questionnaire measures

The daily online questionnaires were completed twice each day over ten working days. In order to maintain participants' compliance over the entire study period, we used short and time-saving measures.

Negative affect. We used Kessler and Staudinger's (2009) affect list to measure negative affect during the last hours before filling out the questionnaire at noon and in the afternoon. The items were: angered, nervous, worried, and anxious. The items were scored on a 5-point Likert scale ranging from 1 *(not at all)* to 5 *(extremely)*. Cronbach's Alpha was .82.

Positive affect was assessed with five items by Kessler and Staudinger (2009). Participants indicated the degree to which five affect items described their experience during the last hours just before filling out the questionnaire. Items scored on a 5-point Likert scale ranging from 1 *(not at all)* to 5 *(extremely)*. The items were: elated, active, delighted, enthusiastic, and proud. Cronbach's Alpha for this scale was .89.

Work engagement was assessed with five items adapted to the daily level from Schaufeli et al.'s (2002) nine-item scale of the Utrecht Work Engagement Scale (UWES). Participants were asked to refer to the level of work engagement they had experienced in the last hours before completing the respective online questionnaire. Items used were "At my work, I felt bursting with energy", "At my job, I felt strong and vigorous" (vigor), "I was enthusiastic about my job", "My job inspired me" (dedication), and "I was immersed in my work" (absorption). Participants gave their answers on a scale ranging from 1 *(not true at all)* to 7 *(very true)*. Coefficient Alpha for the work engagement scale was .94.

Analyses

Apart from testing Hypothesis 2a, we used Hierarchical Linear Modeling (HLM 6.08) which allowed us to account for the nested data structure and to simultaneously model within- and between-person relations among the variables (Raudenbush, Bryk, & Congdon, 2004). Prior to testing the hypotheses, we investigated whether systematic within- and between-person variance existed in the dependent variable and in the mediator by estimating a null model with random effects. Analyses indicated that 59.7%

of work engagement in the afternoon was within-person variance (40.3% was between-person variance). Moreover, there was substantial within-person variance in positive affect at noon (52.4%; 47.6% was between-person variance) and in positive affect in the afternoon (48.6%; 51.4% was between-person variance). This suggests that multilevel analysis is appropriate for analyzing the data (Hofmann, Griffin, & Gavin, 2000) .

For Hypothesis 1, we examined whether self-efficacy functions as a cross-level moderator of the relationship between negative affect participants had experienced since the beginning of the work day (reported for the time period before 11 a.m. – 1 p.m.) and work engagement in the last hours before completing the daily questionnaire in the afternoon (reported for the time period before 3 p.m. – 6 p.m.). Repeated measures of within-person level variables were person-mean centered so that relations among negative affect and work engagement were unconfounded by between-person variance (Enders & Tofighi, 2007).

For Hypothesis 2a, we examined whether between-person differences in self-efficacy were significantly related to the mean of work engagement across all noon and afternoon observations and whether this relationship was mediated by the average level of positive affect across all noon and afternoon observations ($N = 111$). We used multiple linear regression analysis because all variables resided at the between-person level only. For Hypothesis 2b, we examined whether the relationship between self-efficacy and work engagement was mediated by the up-regulation of positive affect from noon to afternoon. Predictors at the within-person level were grand-mean centered in these analyses (Enders & Tofighi, 2007).

3.4 Results

Descriptive statistics and inter-correlations

Table 3.1 shows descriptive statistics and inter-correlations of the study variables. The correlations below the diagonal represent between-person relationships ($N = 111$). The correlations above the diagonal represent within-person relationships for state variables measured at noon and in the afternoon. These relationships were estimated by HLM models with single within-person level predictors and no between-person level predictors ($N = 600$). We standardized all variables prior to calculating the coefficients in order to obtain standardized coefficients on the within-person level. Table 3.1 shows that people high in self-efficacy reported higher levels of positive

affect and work engagement across occasions (coefficients range from .41 to .47, $p <$ .01) as well as lower levels of negative affect (coefficients range from -.37 to -.41, $p <$ .01).

Table 3.1

Means (M), standard deviations (SD), and inter-correlations of study variables

Variable	*M*	*SD*	1	2	3	4	5	6	7	8	9
Trait measures											
1. Trait positive affect	3.49	0.55	-								
2. Trait negative affect	1.84	0.63	-.51**	-							
3. Self-efficacy	4.28	0.59	.36**	-.47**	-						
State measures											
4. Negative affect (noon)	1.61	0.72	-.30**	.63**	-.37**	-	.37**	-.33**	-.18**	-.26**	-.15**
5. Negative affect (afternoon)	1.54	0.63	-.40**	.67**	-.41**	.87**	-	-.16**	-.31**	-.18**	-.31**
6. Positive affect (noon)	2.96	0.76	.42**	-.33**	.41**	-.42**	-.36**	-	.31**	.75**	.45**
7. Positive affect (afternoon)	2.96	0.76	.45**	-.33**	.42**	-.31**	-.34**	.84**	-	.24**	.77**
8. Work engagement (noon)	4.25	1.28	.39**	-.34**	.44**	-.36**	-.34**	.82**	.75**	-	.41**
9. Work engagement (afternoon)	4.21	1.30	.38**	-.34**	.47**	-.33**	-.37**	.75**	.81**	.91**	-

Note. The correlations below the diagonal represent between-person relationships (variables 4 through 9 were aggregated across occasions) ($N = 111$). The correlations above the diagonal represent within-person relationships and were estimated from HLM models with single within-person level predictors and no between-person level predictors ($N = 600$). We standardized all variables prior to calculating the coefficients in order to obtain standardized coefficients on the within-person level. Means and standard deviations were calculated for the aggregated scores. * $p < .05$. ** $p < .01$. (two-tailed).

Tests of hypotheses

Hypothesis 1 states that self-efficacy moderates the lagged within-person relationship between negative affect at noon and work engagement in the afternoon. We included self-efficacy as a predictor of the within-person relationship between negative affect and work engagement. Table 3.2 (Model 3) shows the results of the cross-level moderation analysis based on a sample of 111 participants and 600 pairs of

observations. Self-efficacy significantly predicted the slope of the within-person relationship between negative affect at noon and work engagement in the afternoon (γ = 0.17, t = 2.42, p < .05). This interaction is plotted in Figure 3.2. For people high in self-efficacy, negative affect at noon was positively related to work engagement in the afternoon. For people low in self-efficacy, negative affect at noon was unrelated to work engagement in the afternoon,

In addition, we conducted a simple slope test to further examine the cross-level moderation (Preacher, Curran, & Bauer, 2006). Results show that the relationship between negative affect at noon and work engagement in the afternoon was significant for employees with high self-efficacy (i.e., one *SD* above the mean) (γ = 0.219, t = 2.90, p < .01), but non-significant for employees with low (i.e., one *SD* below the mean) self-efficacy (γ = 0.002, t = 0.39, *ns.*). Next, improvement of model fit for Model 2 and Model 3 was examined by calculating the difference between the likelihood ratios which is based on a chi-square distribution and compares the deviance (-2*log likelihood) of the respective models (Table 3.2). Model 2, which includes all control variables and main effects, showed a better model fit than the null-model (Model 1) (Δ -2*log = 452.77, Δ df = 8, p < .01). Model 3, which additionally includes the interaction term, showed a significant better model fit than Model 2 (Δ -2*log = 5.90, Δ df = 1, p < .05). Altogether, these findings support Hypothesis 1.

We conducted additional analyses to examine if a decrease in negative affect from noon to afternoon was related to work engagement. We calculated a difference score that reflects raw score change in negative affect by subtracting negative affect at noon from negative affect in the afternoon. We then regressed work engagement in the afternoon on this difference score. Results showed that a decrease in negative affect between noon and afternoon was related to work engagement in the afternoon when controlling for work engagement at noon (γ = - 0.26, t = -4.22, p < .01).

Table 3.2

Results of cross-level moderation of self-efficacy (Hypothesis 1)

Variable	Work engagement (afternoon)								
	Model 1			Model 2			Model 3		
	γ	SE	t	γ	SE	t	γ	SE	t
Intercept	4.22	0.10	41.50**	4.24	0.09	48.71**	4.24	0.09	48.71**
Trait measures									
Trait negative affect				-0.11	0.17	-0.64	-0.11	0.17	-0.64
Trait positive affect				0.41	0.19	2.20*	0.41	0.19	2.20*
Self-efficacy				0.66	0.17	3.86**	0.66	0.17	3.86**
State measures									
Negative affect (noon)				0.09	0.05	1.64	0.11	0.06	2.06*
Negative affect (afternoon)				-0.12	0.06	-1.90	-0.10	0.06	-1.61
Positive affect (noon)				0.07	0.06	1.19	0.07	0.06	1.17
Positive affect (afternoon)				0.97	0.05	19.35**	0.97	0.05	19.50**
Work engagement (noon)				0.27	0.04	6.62**	0.27	0.04	6.65**
Cross-level interaction									
Negative affect (noon) x Self-efficacy							0.17	0.07	2.44*
Within-person intercept variance		0.680			0.289			0.286	
Between-person intercept variance		0.984			0.765			0.766	
-2*log (lh)		1701.99			1249.211			1243.305	
Δ -2*log					452.77**			5.90*	
Δ df					8			1	

Note. γ = unstandardized HLM regression coefficient; *SE* = standard error; *N* = 600 observations nested within 111 participants. Within-person level variables were person mean-centered, and between-person level variables were grand-mean centered. log (lh) = likelihood ratio. *$p < .05$. **$p < .01$. (two-tailed).
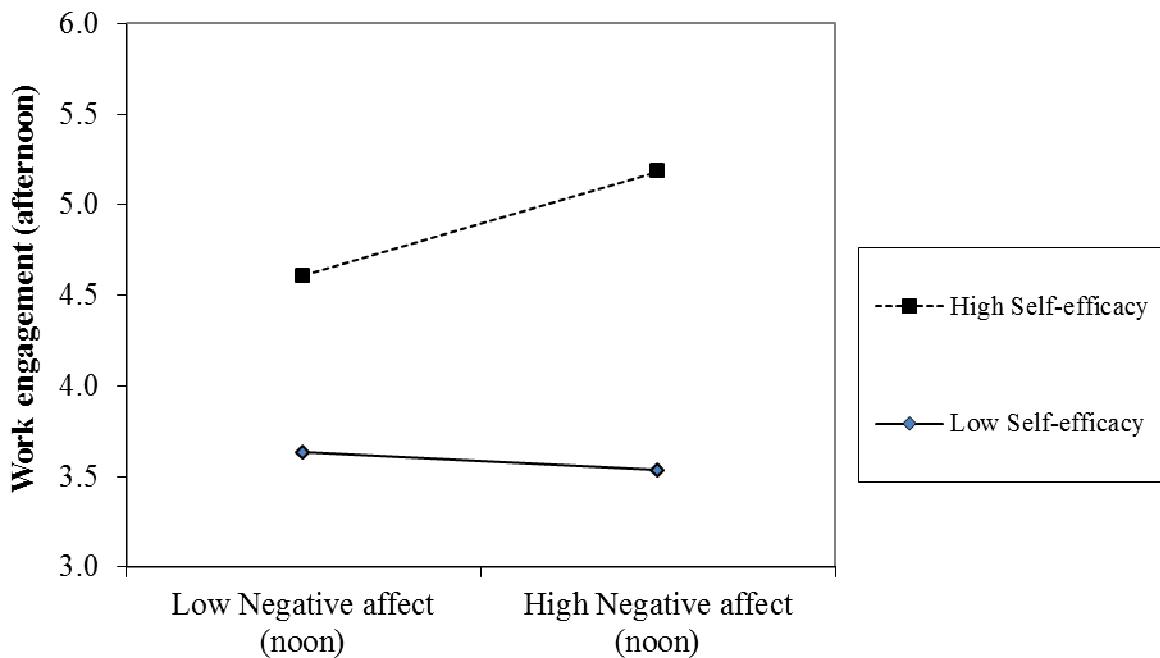
Figure 3.2

Self-efficacy as a moderator of the relationship between negative affect at noon and work engagement in the afternoon

Hypothesis 2 states that the relationship between self-efficacy and work engagement is mediated (a) by the level of positive affect and (b) by an increase in positive affect from noon to afternoon. Table 3.1 shows that the between-person correlations between self-efficacy, positive affect, and work engagement were positive. The preconditions to test for mediation were thus met (Baron & Kenny, 1986; Frazier, Tix, & Barron, 2004). To test Hypothesis 2a, we predicted the average level of work engagement across all noon and afternoon observations with self-efficacy ($N = 111$). In a second step, the average level of positive affect across all noon and afternoon observations was entered as a mediator in the regression equation. In support for mediation, the regression coefficient for self-efficacy declined from $b = .63$ ($\beta = .35$; $t = 3.72$; $p < .01$) to $b = .21$ ($\beta = .12$; $t = 1.86$) and was no longer significant when positive affect was included. Results thus supported the hypothesis that people with high as compared to low self-efficacy show higher work engagement because they experience higher levels of positive affect.

To test Hypotheses 2b, we first tested whether self-efficacy was related to an increase in positive affect during the day. Change in positive affect from noon to

afternoon was examined by predicting positive affect in the afternoon with self-efficacy while controlling for positive affect at noon (see Table 3.3). As positive affect at noon was controlled for, the residual variance in positive affect in the afternoon reflects change in positive affect. Results show that self-efficacy was positively related to change in positive affect, that is, self-efficacy predicted an increase in positive affect from noon to afternoon ($\gamma = 0.18$, $t = 2.69$, $p < .01$).

We next predicted work enagement in the afternoon with self-efficacy as independent variable and change in positive affect as the mediator (i.e. afternoon positive affect while controlling for noon positive affect). Results show that the residual variance in positive affect that reflects change in positive affect was positively related to work engagement in the afternoon ($\gamma = 0.95$, $t = 20.82$, $p < .01$). As can be seen in Table 3.3, the regression coefficient for self-efficacy was non-significant ($\gamma = 0.15$, $t = 1.82$, *ns.*) if positive affect was included in the model. This supports Hypothesis 2b, which states that self efficacy is related to work engagement because it factiliates an increase in positive affect after situations in which positive affect was low. [3]

---

[3] In all analyses, we controlled for trait positive and negative affect on the between-person level. However, the results did not differ when we conducted the analyses without the control variables included (Becker, 2005). For Hypothesis 1, state variables were person-mean centered which ensures that the relations shown in Table 3.2 are independent of any differences between participants in trait affect (Enders & Tofighi, 2007). For Hypothesis 2b, state varables were grand-mean centered. The results shown in Table 3.3 provide evidence that self efficacy predicted the change in positive affect over and above the influence of trait affect. Omitting the control variables did not change the results.

Table 3.3

Results of mediation analysis (Hypothesis 2b)

Variable	Positive affect (afternoon)			Work engagement (afternoon)		
	γ	SE	t	γ	SE	t
Intercept	2.97	0.03	87.46**	4.20	0.04	100.36**
Trait measures						
Trait negative affect	0.09	0.07	1.33	-0.05	0.09	-0.57
Trait positive affect	0.19	0.07	2.59*	-0.12	0.09	-1.33
Self-efficacy	0.18	0.07	2.69**	0.15	0.08	1.82
State measures						
Negative affect (noon)	0.08	0.05	1.73	0.10	0.05	1.94
Negative affect (afternoon)	-0.29	0.05	-5.88**	-0.13	0.06	2.19*
Positive affect (noon)	0.42	0.04	11.36**	-0.06	0.06	-1.23
Positive affect (afternoon)				0.95	0.05	20.82**
Work engagement (noon)				0.39	0.04	11.50**

Note. γ = unstandardized HLM regression coefficient; *SE* = standard error; *N* = 600 observations nested within 111 participants. Within-person level variables and between-person level variables were grand-mean centered. *p < .05. **p < .01. (two-tailed).

3.5 Discussion

The aim of this article was to further develop the affective shift model of work engagement by including self-efficacy regarding a person's work role as a facilitator of the dynamics of affect related to high work engagement. Results provided support for the hypothesis that negative affect has motivating potential and can result in high work engagement if self-efficacy is high. Hence, people who evaluate their ability to satisfy demands related to their work role as high and judge their behavior as effective are more likely to display work engagement after negative affective situations. Further, results provided evidence that the motivating potential of negative affect unfolds only after a time lag during which people are able to down-regulate negative affective states. Moreover, this study shed light on the mediating role of positive affect for the relationship between self-efficacy and work engagement. People high in self-efficacy

reported high levels of positive affect and an increase of positive affect after positive affect was temporarily reduced. Thus, a key underlying mechanism of the motivational benefits of self-efficacy is the up-regulation of positive affect, a mechanism that is of particular importance after situations in which negative affect was experience (Bledow, et al., 2011).

In sum, the current study extends the affective shift model of work engagement (Bledow, et al., 2011) by providing evidence that self-efficacy is a personal resource in the affective shift process and by advancing the understanding of the underlying affective mechanisms. The extended model is based on theories of self-regulation (Baumann, et al., 2007; Bledow, et al., 2011; Kuhl, 2000) and the literature on self-efficacy as an important resource in the regulation of motivation (Bandura, 1997; Jerusalem & Schwarzer, 1992; Spreitzer, 1995). The study adds to the literature by providing a dynamic account of work motivation. Not only affective states matter for motivation, but changes in affect and the dynamic interplay of positive and negative affect (Carver & Scheier, 1990).

The present study also contributes to the literature on self-efficacy. Self-efficacy is defined as the subjective assessment and evaluation of a person's abilities and knowledge rather than a person's objective performance abilities and skills (Bandura, 1997; Spreitzer, 1995). However, we argued that measures of self-efficacy do not only assess people's beliefs about their competencies but actual self-regulatory abilities (cf. Kuhl, 2001). The present findings support this proposition because they show that self-efficacy is related to the ability to regulate affect effectively. The role of self-efficacy in effectively regulating positive and negative affect in the work context has been neglected by previous research so far. Thus, this study adds by helping to explain previous findings regarding the positive relationship between self-efficacy and work engagement which have not specified the underlying affect-regulatory mechanisms (e.g., Korunka, et al., 2009; Xanthopoulou, et al., 2009).

Nevertheless, it can be argued that when there is a lack of actual abilities and skills, it may be difficult for a person to successfully deal with negative affective situations, because the engagement the person invests in work-related tasks does not yield positive outcomes. Although the person perceives high self-efficacy and is confident in being able to change the status quo, the person will fail to succeed due to a lack of actual knowledge, abilities and skills, which in turn may have long-term

negative consequences in terms of motivation and performance (Frese & Fay, 2001). Hence, for effective performance the ability to regulate affect needs to be complemented by task-specific knowledge and skills.

Limitations and future research

This study was solely based on self-report measures, which is a potential source of concern with regard to inflated associations due to common method variance. To minimize this limitation, self-efficacy as a between-person variable was assessed once in a general questionnaire independent from the daily questionnaires. Study variables that are assessed at different time points are less likely influenced by common method bias (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). Further, for the test of Hypohesis 1 we used person-mean centering of the within-person level predictor variables in order to remove any between-person variance. According to Siemsen, Roth, and Oliveira (2010), common method variance does not negatively affect validity of study results in testing interaction effects which was one main focus of this study.

Experience sampling studies can investigate temporal effects but they do not allow for clear conclusions about causal relations between variables, as they do not provide the degree of control to rule out other alternative explanations (Uy, Foo, & Aguinis, 2010). One advantage of this study that strengthens causal inferences is that we investigated lagged effects of affective states and changes in affect from noon to afternoon on work engagement. However, reciprocal relationships between the variables cannot be ruled out. For example, if work engagement is high, it might be easier to down-regulate negative affect and up-regulate positive affect. Hence, work engagement might have also been the cause of affect-regulatory processes and not only their consequence. Future studies need to clarify the causal relationships between affective states and work engagement by using experimental study designs (Spencer, Zanna, & Fong, 2005).

There are some important avenues for future research that follow from this study. First, the study did not address the issue of how people regulate affective states in order to show work engagement. People can down-regulate negative affect and up-regulation positive affect through different means that can be explicit or implicit. The initiation and implementation of explicit strategies of affect regulation requires conscious effort. By constrast, implicit strategies occur outside of a person's awareness

and do not draw form the limited resources of the conscious mind (Baumann, et al., 2007; Gyurak, Gross, & Etkin, 2011). For instance, the construct of action-state orientation refers to individual differences in implicit affect regulation (Baumann, et al., 2007; Koole & Jostmann, 2004). Under stressful and demanding conditions, action-oriented people down-regulate negative affect and up-regulate positive affect more efficiently than state-oriented people. The latter experience persisting negative affective states (Koole & Jostmann, 2004). When negative affect is enduring and not effectively regulated, energetical resources may be depleted. This results in a physical and psychological state of exhaustion and negatively impacts health and well-being in the long turn (Gross & John, 2003; Kühnel, et al., 2011; Muraven & Baumeister, 2000). Longitudinal and experimental studies are needed to examine the interplay of explicit and implicit means of affect regulation and their effectiveness in leveraging the beneficial and minolinizing the detrimental consequence of negative affect.

Second, regulation strategies used by employees may vary between people from different cultural backgrounds due to cultural differences in the norms for experiencing and expressing affective states (Eid & Diener, 2009; Matsumoto, 2006). Negative affect may more likely be positively related to work engagement under conditions of high self-efficacy in Western cultures but not in Eastern cultures where people tend not to change the status quo based on individual decisions but are more likely to adapt to the given situation (Chang, 1996; Matsumoto, 2006). Future research needs to look into this issue.

Third, future research needs to examine other boundary conditions that influence the regulation of affective states and their consequences for work engagement. For example, for people with personal resources other than self-efficacy (e.g., resilience, optimism) or external resources (e.g., job control, organizationl support, psychological safety), the relationship between negative affect and work engagement might be positive despite of low levels of self-efficacy. In contrast, the relationship might be negative for people low in compensating personal and external resources (Hobfoll & Leiberman, 1987; Westman, Hobfoll, Chen, Davidson, & Laski, 2005). Accordingly, Kühnel et al. (2011) showed that on days with high job control, time pessure as a job demand which can elicit negative affect, was beneficial for work engagement whereas it was detrimental for work engagement on days with lower job control.

Finally, an interesting avenue for future research to more systematically examine the affective shift process would be to investigate specific work events as external

antecedents of the affective shift process that indirectly effect work engagement transmitted through affective reactions (Weiss & Cropanzano, 1996). For instance, Bach and Fisher's (2000) events-emotions matrix revealed that negative events such as task problems, lack of control, acts of colleagues and management have a strong impact on negative affective states (e.g., feeling angered, worried or frustrated).

Practical implications and conclusion

We propose that organizations and supervisors can enhance work engagement of employees by strengthening their self-efficacy. Self-efficacy benefits form clear work roles and from the development of skills that are necessary to perform effectively. People who feel capable in handling their work role are better able to regulate affective states such that work engagement increases. Human resource practices need to pay attention to competency development in employees, should emphasize learning and development, identify skill and competency gaps and provide customized training and performance feedback on a regular basis. Bandura (1997, 2000) proposed that employees can benefit from approaches that increase the beliefs they hold about their capabilities in given situations and their skills and competencies. Guided mastery experiences gained through effort and ability to learn from setbacks strengthens self-efficacy and provides an effective way of cultivating competencies in employees (Bandura, 1997, 2000). Also, positive environmental conditions at work and organizational support can strengthen one's self-efficacy (Bandura, 2000; Gardner & Pierce, 1998).

In conclusion, the present experience sampling study adds to the literature on work engagement and self-regulation by showing that self-efficacy regarding a person's work role operates through the regulation of affective states in how it influences work engagement. People high in self-efficacy regulate affective states more effectively than people low in self-efficacy. Hence, it is the interplay of positive affect, negative affect and self-efficacy as a personal resource that influences daily work engagement.

3.6 References

Bakker, A. B., Albrecht, S. L., & Leiter, M. P. (2011). Work engagement: Further reflections on the state of play. *European Journal of Work and Organizational Psychology, 20*, 74-88.

Bakker, A. B., & Bal, M. (2010). Weekly work engagement and performance: A study among starting teachers. *Journal of Occupational and Organizational Psychology, 83*, 189-206.

Bandura, A. (1991). Social cognitive theory of self-regulation. *Organizational Behavior and Human Decision Making Processes, 50*, 248-287.

Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: W. H. Freeman.

Bandura, A. (2000). Cultivate self-efficacy for personal and organizational effectiveness. In E. A. Locke (Ed.), *Handbook of principles of organizational behavior* (pp. 120-136). Oxford, UK: Blackwell.

Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology, 51*, 1173-1182.

Basch, J., & Fisher, C. D. (2000). Affective events-emotions matrix: A classification of work events and associated emotions. In N. M. Ashkanasy, Härtel, C. E. J., Zerbe, W. J. (Ed.), *Emotions in the workplace: Research, theory and practice* (pp. 33-48). Westport: CT: Quorum Books, Greenwood Publishing Group.

Baumann, N., Kaschel, R., & Kuhl, J. (2007). Affect sensitivity and affect regulation in dealing with positive and negative affect. *Journal of Research in Personality, 41*, 239-248.

Baumeister, R. F., Bratslavsky, E., Finkenhauer, C., & Vohs, K. D. (2001). Bad is stronger than good. *Review of General Psychology, 5*, 323-370.

Beal, D. J., Weiss, H. M., Barros, E., & MacDermid, S. M. (2005). An episodic process model of affective influences on performance. *Journal of Applied Psychology, 90*, 1054-1068.

Becker, T. E. (2005). Potential problems in the statistical control of variables in organizational research: A qualitative analysis with recommendations. *Organizational Research Methods, 8*, 274-289.

Bindl, U. K., & Parker, S. K. (2010). Proactive work behavior: Forward-thinking and change-oriented action in organizations. In S. Zedeck (Ed.), *APA handbook of*

industrial and organizational psychology. Washington, DC: American Psychological Association.

Bledow, R., Rosing, K., & Frese, M. (in press). A dynamic perspective on affect and creativity. *Academy of Management Journal*.

Bledow, R., Schmitt, A., Frese, M., & Kühnel, J. (2011). The affective shift model of work engagement. *Journal of Applied Psychology, 96*, 1246-1257.

Bolger, N., Davis, A., & Rafaeli, E. (2003). Diary methods: Capturing life as it is lived. *Annual Review of Psychology, 54*, 579-616.

Carver, C. S. (2006). Approach, avoidance, and the self-regulation of affect and action. *Motivation and Emotion, 30*, 105-110.

Carver, C. S., & Scheier, M. F. (1990). Origins and functions of positive and negative affect: A control-process view. *Psychological Review, 97*, 19-35.

Chang, C. C. (1996). Cultural differences in optimism, pessimism, and coping: Predictors of subsequent adjustment in Asian American and Caucasian American college students. *Journal of Counseling Psychology, 43*, 113-123.

Derryberry, D., & Tucker, D. M. (1994). *Motivating the focus of attention*. San Diego, CA: Academic Press.

Eid, M., & Diener, E. (2009). Norms for experiencing emotions in different cultures: Inter- and intranational differences culture and well-being. In E. Diener (Ed.), (pp. 169-202): Springer Netherlands.

Elliot, A. J. (2006). The hierarchical model of approach-avoidance motivation. *Motivation and Emotion, 30*, 111-116.

Enders, C. K., & Tofighi, D. (2007). Centering predictor variables in cross-sectional multilevel models: A new look at an old Issue. *Psychological Methods, 12*, 121-138.

Fay, D., & Sonnentag, S. (2002). Rethinking the effects of stressors: A longitudinal study on personal initiative. *Journal of Occupational Health Psychology, 7*, 221-234.

Frazier, P. A., Tix, A. P., & Barron, K. E. (2004). Testing moderator and mediator effects in counseling psychology research. *Journal of Counseling Psychology, 51*, 115-134.

Fredrickson, B. L., Tugade, M. M., Waugh, C. E., & Larkin, G. R. (2005). What good are positive emotions in crises? A prospective study of resilience and emotions

following the terrorist attacks on the United States on September 11th, 2001. *Journal of Personality and Social Psychology, 34*, 365-376.

Frese, M., & Fay, D. (2001). Personal initiative (PI): An active performance concept for work in the 21st century. In B. M. Staw & R. M. Sutton (Eds.), *Research in Organizational Behavior* (Vol. 23, pp. 133-187). Amsterdam: Elsevier Science.

Frijda, N. H. (1993). Moods, emotion episodes, and emotions. In M. Lewis & J. M. Haviland (Eds.), *Handbook of emotions* (pp. 381-403). New York: Guilford Press.

Gardner, D. G., & Pierce, J. L. (1998). Self-esteem and self-efficacy within the organizational context. *Group & Organization Management, 23*, 48-70.

George, J. M. (2011). Dual tuning: A minimum condition for understanding affect in organizations? *Organizational Psychology Review, 1*, 147-164.

George, J. M., & Zhou, J. (2002). Understanding when bad moods foster creativity and good ones don't: The role of context and clarity of feelings. *Journal of Applied Psychology, 87*, 687-697.

Grant, A. M., & Ashford, S. J. (2008). The dynamics of proactivity at work. *Research in organizational behavior, 28*, 3-34.

Gross, J. J., & John, O. P. (2003). Individual differences in two emotion regulation processes: Implications for affect, relationships, and well-being. *Journal of Personality and Social Psychology, 85*, 348-362.

Gyurak, A., Gross, J. J., & Etkin, A. (2011). Explicit and implicit emotion regulation: A dual-process framework. *Cognition and Emotion, 25*, 400-412.

Hobfoll, S. E., & Leiberman, J. R. (1987). Personality and social resources in immediate and continued stress resistance among women. *Journal of Personality and Social Psychology, 52*, 18-26.

Hofmann, D. A., Griffin, M. A., & Gavin, M. B. (2000). The application of hierarchical linear modeling to organizational research. In K. J. Klein & S. W. J. Kozlowski (Eds.), *Multilevel theory, research, and methods in organizations* (pp. 467–511). San Francisco, CA: Jossey-Bass.

Jerusalem, M., & Schwarzer, R. (1992). Self-efficacy as a resource factor in stress appraisal processes. In R. Schwarzer (Ed.), *Self-efficacy: Thought control of action* (pp. 195-213). Washington, DC: Hemisphere Publishing Corp.

Judge, T. A., & Ilies, R. (2004). Affect and job satisfaction: A study of their relationship at work and at home. *Journal of Applied Psychology, 89*, 661-673.

Kessler, E.-M., & Staudinger, U. M. (2009). Affective experience in adulthood and old age: The role of affective arousal and perceived affect regulation. *Psychology and Aging, 24*, 349-362.

Koole, S. L., & Jostmann, N. B. (2004). Getting a grip on your feelings: Effects of action orientation and external demands on intuitive affect regulation. *Journal of Personality and Social Psychology, 87*, 974-990.

Korunka, C., Kubicek, B., Schaufeli, W. B., & Hoonakker, P. (2009). Work engagement and burnout: testing the robustness of the job demands-resources model. *The Journal of Positive Psychology, 4*, 243-255.

Kuhl, J. (2000). A functional-design approach to motivation and self-regulation: The dynamics of personality systems interactions. In M. Boekarts, P. R. Pintrich & M. Zeidner (Eds.), *Handbook of self-regulation* (pp. 111-169). San Diego, CA: Academic Press.

Kuhl, J., & Kazén, M. (1999). Volitional facilitation of difficult intentions: Joint activation of intention memory and positive affect removes Stroop interference. *Journal of Experimental Psychology: General, 128*, 382-399.

Kühnel, J., Sonnentag, S., & Bledow, R. (2011). Resources and time pressure as day-level antecedents of work engagement. *Journal of Occupational and Organizational Psychology*.

Llorens, S., Schaufeli, W., Bakker, A., & Salanova, M. (2007). Does a positive gain spiral of resources, efficacy beliefs and engagement exist? *Computers in Human Behavior, 23*, 825-841.

Luthans, F., Avolio, B. J., Avey, J. B., & Norman, S. M. (2007). Positive psychological capital: Measurement and relationship with performance and satisfaction. *Personnel Psychology, 60*, 541-572.

Mackinnon, A., Jorm, A. F., Christensen, H., Korten, A. E., Jacomb, P. A., & Rodgers, B. (1999). A short form of the Positive and Negative Affect Schedule: Evaluation of factorial validity and invariance across demographic variables in a community sample. *Personality and Individual Differences, 27*, 405-416.

Matsumoto, D. (2006). Are cultural differences in emotion regulation mediated by personality traits? *Journal of Cross-Cultural Psychology, 37*, 421-437.

Miner, A. G., Glomb, T. M., & Hulin, C. (2005). Experience sampling mood and its correlates at work. *Journal of Occupational and Organizational Psychology, 78*, 171-193.

Morris, W. N., & Schnurr, P. P. (1989). *Mood: The frame of mind*. New York: Springer Publishing.

Muraven, M., & Baumeister, R. F. (2000). Self-regulation and depletion of limited resources: Does self-control resemble a muscle? *Psychological Bulletin, 126*, 247-259.

Ohly, S., Sonnentag, S., Niessen, C., & Zapf, D. (2010). Diary studies in organizational research: An introduction and some practical recommendations. *Journal of Personnel Psychology, 9*, 79-93.

Pekrun, R., & Frese, M. (1992). Emotions at work and achievement. In C. L. Cooper & I. T. Robertson (Eds.), *International review of industrial and organizational psychology 1992* (Vol. 7, pp. 153-200). Chichester, England: Wiley.

Podsakoff, P. M., MacKenzie, S. B., Lee, J.-Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology, 88*, 879-903.

Preacher, K. J., Curran, P. J., & Bauer, D. J. (2006). Computational tools for probing interactions in multiple linear regression, multilevel modeling, and latent curve analysis. *Journal of Educational and Behavioral Statistics, 31*, 437-448.

Raudenbush, S., Bryk, A., & Congdon, R. (2004). *HLM 6*. Chicago, IL: Scientific Software.

Rich, B. L., Lepine, J. A., & Crawford, E. R. (2010). Job engagement: Antecedents and effects on job performance. *The Academy of Management Journal, 53*, 617-635.

Salanova, M., Llorens, S., & Schaufeli, W. B. (2011). "Yes, I can, I feel good, and I just do it!" On gain cycles and spirals of efficacy beliefs, affect, and engagement. *Applied Psychology: An International Review, 60*, 255-285.

Salanova, M., & Schaufeli, W. B. (2008). A cross-national study of work engagement as a mediator between job resources and proactive behaviour. *The International Journal of Human Resource Management, 19*, 116-131.

Schaufeli, W. B., & Bakker, A. B. (2004). Job demands, job resources, and their relationship with engagement and burnout: A multi-sample study. *Journal of Organizational Behavior, 25*, 293-315.

Schaufeli, W. B., Salanova, M., González-Romá, V., & Bakker, A. B. (2002). The measurement of engagement and burnout: A two sample confirmatory factor analytic approach. *Journal of Happiness Studies, 3*, 71-92.

Scherer, K. R., Wranik, T., Sangsue, J., Tran, V., & Scherer, U. (2004). Emotions in everyday life: Probability of occurrence, risk factors, appraisal and reaction patterns. *Social Science Information, 43*, 499-570.

Schwarz, N., & Bless, H. (1991). Happy and mindless, but sad and smart? The impact of affective states on analytic reasoning. In J. P. Forgas (Ed.), *Emotion and social judgments.International series in experimental social psychology* (pp. 55–71). Elmsford, NY Pergamon Press.

Schwarz, N., & Clore, G. L. (2003). Mood as Information: 20 years later *Psychological Inquiry, 14*, 296-303.

Siemsen, E., Roth, A., & Oliveira, P. (2010). Common method bias in regression models with linear, quadratic, and interaction effects. *Organizational Research Methods, 13*, 456-476.

Simbula, S., Guglielmi, D., & Schaufeli, W. B. (2011). A three-wave study of job resources, self-efficacy, and work engagement among Italian schoolteachers. *European Journal of Work and Organizational Psychology, 20*, 285-304.

Skinner, N., & Brewer, N. (2002). The dynamics of threat and challenge appraisals prior to stressful achievement events. *Journal of Personality and Social Psychology, 83*, 678-692.

Sonnentag, S. (2003). Recovery, work engagement, and proactive behavior: A new look at the interface between nonwork and work. *Journal of Applied Psychology, 88*, 518-528.

Sonnentag, S., Dormann, C., & Demerouti, E. (2010). Not all days are created equal: The concept of state work engagement. In A. B. Bakker & M. P. Leiter (Eds.), *Work engagement: Recent developments in theory and research* (pp. 25-38). New York: Psychology Press.

Sonnentag, S., & Grant, A. M. (in press). Doing good at work feels good at home, but not right away: When and why perceived prosocial impact predicts positive affect. *Personnel Psychology*.

Spencer, S. J., Zanna, M. P., & Fong, G. T. (2005). Establishing a causal chain: why experiments are often more effective than mediational analyses in examining

psychological processes. *Journal of Personality and Social Psychology, 89*, 845-851.

Spreitzer, G. M. (1995). Psychological empowerment in the workplace: Dimensions, measurement, and validation. *Academy of Management Journal, 38*, 1442-1465.

To, M. L., Fisher, C. D., Ashkanasy, N. M., & Rowe, P. A. (2011). Within-person relationships between mood and creativity. *Journal of Applied Psychology*.

Uy, M., Foo, M., & Aguinis, H. (2010). Using experience sampling methodology to advance entrepreneurship theory and research. *Organizational Research Methods, 13*, 31-54.

Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS Scales. *Journal of Personality and Social Psychology, 54*, 1063-1070.

Weiss, H. M., & Cropanzano, R. (1996). Affective events theory: A theoretical discussion of the structure, causes and consequences of affective experiences at work. *Research in Organizational Behavior, 18*, 1-74.

Westman, M., Hobfoll, S. E., Chen, S., Davidson, O. B., & Laski, S. (2005). Organizational stress through the lens of conservation of resources (COR) theory. *Research in Occupational Stress and Well Being, 4*, 167-220.

Xanthopoulou, D., Bakker, A. B., Demerouti, E., & Schaufeli, W. B. (2009). Reciprocal relationships between job resources, personal resources, and work engagement. *Journal of Vocational Behavior, 74*, 235–244.

STUDY 3

What Makes Us Happy, Angry, Content or Worried? Development and Validation of a Work Events Taxonomy Using Concept Mapping Methodology

4.1 Abstract

Affective events theory (AET) highlights the importance of work events as antecedents of distinct emotions, attitudes and work behavior. However, when reviewing the literature it becomes evident that few attempts have been made to systematically classify positive and negative work events. The aim of this study was to develop a comprehensive taxonomy of work events to provide a common frame of reference for future research. Further, we aimed to explain what constitutes an affective event by accounting for the appraisal dimension of needs satisfaction. We used concept mapping methodology as a qualitative approach to analyze our data on work events.

In three daily diary studies, 218 employees reported 559 positive and 383 negative work events. We identified four positive and seven negative event clusters. Each event cluster showed a unique relationship with distinct affective states, mostly also when controlling for trait affect and the occurrence of events without clustering. The results support the validity of our taxonomy. This study contributes to the previous literature by refining AET and through providing a comprehensive yet parsimonious classification of both positive and negative work events. Future research can use the taxonomy to more differentially investigate relationships proposed in AET, and work-related consequences of affect.

4.2 Introduction

Affective experiences are present everywhere in daily life. They range from pride when accomplishing an important task to anger when having to talk to a rude customer, from enjoyment in pleasant activities to frustration when goal progress is lacking. The pervasiveness of affective experiences is also reflected in numerous research approaches dealing with emotion-eliciting events such as psychological contract breach (Conway & Briner, 2002), goal progress (Zohar, Tzischinski, & Epstein, 2003), positive and negative feedback (Kluger & DeNisi, 1996), and stress at work and at home (Bolger, DeLongis, Kessler, & Schilling, 1989; Kanner, Coyne, Schaefer, & Lazarus, 1981) to name just a few prominent examples. Affective events are defined as "things [that] happen to people in work settings" (Weiss & Cropanzano, 1996, p. 11) to which "people react emotionally".

Although in each of these research approaches, knowledge is gained of how the appraisal of specific events relate to affective experiences and in turn to important outcomes such as job attitudes and job performance, health and well-being, and behavior towards significant others, a comprehensive picture of the kind of events frequently occurring in the workplace, and of their combined rather than specific effects is lacking. In reviewing the literature on events as antecedents of affect in the workplace, Brief and Weiss (2002) noted that a lack of theoretical frame of reference hinders progress in this field. More knowledge on the kind of affective events that frequently occur in work settings is needed to derive specific propositions how stable work features are linked to the occurrence of affective states (Weiss & Cropanzano, 1996). Furthermore, a better prediction of the joint and possibly interactive effects of both positive and negative work events will be possible. Knowing about the occurrence and consequences of affective events has important implications for theorizing about the antecedents of affect-driven behavior such as helping or developing novel ideas.

The aim of the present study is to provide a frame of reference for future studies to build on by a) establishing a comprehensive taxonomy of workplace events, b) examining the relevance of the cognitive dimension needs satisfaction that determines the occurrence of work events, and c) showing evidence of the validity of this taxonomy. We will first describe the nature of affective experience and outline the propositions of AET (Weiss & Cropanzano, 1996). Based on a literature review we will

then describe limitations in previous studies of work events before we describe the approach used in this study.

Affective experiences

The umbrella term of affective experiences covers both short-term discrete emotions and longer lasting mood states (Forgas, 1995; Weiss & Cropanzano, 1996). Current theoretical frameworks integrate the approach of circumplex models developed by mood researchers and the focus on discrete emotions (Weiss & Cropanzano, 1996). Whereas emotions are more strongly linked to the appraisal of causal events or objectives and are more specific for a certain event (Frijda, 1993; Weiss & Cropanzano, 1996), mood states may result from the appraisal of rather mildly positive and negative events (Morris & Schnurr, 1989) or develop from an emotional state when the causing event or objective is no longer salient (Frijda, 1993). Work events are related to discrete affective states which differ in hedonic quality and in the level of activation. In this paper, we explore the relationship between work events and five distinct affective states from the affective circumplex: Anger and worry as highly activated negative affective states, enthusiasm as an highly activated positive affective state, at rest as a deactivated affective positive state, and exhaustion as a deactivated negative affective state. Examining distinct affective states is an advantage over approaches contrasting positive and negative activating and deactivating affect, because affective states from the same level of activation and valence can be differentially related to outcome variables (Lerner & Keltner, 2000; Weiss, Suckow, & Cropanzano, 1999). We base our assumptions on the relationships between work events and affective states on cognitive appraisal theories that attribute the occurrence of affective states to cognitive appraisal processes that are initiated when individuals perceive objectives and events from the environment (cf. Elfenbein, 2007; Lazarus, 1991; Weiss & Cropanzano, 1996).

Affective events theory

According to AET (Weiss & Cropanzano, 1996), workplace events elicit affective states such as transient moods and discrete emotions. The appraisal of affective events is seen as an important mechanism by which the work environment impacts job attitudes such as job satisfaction, and elicits affect-driven behavior such as helping. Furthermore, "work environments are seen as having an indirect influence on affective experience by making certain events, real or imagined, more or less likely"

(Weiss & Cropanzano, 1996, p. 12). The work environment refers to features of the job such as autonomy, task variety, supervisory support, and job demands. In addition to the strong influence of work events, personality dispositions such as trait positive and negative affect have a substantial impact on distinct affective states according to AET. Affective states will directly influence work attitudes and in turn both attitudes and affective states determine behavioral responses.

Only few studies have tested the core proposition of affective events as mechanisms in the relationship between features of the job and job attitudes (Weiss & Beal, 2005). Some studies have tested propositions of AET without assessing affective events. For example, Weiss and colleagues (1999) showed that daily affective experiences (averaged across the days of the study) predict job satisfaction over and above dispositional affect and beliefs about one's job. Fisher (2002) examined stable antecedents of affective experiences and showed that a measure of job characteristics (Hackman & Oldham, 1976), and dispositional positive affect predicted average momentary affect while role conflicts and dispositional negative affect predicted average momentary negative affect.

Other studies that focused on workplace events differ widely in the way affective events were assessed and analyzed (see for a review below). One reason for this fact is the relative muteness of AET about the nature of affective events. No specific propositions about which kind of events elicit positive or negative affective states are formulated. AET has therefore been characterized as a "macrostructure" instead of a testable theory (Weiss & Beal, 2005, p. 2).

Review of empirical studies on daily work events

To look for studies to be integrated in the present literature review, we did an electronic search in the PsycINFO and Google Scholar databases. We gathered relevant articles on "work events" that were identified by the databases. We also screened the respective reference lists for further studies. Finally, a total of 14 studies are included in our review.[4] From the studies included it becomes clear that a broad range of work events were assessed: Anger and pride-eliciting events (Grandey, Tam, & Brauburger, 2002), stressful events (Elfering et al., 2005; Fuller et al., 2003), positive and negative

---

[4] A table providing an overview of our literature review on affective events with details regarding the sample, assessment of work events and resulting categories for the respective study can be provided by the authors upon request.

interpersonal interactions (Dimotakis, Scott, & Koopman, 2011), goal-disruptive and goal-enhancing events (Zohar, et al., 2003), to name just a few. In sum, there seems to be lack of consensus what kind of events can be conceptualized as affective events, and what kind of affective events are worth examining.

From our review it becomes evident that the resulting categories of events are based on researchers' theoretical assumptions and orientations (stress and occupational health; emotions; self-regulation). This procedure is unfortunate because the same event may be coded differently in these taxonomies. Consider the example of an employee being hindered in executing a task because the computer equipment is failing. In terms of self-regulation (Zohar, et al., 2003), this event is coded as a goal-disruptive event. In terms of stress research, this would be an organizational problem (Elfering, et al., 2005), and in terms of emotions an anger-eliciting event, specifically a task interference (Grandey, et al., 2002) or job incompetence (Fitness, 2000). Finally, in terms of psychological contracts, this event could be classified as psychological contract breach (N. Conway, personal communication, August 30, 2011; Conway & Briner, 2002).

Positive work events were less often the subject of categorization, but a similar argument applies here as well: A co-worker praising an individuals' work would either be coded as a positive interaction with a co-worker (Dimotakis, et al., 2011), or as a pride-eliciting event, specifically performance feedback (Grandey, et al., 2002), or as exceeded promises in terms of psychological contract theory (N. Conway, personal communication, August 30, 2011; Conway & Briner, 2002). Clearly, the use of different labels for the same event hinders integration of findings. Thus, knowledge about what kinds of work events elicit affective experiences accumulates only slowly.

Knowledge about the nature of work events is also slow to accumulate because there is no accepted method of assessing work events. As one approach to study work events, questions with an open response format have been used (Fuller, et al., 2003; Grandey, et al., 2002). The responses to these questions were either coded into different categories (see examples above), or positive (or negative) events as unitary concepts (Gross et al., 2011). In essence, in studies using this unitary approach, there is an implicit assumption that all forms of positive (negative) events will have the same effect on employees' affective experiences, well-being or job attitudes. This assumption is questionable however. For example, Gross and colleagues draw on Hobfoll's (1989) conservation of resources theory, and stipulate that resources are built in positive events

that can be used when negative events occur. However, not all resources are equally effective in dealing with negative events. In stress research, the triple match principle (De Jonge & Dormann, 2003; De Jonge & Dormann, 2006) proposes a distinction between three dimensions of stressors, resources and strains: A cognitive-informational dimension, an emotional dimension, and a physical dimension (for a similar distinction see Brief & Weiss, 2002; and Shirom, 2011). Thus based on the differentiation of resources and stressors, it seems likely that the kind of resources built in positive events needs to be differentiated. For example, positive events involving social interactions might build resources that help buffer against the effects of negative events involving social interactions. To be able to test this assumption, a better differentiation of work events is needed. The assumption of events as unitary concepts is also questionable in light of findings that some subtypes of events are related to affective experiences while others are not (Miner et al., 2005). Thus, a differentiated account of positive and negative events is likely to yield better predictions of affective experiences.

AET suggests that affective events are related to discrete emotions. However, based on our review of studies it seems that this relationship has rarely been tested. Researchers have instead mostly focused on the relationships with hedonic tone, positive and negative mood (Conway & Briner, 2002; Dimotakis, et al., 2011; Miner, Glomb, & Hulin, 2005), or on fatigue (Elfering, et al., 2005; Zohar, et al., 2003). Other focused on specific emotion-eliciting events in relation to the discrete emotions of anger and pride (Fitness, 2000; Grandey, et al., 2002), but did not test their relationships with other affective states. Only rarely does a study report relationships with multiple affective states from the circumplex such as fear or feeling content (for an exception see Mignonac & Herrbach, 2004). Examining the full range of the affective circumplex could lead to important insights. For example, more knowledge could be gained of which kind of positive events counteract the effects of negative events.

Taken together, previous studies on positive and negative work events differ widely in the way specific events were categorized and assessed. Furthermore, the unitary approach to assess positive or negative events has some disadvantages, and a differentiated assessment is likely to yield novel insights. Finally, the focus on single affective states as outcomes combined with unique approaches to assess affective work events makes it difficult to integrate study findings. This lack of integration complicates

the comparison of results across studies, and makes it difficult to derive conclusions about the validity of the assumptions of AET concerning the role of affective events.

Events-emotions matrix

A first systematic and widely recognized approach to classifying work events was supplied by Basch and Fisher (2000). The authors developed an events-emotions matrix that represents the relationship between organizational events and resulting emotional experiences mentioned by study participants. 101 employees retrospectively described 332 positive and 404 negative events that they had "recently" experienced at work and that caused ten specified emotions (Basch & Fisher, 2000, p. 6). Work events mentioned by participants were classified into categories by the researchers based on an existing incident classification system suggested by Bitner, Booms, and Tetreault (1990). Fourteen categories of positive job events and thirteen categories of negative job events emerged from the analysis. The events-emotions matrix provides a valuable first attempt to classify affective events. However, we think that the approach used in this study had some limitations. First, study participants completed the questionnaire only once referring to work events in the past. Because of the retrospective report, memory distortions about the nature of events are possible. Second, for the most part the events-emotions matrix is based on a preliminary classification scheme. The adoption of preexisting classification schemes, however, may lead to classification results that do not match the reality of respondents who mentioned work events but are biased due to researchers' expectations (Jackson & Trochim, 2002). Finally, because participants had to describe a recent work event that caused one of ten specified emotions, they had to focus on only one particular emotion when reporting an event. Grandey et al. (2002) challenged this approach by stating that it does "not allow for the complex concurrence of multiple and conflicting emotions" (p. 33).

Our study intends to tackle the limitations mentioned. To develop a comprehensive taxonomy of positive and negative work events we collected reports of work events in a heterogeneous sample of employees. To reduce memory distortion, these reports were collected twice daily. The objective of this study was to gather an in-depth understanding of the occurrence and affective consequences of work events and to develop a comprehensive taxonomy to provide a common frame of reference for future research. In order to explore these research questions we applied a qualitative approach to examine work events using concept mapping methodology. Furthermore, to provide

evidence for the validity of the taxonomy we examined the relationships of the occurrence of positive and negative work events to positive and negative affective states.

AET posits that the appraisal of work events is an important mechanism by which the work environment impacts affect, attitudes and behavior. However, previous categorizations of work events did not sufficiently integrate the role of appraisal dimensions in the development and interpretation of their classifications. Although Basch and Fisher (2000) noticed the relevance of appraisal and evaluation processes for the determination of affective events, they did not examine these dimensions in detail. Our study contributes by examining one specific appraisal dimension as an important mechanism that determines the perception of affective work events. Specifically, we examine the role of basic psychological needs in the appraisal of an event.

Development of hypotheses

Based on previous research, we expect to find multiple categories of positive and negative events that are related to discrete affective states. We base our events taxonomy and relationships with affective states on cognitive appraisal theories of emotions (e.g., Lazarus, 1991; Scherer, 1988), and on the relevance of basic psychological needs for well-being (Deci & Ryan, 2000). According to cognitive appraisal theories, affective states are the result of a sequence of appraisal processes or stimulus appraisal checks along sequential appraisal dimensions that are initiated when individuals perceive objectives and events from the environment (Elfenbein, 2007; Scherer, 2001). It is the psychological meaning of work events that matters for the individual, not the occurrence of an event per se.

Appraisal processes can sometimes be deliberate but they usually proceed without conscious awareness (Elfenbein, 2007; Ellsworth & Scherer, 2003). The first appraisal dimension is novelty: Individuals constantly evaluate novel events that happen in their environment and that attract attention. Further dimensions of appraisal include pleasantness of a stimulus, relevance to needs and goals, and potential for coping, followed by others that are based on the results to the previous appraisal steps (cf. Elfenbein, 2007; Frijda, 1993; Scherer, 1988). In this study, we focus on the conduciveness of an event to the satisfaction of needs because appraisal researchers see this as the most important dimension (cf. Ellsworth & Scherer, 2003). Although the various theoretical approaches differ in the number of and the labels used for appraisal

dimensions, the importance of needs and goals for the appraisal of events is a central dimension in most appraisal theories (cf. Ellsworth & Scherer, 2003). For instance, Scherer (2001) proposes that individuals check the relevance or importance of an event for the hierarchy of needs such that an event is judged to be relevant if it results in outcomes that affect fundamental psychological needs. In the approach developed by Lazarus (1991), the motivational relevance of goal congruence and goal content is inherent in the dimension of primary appraisal, and Roseman (2001) uses the term motive consistency for this appraisal dimension.

When an individual appraises an event, the evaluation of need relevance is based on those needs that are currently high in the individuals' priority. According to self-determination theory (Deci & Ryan, 2000; Ryan & Deci, 2000), there are three basic psychological needs that exist in all individuals to varying degrees and that have high priority when threatened. The *need for autonomy* refers to the capability to control one's behavior and to engage in behavior that is consistent with the integrated sense of the self. The *need for competence* refers to the experience of personal mastery and engagement in challenges. The *need for relatedness* refers to the need to feel connected to others and to form stable interpersonal relationships. Several studies have shown that the satisfaction of these basic psychological needs is linked to health and well-being whereas well-being is impaired when autonomy, competence, or relatedness are threatened (Deci & Ryan, 2000; Reis, Sheldon, Gable, Roscoe, & Ryan, 2000). Given that well-being includes positive affective experience and the absence of negative affect, it seems likely that affective work events are characterized by the potential (or lack of potential) to fulfill basic human needs.

Based on cognitive appraisal theories, we assume that that the appraisal of affective work events is related to the fulfillment of these basic psychological needs. An event is perceived to be positive if it is judged to be relevant for the fulfillment of at least one of the three basic needs currently high in priority (Ellsworth & Scherer, 2003; Scherer, 1988). Conversely, an event is perceived as negative if it is appraised as hindering the satisfaction of needs that are high in priority.

*Hypothesis 1a***:** Positive work events are characterized by a potential to fulfill basic psychological needs.

Hypothesis 1b: Negative work events are characterized by the hindrance of fulfillment of basic psychological needs.

Hypothesis 2: Positive work events are related to positive affective states.

Hypothesis 3: Negative work events are related to negative affective states.

While AET proposes a moderating and cumulative effect of dispositional affect on the relationship between work events and affective states, cognitive appraisal theories assume that the processes are generalizable across persons. Hence, we suppose that the relationship between affective events and affective states is relatively independent of individuals' disposition affect (Ellsworth & Scherer, 2003; Weiss & Cropanzano, 1996). Thus, evidence of validity of the taxonomy of work events can be shown when the taxonomy leads to prediction of affective states better than would be possible by trait affect alone.

> *Hypothesis 2a:* The positive relationship between specific positive work events and positive affective states will also be significant when controlling for trait positive affect.

> *Hypothesis 3a:* The relationship between specific negative work events will also be significant when controlling for trait negative affect.

Furthermore, as outlined above, there are reasons to question the unitary approach to work events that implies homogeneous effects of all positive (or negative) events on affective states. Thus, we expect the different categories of positive (or negative) events to have unique effects on affective states over and above the mere occurrence of positive (or negative) work events without clustering.

> *Hypothesis 2b:* The positive relationship between specific work events and positive affective states will also be significant when controlling for the occurrence of positive events without clustering.

> *Hypothesis 3b:* The positive relationship between specific negative work events and negative affective states will also be significant when controlling for the occurrence of negative work events without clustering.

The method of concept mapping

Concept mapping is an appropriate methodology for analyzing data gathered through open-ended questionnaires (Jackson & Trochim, 2002). It combines statistical analysis with participants' judgments to create conceptually related categories by using multidimensional scaling and cluster analysis as exploratory analytical techniques. Compared to alternative methods for analyzing qualitative data, concept mapping has

several advantages: There are no forced category classifications that are pre-established by the researcher. Rather, sorters involved in the concept mapping create their own categories based on their understanding and individual perspective. Sorters are instructed to create groups based on the thematic similarity of the statements that have to be sorted and classified. Hence, the final classifications are based on the mental models of the sorters and not biased due to researchers' expectations (Jackson & Trochim, 2002; Kane, Trochim, & Trochim, 2007). In order to account for disagreement in sorters' judgments, they are statistically aggregated afterwards. The combination of sorters' judgment and exploratory statistical analysis allows one to gain a picture of individuals' understandings of work events categories and to include this knowledge into statistical analyses (Jackson & Trochim, 2002).

We aimed to develop a comprehensive taxonomy of work events that can provide a conceptual checklist of types of positive and negative work events in future studies. Thus, for our research question that was exploratory in nature the approach of concept mapping was especially useful.

4.3 Method

Procedure

We build the classification taxonomy on a data base of three online daily diary studies. Data came from 218 full-time employees working in different branches and professions. The only requirement for participation in the diary studies was access to the internet during working time.

In Study 1 ($N = 114$ participants) and Study 2 ($N = 41$), data were collected over the course of two work weeks. Work events and affective states were assessed both in the noon and the afternoon questionnaire. In Study 3 ($N = 63$), data were collected over the course of four work days. Whereas work events were assessed in the noon questionnaire only, affective states were assessed in the afternoon questionnaire. Before attending to the daily questionnaires, participants in all three studies completed one general online questionnaire to measure demographic variables, trait negative and positive affect and other more trait-like concepts.

Sample

The overall sample included 126 men (58%) and 92 women (42%). Mean age was 38.88 years (SD = 9.89 years) with a range from 18 to 62 years. In terms of educational background, five (2.4%) participants had a German general education degree, 48 (22.4%) had a middle school degree, 62 (29.0%) had a high school degree, 82 (38.3%) had a university diploma, and 17 (7.9%) had a doctoral degree. On average, participants had 16.71 years (SD = 10.59 years) of professional experience with a range from six months to 41 years. Participants held a variety of jobs in different branches and organizations such as engineers, administrative assistants in public administration, commercial clerks, design draftsmen, physicians, and assistant medical technicians, software engineers or specialists in information technology. The diversity of these samples helps us to generalize our findings across a wide variety of occupations.

Measures

Daily online questionnaire

Because the same daily diary questionnaires had to be completed between eight and 20 times, adapted scales and single item measures were used in order not to overburden participants (Bolger, Davis, & Rafaeli, 2003; Ohly, Sonnentag, Niessen, & Zapf, 2010).

Positive and negative work events. Participants were instructed to note whether they had experienced certain events at work that they perceived as being positive or negative during the last hours before completing the questionnaire (dichotomous item: yes/no for positive and negative events separately). Participants were then required to briefly describe their positive or negative work events in an open question format. The wording for positive events was as follows: "During the last hours, did you experience an event or a certain situation at work that you perceived to be positive (e.g., receiving praise or appreciation; solving a work-related problem or attaining a work goal)? If yes, what was the event about? Please describe this event briefly." The instruction for negative events had the following wording: "During the last hours, did you experience an event or a certain situation at work that you perceived to be negative (e.g., coming into conflict with someone; receiving a bad news; experiencing technical problems at work)? If yes, what was the event about? Please describe this event briefly." In the first daily questionnaire at noon, participants reported work events they had experienced

since the beginning of the working day. In the second questionnaire, participants reported work events they had experienced during the time period between noon and afternoon (in Studies 1 and 3). Participants' responses typically comprised one sentence or statement per work event mentioned. Altogether, 218 employees reported and described 559 positive and 383 negative work events (a total of 942 events).

Positive and negative affective states. In all three studies we assessed the positive activating affective state "enthusiastic" and the negative activating affective states "worried" and "angered". In Study 1, we also measured the deactivating affective states "at rest" and "exhausted". Participants rated the extent to which they had experienced these affective states during the last hours just before filling out the questionnaire on a scale ranging from 1 (*not at all*) to 5 (*extremely*). In Studies 1 and 2, affective states were measured in both the noon and the afternoon questionnaire. In Study 3, affective states were assessed in the afternoon questionnaire only.

The use of single-item measures is common in daily diary studies where brevity is important (Ong, Bergeman, Bisconti, & Wallace, 2006). Advantages of single-item measures are that they are easily understood by participants and brief to administer (Larsen & Fredrickson, 1999). As we were interested in distinct affective states that consist of concrete singular attributes, single-item measures are found to be sufficient in this case (Rossiter, 2002).

General online questionnaire

Demographic variables. Gender and age were measured with one item each.

Positive and negative trait affect. To be able to control for the influence of trait affect, the German translation of MacKinnon et al.'s (1999) short version of the positive and negative affect scales (Watson, Clark, & Tellegen, 1988) was used to measure positive and negative trait affect. Coefficient alpha ranged from .70 to .79 for the positive trait affect scale and from .72 to .82 for the negative trait affect scale.

Analyses

To develop the classification typology we used the concept mapping approach which consists of the following five steps (Jackson & Trochim, 2002; Kane, et al., 2007):

(a) Determination of the units of analysis. The researchers need to ensure that a unit of analysis consists of one statement containing only one concept or idea (work event in

our case). Single-concept statements are selected and written on cards for the sorting process.

(b) Participants sort units of analysis into groups of similar concepts. According to Jackson and Trochim (2002) and Kane et al. (2007) it is recommended to have at least 10 sorters who do the sorting of concepts individually. Sorters can create as many groups as they regard as reasonable – the number of groups specified is unlimited. The only two constraints are that sorters are not allowed to create a "miscellaneous" group and they cannot put all events in one group. Sorters then have to name each of their groups based on the content that is represented in the respective group.

(c) Performing a multidimensional scaling analysis (MDS) of the sorted data. Sorters' individual judgments are aggregated and represented in distance matrix form. This is a binary square matrix with rows and columns representing statements which results by adding sorters' individual sortings together. From that aggregated matrix, MDS estimates distances between the statements or objectives to explain them in terms of underlying dimensions (Kane, et al., 2007). Overall, MDS arranges the statements in a space with any number of dimensions in order to arrive at a configuration that best approximates the observed distances. The distances are diagramed in a map where each statement is represented by a point. Distances between points represent how similar the statements are judged to be by the sorters. An important statistic in MDS is the stress index that helps to evaluate how well a particular configuration of statements can reproduce the observed distance matrix (Kruskal & Wish, 1978). Whereas a low stress value suggests a good overall fit between the input matrix and the matrix gathered through MDS, a high stress value implies that there is a greater discrepancy such that the map does not represent the input data well. According to Kane et al. (2007) stress values that represent a good fit are in the range between 0.205 and 0.365. The number of underlying dimensions of the investigated objects that are finally chosen depends on balancing the interpretability of the solution and the evaluation of the stress index.

(d) Performing a cluster analysis to identify a final cluster solution. In order to decide on the final number of clusters that represent an appropriate solution for the data a cluster analysis is performed based on the points of the MDS map. Cluster analysis is an exploratory data analysis tool which aims at grouping objects of similar kind into categories and developing taxonomies by organizing observed data into meaningful

structures (Kane, et al., 2007; Romesburg, 2004). The output of cluster analysis is represented in a dendrogram (tree structure).

(e) Naming the clusters. Labels for the final clusters need to be determined based on the names the original sorters had given to their groups of concepts and based on the researchers judgments of the label that best represents the respective cluster.

Application of concept mapping analysis to our data

In our study, we followed these five steps. We screened the work events mentioned by participants in the diary studies and ensured that each report consists of only one event. From the 590 positive and 383 negative work events, we randomly chose 70 positive and 70 negative events for concept mapping. A larger amount of events was not possible to choose due to data constraints of the program we used for the concept mapping procedure (*EZSort*, Beta version 1.8) (Dong, Martin, & Waldo, 2001). *EZSort* is an automated and freely accessible sorting tool that was developed by IBM. *EZSort* includes two packages: *Usort* provides an interface for the sorting procedure and *EZCalc* analyzes the sorting data gathered from *Usort*. As a limitation however, *EZSort* cannot work with item sets of larger than 70 items. Each of the respective 70 positive and negative work events was written on a small card for the sorting process.

Twenty-eight students of psychology participated as sorters in our study. Fourteen of them sorted the positive events, 14 sorted the negative events. Students were invited into the laboratory, they were then instructed to individually sort the given work events into groups based on conceptual similarity and to name each of their groups. Sorters' individual judgments were entered into the concept mapping tool *Usort* in order to prepare for data analysis. *EZCalc* analyzed the sort data gathered from *Usort* by aggregating the individual sortings of each sorter for positive and negative events separately (Dong, et al., 2001). *EZCalc* then represents the data in distance matrix form. In our study, this distance matrix is a 70 x 70 binary square matrix (columns and rows represent work events) that contains the aggregated distance judgments by adding all of the 28 judgments together. Multidimensional scaling (MDS) was applied from the aggregated distance matrix by using ALSCAL algorithm which is implemented in SPSS (for further information see Borg & Groenen, 2005). MDS can detect meaningful underlying dimensions that allow explaining observed distances between the investigated work events.

Basic needs rating

Six graduate students that have not been involved in the sorting process before rated the extent to which the three basic psychological needs (need for competence, need for autonomy, need for relatedness) were relevant for each of the respective four positive event clusters and the extent to which these three basic needs were threatened by the occurrence of each of the seven negative event clusters. Rating was done on a 4-point scale ranging from 1 (*not at all relevant)* or *(not at all threatened*) to 4 (*extremely relevant)* or *(extremely threatened*). Further, the students indicated how confident they felt with their ratings for each of the work event cluster on a 5-point scale ranging from 1 *(not at all confident)* to 5 *(extremely confident)*.

4.4 Results

Multidimensional scaling analysis (MDS)

To determine underlying dimensions of the objectives based on the aggregated distance matrix of the 28 sorters, distances between these statements were estimated by using MDS (Izenman, 2008). As recommended by Kane et al. (2007), we analyzed several dimensional solutions ranging from one dimension to three dimensions and evaluated whether a particular solution was appropriate. Researchers tend to prefer two dimensional solutions that can be more easily interpreted and are the most useful foundation for the cluster analysis that follows afterwards (Kane, et al., 2007; Kruskal & Wish, 1978). Finally, for the positive events we chose a two-dimensional solution that had a stress index of 0.246 suggesting a good fit with the data. For the negative events we chose a two-dimensional solution that had a stress index of 0.267.

Cluster analysis

In order to identify a final cluster solution, we performed hierarchical agglomerative cluster analysis of the multidimensional scaling coordinates using SPSS (Kane, et al., 2007; Romesburg, 2004). As a linkage rule to decide on when two clusters can be linked together we used Ward's method which evaluates the distances between clusters based on an analysis of variance test. We made the final decision on the number of conceptual clusters by looking at the cluster dendrograms resulting from cluster analysis and decided on the kind of classification that seems logical. Importantly, there is no single "correct" number of clusters but the decision is based on human judgment and depends on the level of specificity that is desired (Kane, et al., 2007).

For positive events, six clusters were found. Certain clusters were conceptually similar enough to merge: Two of the clusters contained statements on goal attainment, problem solving and personal success related to the completion of work tasks (e.g., for one cluster: "I successfully completed the preliminary work for my supervisor"; "Hold a successful presentation"; "Attained the important deadline", and for the other cluster: "I could contain a long-standing problem"; "Could fix a severe error"). Two other clusters covered work events that contained the perception of personal competence perceived in social interactions such as talks or discussions (e.g., for one cluster "I could exceed all customer expectations"; "Assisted my supervisor and felt competent", and for the other cluster "The job interview with trainees worked out fine"; "The discussion with colleagues on the phone was successful and constructive"). Hence, we decided on a four-cluster solution by putting conceptually similar clusters together.

For negative events, a total of ten clusters were found. Three clusters were found to be conceptually similar enough to merge because they covered statements such as overload, barriers that impede the completion of goals and hindrances in order to successfully complete work tasks (e.g., "too many different tasks and projects that are not solvable"; "acute lack of time" for one cluster"; "lack of success due to a failure in preparation"; "forgot one important step in the working process" for the second cluster, and "frequent questions from colleagues and customers that impede my work"; "many difficult and annoying calls from customers" for the third cluster). Further, two other clusters were merged due to their common focus on internal organizational and managerial problems affecting organizational climate (e.g., "My colleague resigned from his job due to problems with our supervisor"; "A colleague whom I recommended quit his probation period after two days" for one cluster. "Received unfair criticism from my supervisor"; "Problems with the management of the company" for the second cluster). Hence, for the negative events we decided that a seven-cluster solution was reasonable. In sum, based on similarity in content, several clusters were merged which resulted in four clusters for positive events and seven clusters for negative events as a final solution.

To determine a label that best represented the content of the work event clusters, two advanced graduate students not previously involved in the study independently examined the statements in each of the four positive and seven negative event clusters and the names the original 28 sorters had given to their sorted groups of events. They

independently chose a label for each cluster. The same was done by one of the researchers. Consensus was reached by discussion.

Coding of remaining events

The remaining 489 positive and 313 negative work events that could not be included in the concept mapping procedure due to capacity constraints of our concept mapping tool were sorted into the eleven categories by two graduate students. For both positive and negative work events inter-rater reliability was found to be Cohen's Kappa = .89 ($p < 0.01$). In sum, the two raters showed a substantial level of agreement. For those few events the two student sorters disagreed on, one of the researchers decided on the final assignment to one of the events categories.

Description of final cluster solution

The final classification typology gathered from the concept mapping analysis and examples for positive and negative work events mentioned are presented in Table 4.1. Four clusters for positive work events were generated. Altogether, 303 of the 559 reported positive events (54.20%) fall into the cluster of *goal attainment, problem solving, task-related success*. An example is "Solved a technical problem together with a colleague". The occurrence of this event cluster is consistent with the notion that perceived performance, progress, or competence on a task is related to positive affect (Amabile & Kramer, 2011; Fisher & Noble, 2004) and is similar in content to events included in previous research (see Table 4.1). For instance, as stated in the literature on goal-setting people tend to perceive a task to be more favorable when they have performed well compared to when they have failed to reach their goals (cf. Fisher, 2008; Locke & Latham, 2002).

The second most frequently experienced form of positive events fall into the cluster *praise, appreciation, positive feedback* (example: "I was given credit by my principal") and were mentioned in 21.21% of all positive events. The content of this cluster is consistent with the notion that *recognizing* is an important leader behavior (Yukl, 2001), and events of this type have been included frequently in previous studies (under different labels, see Table 4.1).

Events that fall into the cluster *perceived competence in or through social interactions* are reported in 16.99% of all positive events (example: "successful teamwork"). The occurrence of this event cluster is consistent with the importance of

social work design features (Grant et al., 2007; Humphrey, Nahrgang, & Morgeson, 2007) and research showing that individuals interact with others to regulate their emotions or to deal with stressful situations (Daniels & Harris, 2005; Fritz, Lam, & Spreitzer, 2011). Positive social interactions such as helping others at work are related to the experience of energy and positive affect (Saavedra & Kwun, 2000). Interestingly, this type of event has not been included in previous research in this specific form but could have been subsumed under the label positive social interactions.

Passively experienced, externally determined positive experiences were mentioned less frequently (7.69%). An example is "got a new job offer". It is conceivable that this type of event does not occur frequently or on a daily basis. Still, the content of this event cluster is similar to events included in previous research (see Table 4.1).

A total of seven clusters were generated for negative events. Events reported most frequently were in the cluster *hindrances in goal attainment, obstacles in completing work tasks, overload* (reported for 22.45%, example item is: "additional strain due to new work tasks"). The content of this cluster is similar to research on task-related stressors in organizations, specifically stressors in the regulation of actions (for a review see Sonnentag & Frese, 2003) or hindrance-related stressors (LePine, Podsakoff, & LePine, 2005). Similar events have been included frequently in previous research (see Table 4.1).

Events in the cluster *conflicts and communication problems* were the second most frequently occurring type of negative work events (21.93%, example item: "conflicts with a colleague"). The emergence of this cluster reflects the importance of conflicts in work settings for employees (De Dreu, Harink, & Van Vianen, 1999). This importance is also reflected in previous studies frequently including this type of event (using different labels; see Table 4.1).

Technical difficulties, problems with work utensils and equipment were reported in 17.23% of all negative events. An example is "technical problems with the internet". This event cluster is again similar to regulation obstacles or hindrance-related stressors, but more specifically related to (technical) equipment. The emergence of this cluster is consistent with the notion that technology is an additional source of stress among employees (Smith, Conway, & Karsh, 1999). This type of event has not been included in previous research on affective events in this specific form. Events that fall into the

cluster of *managerial and internal problems, organizational climate* were mentioned for 13.84% (example: "my colleague resigned from his job"). This type of event has frequently been included in previous research under varying labels (see Table 4.1).

The events in the cluster *ambiguity, insecurity, loss of control* (11.49%, example: "ambiguous task in a project") are similar to the concept of role ambiguity (Katz & Kahn, 1978), and have been included in previous research under different labels (see Table 4.1). Events in the cluster *health problems and private issues* (7.57%, example: "I suffer from stomach ache") have been found in previous research (see Table 4.1) but have been omitted from the analyses in previous research due to content overlap with well-being outcomes (van Eck, Nicolson, & Berkhof, 1998). The emergence of this type of event may nevertheless be of interest in light of research on work-home interference (Rothbard & Wilk, 2011).

Problems in interactions with clients or patients (5.48%, example: "ineffective conversation with a customer") were reported less frequently. The emergence of this type of event is consistent with previous research on customer-related social stressors (Dormann & Zapf, 2004) and emotional labor (Grandey, 2000). Table 4.1 also shows that the relative frequencies with which each event cluster occurred are similar across the three diary studies.

Table 4.1

Results of concept mapping

Cluster name	Representative events mentioned	Absolute frequency of occurrence	Relative frequency of occurrence	Related concepts in previous studies	Comments
Goal attainment, problem solving, task-related success	"I met the deadline" "Had a successful presentation" "Discussed and finished the agenda for a workshop with colleagues" "Solved a technical problem together with a colleague" "Finishing of a work task"	303	54.20% Study 1: 56.53% Study 2: 50.00% Study 3: 47.13%	Goal-enhancing events (Zohar, et al., 2003); Perceived performance (Fisher & Noble, 2004); Self-acknowledgment (Grandey, 2000) ; Successfully completed a project or task (Mignonac & Herrbach, 2004); Positive event related to work (Miner, et al., 2005); Achievement (Herzberg, 1966)	Frequently studied; related to positive affect (Fisher & Noble, 2004; Miner, et al., 2005; Zohar, et al., 2003); pleasure and comfort and low fatigue (Mignonac & Herrbach, 2004)
Praise, appreciation, positive feedback	"received praise" "my supervisor thanked me" "received praise for being credible" "I was given credit by the principal"	118	21.12% Study 1: 22.62% Study 2: 5.41% Study 3: 27.59%	Positive event related to supervisor or coworkers (Miner, et al., 2005); Received praise from supervisor or coworker or award and acknowledgement of achievement (Mignonac & Herrbach, 2004); Feedback (Grandey, et al., 2002); Feedback (Gaddis, Connelly, & Mumford, 2004); Recognition (Herzberg, 1965)	Frequently studied; Related to hedonic tone (Miner, et al., 2005), pleasure, comfort and tiredness (Mignonac & Herrbach, 2004)

Cluster name	Representative events mentioned	Absolute frequency of occurrence	Relative frequency of occurrence	Related concepts in previous studies	Comments
Perceived competence in or through social interactions	"Assisted my supervisor and felt competent" "Was asked for help in a research project by colleagues from another department" "positive meeting, I was a best seller" "good conversation with a colleague" "successful teamwork"	95	16.99% Study 1: 16.83% Study 2: 20.27% Study 3: 14.94%	Daily positive interaction with supervisor or coworker (Dimotakis, et al., 2011); Positive event related to supervisor or coworkers (Miner, et al., 2005); Socio-emotional feedback (Grandey, 2000); Work itself (Herzberg, 1965)	Not specifically studied in previous research but included in broader category of positive social interactions; Related to positive affect (Dimotakis, et al., 2011) and hedonic tone (Miner, et al., 2005);
Passively experienced, externally determined positive experiences	"was assigned to a new project leader" "service assignment in Spain" "received a promotion" "My colleague got a baby" "got a new job offer"	43	7.69% Study 1: 4.02% Study 2: 24.32% Study 3: 10.34%	Received a promotion (Mignonac & Herrbach, 2004) ; Recognized potential (Grandey, et al., 2002); Responsibility and advancement (Herzberg, 1966)	Heterogeneous category that was included in various ways in previous research; Related to pleasure, comfort and tiredness (Mignonac & Herrbach, 2004)
Hindrances in goal attainment, obstacles in completing work tasks, overload	"acute lack of time" "too many different tasks and projects that are not solvable" "errors when completing a task – thus, additional expenses in working time" "additional strain due to new work tasks" "permanent questions from colleagues and costumers that impede my work"	86	22.45% Study 1: 21.01% Study 2: 24.69% Study 3: 25.00%	Goal-disruptive events (Zohar, et al., 2003); Negative event related to work (Miner, et al., 2005); Overload at work (Bolger, et al., 1989); Quantitative and qualitative overload (Elfering, et al., 2005); Time conflicts (Hahn, 2000); Role overload (Zohar, 1997)	Traditional work stressor; Related to hedonic tone (Miner, et al., 2005); negative mood (Bolger, et al., 1989); emotional exhaustion and depersonalisation (Zohar, 1997); Anger-eliciting event (Hahn, 2000)

Cluster name	Representative events mentioned	Absolute frequency of occurrence	Relative frequency of occurrence	Related concepts in previous studies	Comments
Conflicts and communication problems	"communication problems between the female employees" "an unjustified reproach from a colleague" "an extremely negative discussion with an employee" "conflict with a colleague"	84	21.93% Study 1: 23.95% Study 2: 12.35% Study 3: 26.56%	Cooperation problems in Elfering et al., 2005; Personal attacks or incivility (Grandey, et al., 2002); Negative social interaction (Dimotakis, et al., 2011; van Eck, et al., 1998); Negative event related to coworker (Miner, et al., 2005); Role conflict (Zohar, 1997); Hostile communication and inability to communicate expectations (Hahn, 2000); Interpersonal conflict with single other person (Bolger, et al., 1989); Problems getting along with a supervisor or coworker (Mignonac & Herrbach, 2004); Relations with peers (Herzberg, 1965)	Frequently studied; Related to negative mood (Dimotakis, et al., 2011); hedonic tone (Miner, et al., 2005); emotional exhaustion and depersonalisation (Zohar, 1997)
Technical difficulties, problems with work utensils and equipment	"technical problems with the internet" "the program crashed" "the components are damaged" "parts of production dropped out for 80%"	66	17.23% Study 1: 19.33% Study 2: 14.82% Study 3: 12.50%	Goal-disruptive events (Zohar et al., 2003); Task interference (Grandey, et al., 2002); Negative event related to work (Miner et al., 2005); Organizational problems (Elfering, et al., 2005)	Related to negative affect and fatigue (Zohar, et al., 2003) and hedonic tone (Miner, et al., 2005)

Cluster name	Representative events mentioned	Absolute frequency of occurrence	Relative frequency of occurrence	Related concepts in previous studies	Comments
Managerial and internal problems, organizational climate	"an employee will leave the organization" "my colleague resigned from his job" "received unfair criticism from my supervisor" "endless discussion at the meeting without satisfying results" "problems with the management of the company"	53	13.84% Study 1: 13.03% Study 2: 14.81% Study 3: 15.63%	Unjust treatment and job incompetence (Fitness, 2000); Social stressors (Elfering, et al., 2005); Policy/structure (Grandey, et al., 2002); Well-liked coworker left your work unit (Mignonac & Herrbach, 2004); Supervision (Herzberg, 1965)	See justice research
Ambiguity, insecurity, loss of control	"Chaos! There is no business strategy" "ambiguous task in a project" "A second payment reminder appeared and nobody knows anything about it"	44	11.49% Study 1: 10.50% Study 2: 11.11% Study 3: 15.63%	Organizational problems in Elfering et al., 2005; Policy/structure in Grandey et al., 2002; Unreliability (Hahn, 2000); Role ambiguity (Zohar, 1997); Company policy and administration (Herzberg, 1965)	Traditional stressor, see concept of role ambiguity; Related to emotional exhaustion and depersonalisation (Zohar, 1997)
Health problems and private issues	"I come down with a cold" "Have a hangover" "I suffer from stomach ache" "received bad news about a relative" "ineffective flat viewing"	29	7.57% Study 1: 5.04% Study 2: 19.75% Study 3: 1.56%	Private life (Elfering, et al., 2005); Personal lives interfering with work (Hahn, 2000); Personal health (van Eck, et al., 1998); Personal life (Herzberg, 1965)	Rarely subject of analyses, excluded from the analyses (van Eck, et al., 1998); anger-eliciting event (Hahn, 2000)

Cluster name	Representative events mentioned	Absolute frequency of occurrence	Relative frequency of occurrence	Related concepts in previous studies	Comments
Problems in interactions with clients or patients	"had a phone call with a short-tempered customer" "ineffective conversation with a customer"	21	5.48% Study 1: 7.14% Study 2: 2.47% Study 3: 3.13%	Interpersonal conflict with a single other person (Bolger, et al., 1989); Personal attack or incivility by customer (Grandey, et al., 2002); Client dissatisfaction with service (Hahn, 2000); Role conflict (Zohar, 1997)	See also concept of customer-related social stressor and research on emotion work; Anger-eliciting event (Grandey, et al., 2002; Hahn, 2000); Related to emotional exhaustion and depersonalisation (Zohar, 1997); Strongest predictor of negative mood (Bolger, et al., 1989)

Test of hypotheses

Hypotheses 1a and 1b stated that positive work events are characterized by a potential to fulfill basic psychological needs whereas negative work events are characterized by the hindrance of fulfillment of basic psychological needs. To test these hypotheses we evaluated whether the six raters were consistent in their ratings by using intra-class coefficients for Likert items (ICC) (Shrout & Fleiss, 1979). For all the eleven event clusters the six raters were on average moderately to predominantly confident regarding their ratings ($M = 3.40$, $SD = 0.42$).

Inter-rater consistency across the positive event clusters was ICC = .83. Hence, the six raters were consistent in their evaluation on the needs that were relevant for each of the respective positive event clusters. For instance, the raters consistently rated the cluster *goal attainment, problem solving, task-related success* to most likely fulfill the need for competence ($M = 4.00$, $SD = 0.00$, ICC = .92) (see Table 4.2). The cluster *perceived competence in or through social interactions* was judged to consistently (ICC = .89) fulfill the need for competence ($M = 3.67$, $SD = 0.52$) and the need for relatedness ($M = 3.67$, $SD = 0.52$). The cluster *praise, appreciation, positive feedback* was most likely judged (ICC = .68) to fulfill the need for competence ($M = 3.50$, $SD = 0.84$). However, for *passively experienced, externally determined positive experiences* the raters were relatively consistent in their evaluation (ICC = .77) that this cluster did neither fulfill the need for autonomy ($M = 2.00$, $SD = 0.63$), nor the need for competence ($M = 2.50$, $SD = 0.55$) or for relatedness ($M = 2.67$, $SD = 0.82$). Hypothesis 1a was largely supported. Three of the four positive event clusters were consistently related to the conduciveness of basic psychological needs.

Similarly, inter-rater consistency for the negative events was satisfying with an average ICC of .79. The only exception was the event cluster *health problems and private issues* (ICC = .02). Also, for events from this cluster, the three basic psychological needs were rated to be low (see Table 4.2). This was also the case for the cluster *technical difficulties, problems with work utensils and equipment*. The raters were consistent (ICC = .89) that this cluster did neither fulfill the need for autonomy ($M = 2.83$, $SD = 0.75$), nor the need for competence ($M = 2.83$, $SD = 0.98$) or for relatedness ($M = 1.17$, $SD = 0.41$). Apart from these two exceptions, the six raters were consistent in their judgments on basic psychological needs that were threatened by the

occurrence of the respective negative event clusters. For instance, the cluster *conflicts and communication problems* was judged to consistently (ICC = .91) threat the need for relatedness (*M* = 4.00, *SD* = 00). Further, the raters consistently (ICC = .79) judged the cluster *ambiguity, insecurity, loss of control* to most likely threaten the need for competence (*M* = 3.67, *SD* = 0.52) and the need for autonomy (*M* = 3.33, *SD* = 0.82), and less likely to be related to the need for relatedness (*M* = 2.50, *SD* = 1.05). For more results, see Table 4.2. Apart from the two event clusters *health problems and private issues* and *technical difficulties, problems with work utensils and equipment*, Hypothesis 1b was supported.

Investigating relationships between event clusters and distinct affective states

To test Hypotheses 2 and 3 and investigate the relationships between event clusters and distinct affective states we used hierarchical linear regression analysis (HLM 6; Raudenbush, Bryk, & Congdon, 2004) because our data had a two-level structure: Variables measured at the day-level (work events, affective states) were nested within persons.

The results of testing Hypotheses 2 and 3 are represented in Table 4.2. The relationships are based on correlation coefficients on the day-level (within-person level) of analysis (*n* = 830 observations; for *at rest* and *exhausted*: *n* = 552) and represent unstandardized parameter estimates from fixed-coefficients HLM models with single day-level predictors and no between-person level predictors. In order to better evaluate the strength of the relationships between work events and distinct affective states, we calculated the amount of within-person variance explained in the outcome variable by the respective event cluster as an effect size measure (R^2) (Hofmann, Griffin, & Gavin, 2000).

Hypothesis 2 stipulated that positive events are related to positive affective states. As can be seen in Table 4.2, all positive event clusters are positively related to the highly activated positive state of *enthusiastic,* with the event cluster of *goal attainment, problem solving and task-related success* showing the strongest relationship. All but one of the positive events are positively related to *at rest*. The exception is the cluster *passively experienced, externally determined positive experiences.* These results generally support Hypothesis 2.

Hypothesis 3 stipulated that negative events are related to negative affective states. The highly activated negative state of *angered* is significantly related to all negative event clusters (except *health problems and private issues*), with *conflicts and communication problems* showing the strongest relationship. The highly activated negative affective state of *worried* is positively related to four of the seven negative event clusters: *technical difficulties, problems with work utensils and equipment; hindrances in goal attainment, obstacles in completing work tasks, overload; ambiguity, insecurity, loss of control; and conflicts and communication problems*. The low activated negative affective state of *exhausted* is positively related to three negative event clusters (*health problems and private issues; problems in interactions with clients and patients; ambiguity, insecurity, loss of control*) with *health problems and private issues* explaining 10.85% of variance in feeling *exhausted*. However, this effect is probably due to an overlap in content of the predictor and the outcome (van Eck, et al., 1998). Further, *exhausted* is unrelated to the other four negative event clusters. Together, these results partially support Hypothesis 3. Taken together, there are no two event clusters with identical relationships with the five affective states. Moreover, although *angered* and *worried* are both high activation negative affective states, their relationships with preceding events differ (see Table 4.2).

Hypothesis 2a and 3a stipulated that the relationship of positive (negative) work events and positive (negative) affective states would remain significant also when controlling for trait positive (negative) affect. To test Hypotheses 2a and 3a and to further ascertain the validity of our taxonomy, we calculated whether the distinct event clusters explained variance in affective states over and above the influence of trait affect as between-person predictor in multilevel regression analyses. Predictors at the day-level were grand-mean centered in these analyses (Hofmann, et al., 2000). The results revealed that the distinctive event clusters explained variance in almost all affective states beyond the influence of trait positive and negative affect. For example, the four positive event clusters explained 6.89% additional variance in *at rest* beyond the effect of trait positive affect. Further, the negative event clusters explained 29.56% in *angered*, 5.54% in *worried* and 8.92% in *exhausted* beyond the effect of trait negative affect. However, the four positive event clusters explained only 0.40% additional variance in *enthusiastic* beyond the effect of trait positive affect. These results support Hypotheses 2a and 3a with regard to four of the five distinct affective states.

Hypothesis 2b and 3b stated that the relationship of positive (negative) work events and positive (negative) affective states remains significant also when controlling for the occurrence of positive (negative) events. In order to test these hypotheses, we investigated whether the event clusters explained variance in affective states over and above a dichotomous variable that assessed the mere occurrence of positive or negative work events (any event occurred versus no event occurred) without clustering. The specific negative and positive event clusters explained variance in three of the five affective states over and above assessing the occurrence of positive and negative events without clustering. For instance, we found that including the positive event clusters in the analyses explained 1.4% variance in *at rest* over and above a dichotomous variable for the occurrence of positive events without clustering. Including the negative event clusters explained 6.72% variance in *exhausted* and 3.62% in *angered* over and above a dichotomous variable for negative events without clustering. On the contrary, the negative event clusters explained only 0.5% variance in *worried* over and above a dichotomous variable for negative events. Furthermore, in the state of *enthusiastic* the distinct event clusters did not explain notable variance over and above the broad assessment of positive work events as a dichotomous variable. Hence, for the prediction of *enthusiastic* and *worried* the differentiation between specific event clusters does not seem to be relevant compared to the prediction of the remaining affective states. These results partly support Hypothesis 2b (with an exception for *enthusiastic* as positive activating state) and partly support Hypothesis 3b (with an exception for *worried* as negative activating state). Together, these findings lend support for the predictive power of the distinct event clusters that result from our study.

Table 4.2

Relationship of work event clusters with affective states

Cluster name	High activation positive Enthusiastic[1]	Low activation positive At rest[2]	High activation, negative Angered[1]	High activation, negative Worried[1]	Low activation negative Exhausted[2]	Mean rating of relevance Need for autonomy[3]	Mean rating of relevance Need for competence[3]	Mean rating of relevance Need for relatedness[3]
Goal attainment, problem solving, task-related success	++	+	--	-	-			
	.48**(0.06)	.18*(0.07)	-.55**(0.08)	-.26**(0.06)	-.21*(0.07)	3.00 (0.00)	4.00 (0.00)	2.33 (1.03)
	6.77%	1.31%	5.98%	1.91%	1.90%			
Praise, appreciation, positive feedback	+	+	-	o	-			
	.30** (0.09)	.33** (0.11)	-.34*(0.11)	-.09 (0.09)	-.25*(0.10)	2.33 (0.62)	3.50 (0.84)	3.00 (0.63)
	1.11%	2.48%	1.33%	0.08%	1.63%			
Perceived competence in or through social interactions	+	+	-	o	o			
	.27* (0.10)	.31**(0.12)	-.47**(0.12)	-.16 (0.09)	-.20 (0.11)	2.50 (0.84)	3.67 (0.52)	3.67 (0.52)
	0.57%	0.89%	2.07%	0.46%	0.91%			
Passively experienced, externally determined positive experiences	+	o	-	o	o			
	.27*(0.14)	.26 (0.21)	-.34* (0.17)	-.06 (0.13)	.13 (0.20)	2.00 (0.63)	2.50 (0.55)	2.67 (0.82)
	0.73%	0.17%	0.69%	0.09%	0.02%			

Cluster name	High activation positive *Enthusiastic[1]*	Low activation positive *At rest[2]*	High activation, negative *Angered[1]*	High activation, negative *Worried[1]*	Low activation negative *Exhausted[2]*	Mean rating of relevance Need for autonomy[3]	Mean rating of relevance Need for competence[3]	Mean rating of relevance Need for relatedness[3]
Hindrances in goal attainment, obstacles in completing work tasks, overload	-	o	+	+	o			
	-.39** (0.19)	-.16 *(0.12)*	.49** *(0.12)*	.23* *(0.09)*	.13 *(0.12)*	3.50 (0.55)	3.67 (0.52)	2.50 (1.05)
	1.89%	0.14%	2.66%	1.06%	0.29%			
Conflicts and communication problems	-	-	++	+	o			
	-.48** (0.10)	-.52** *(0.12)*	.87** *(0.12)*	.27** *(0.10)*	0.08 *(0.11)*	2.33 (0.52)	2.83 (0.98)	4.00 (0.00)
	2.11%	4.28%	10.12%	0.50%	0.05%			
Technical difficulties, problems with work utensils and equipment	-	-	+	+	o			
	-.36** *(0.11)*	-.37** *(0.13)*	.53** *(0.14)*	.28** *(0.11)*	.07 *(0.12)*	2.83 (0.75)	2.83 (0.98)	1.17 (0.41)
	1.67%	1.48%	1.79%	0.97%	0.13%			
Managerial and internal problems, organizational climate	-	o	+	o	o			
	-.41** *(0.13)*	-.19 *(0.16)*	.62** *(0.15)*	.24* *(0.12)*	.25 *(0.15)*	3.17 (0.76)	2.83 (0.75)	3.83 (0.41)
	0.97%	0.32%	1.99%	0.29%	0.81%			
Ambiguity, insecurity, loss of control	-	-	+	+	+			
	-.46** *(0.13)*	-.63** *(0.17)*	.67** *(0.16)*	.58** *(0.13)*	.52** *(0.16)*	3.33 (0.82)	3.67 (0.52)	2.50 (1.05)
	1.44%	2.69%	2.61%	2.84%	2.14%			

Cluster name	High activation positive Enthusiastic[1]	Low activation positive At rest[2]	High activation, negative Angered[1]	High activation, negative Worried[1]	Low activation negative Exhausted[2]	Mean rating of relevance Need for autonomy[3]	Mean rating of relevance Need for competence[3]	Mean rating of relevance Need for relatedness[3]
Health problems and private issues	-	o	o	o	++			
	-.42** (0.16)	-.29 (0.23)	-.19 (0.19)	-.03 (0.16)	.89** (0.21)	2.67 (1.37)	2.33 (0.52)	2.33 (0.52)
	0.61%	0.26%	0.07%	0.02%	10.85%			
Problems in interactions with clients or patients	-	o	+	o	+			
	-.34* (0.20)	-.35 (0.22)	.70** (0.24) 0.67%	.07 (0.19)	.60** (0.21)	2.00 (0.63)	3.00 (0.63)	2.83 (0.98)
	0.38%	0.31%		0.02%	1.48%			

Note. Unstandardized coefficients are reported (standard errors in brackets). Within-person variance (in %) explained by the predictor was calculated by using the formula: $R^2 = (\sigma^2_{\text{null model}} - \sigma^2_{\text{fixed-effect model}}) / \sigma^2_{\text{null model}}$. (Hofmann, et al., 2000).

++/-- indicates a significant positive/negative relationship with more than 5% of the variance explained by the predictor. +/- indicates a significant positive/negative relationship with less than 5% of the variance explained by the predictor. o indicates no significant relationship.

[1] n = 830 observations based on all studies.

[2] n = 552 observations based on N = 114 from Study 1.

[3] Rating of relevance for basic psychological needs was done on a 4-point scale ranging from 1 (not at all relevant) to 4 (extremely relevant). Standard deviations in brackets.

4.5 Discussion

Summary of results

AET highlights the importance of the appraisal of work events as proximal antecedents of affect and distal antecedents of attitudes and work behavior (Ellsworth & Scherer, 2003; Weiss & Cropanzano, 1996). However, based on our literature review one can conclude that few attempts have been made to systematically classify positive and negative work events (see for an exception Basch & Fisher, 2000). Rather, a clear picture of the kind of events that occur frequently in the workplace is lacking. The purpose of this study was to develop a comprehensive classification taxonomy of positive and negative work events in order to provide a common frame of reference for future studies to build on. Using concept mapping methodology, we were able to identify 11 work event clusters. Further, we examined the validity of our taxonomy by investigating the relationships between each work event cluster and affective states from the affective circumplex. Our findings demonstrate the usefulness of differentiating between the distinct positive and negative event clusters and lend support for the validity of our taxonomy. With the exception for *enthusiastic*, the relationships between positive (negative) work events and positive (negative) affective states remained significant beyond influences of trait positive and trait negative affect that are assumed to additionally predict affective states (Watson, et al., 1988; Weiss & Cropanzano, 1996).

Furthermore, the event clusters explained notable variance in affective states (apart from *enthusiastic* and *worried*) over and above the broad assessment of work events as a dichotomous variable. These findings lend support for the meaningfulness of clustering work events and investigating affective consequences of specific event clusters and they confirm the validity of our taxonomy.

Comparison with existing classifications of work events

Basch and Fisher (2000) applied the first systematic approach to categorize work events and to link events categories with emotional experiences. Some similar clusters emerged in our taxonomy: the cluster *praise, appreciation, positive feedback* is similar to *receiving recognition* in the events-emotions matrix. Further, the negative event cluster of *health problems and private issues* resembles the event cluster *personal problems* in the events-emotions matrix. There are also some differences. The events-emotions matrix

contains 14 positive and 13 negative event clusters, whereas we found a smaller number of both positive and negative event clusters by stronger clustering. This allows for a comprehensive and economical assessment of affective events. When necessary, however, the bigger clusters in our taxonomy that resulted from merging conceptually similar clusters can be broken down in more specific clusters. For example, goal progress and goal achievement could be distinguished from problem solving, and success in social interactions related to task accomplishment could be differentiated from success in social interactions related to the quality of cooperation and progress in teamwork.

Compared to another detailed classification by Grandey et al. (2002), our taxonomy is more comprehensive. The concept mapping method revealed that, consistent with previous research, *health problems and private issues* and *hindrances in goal attainment, obstacles in completing work tasks, overload* are important and frequent additional events. Furthermore, deviating from Grandey's (2002) approach to group events by selected emotions (pride and anger), our taxonomy is open about the relationship to specific affective states, and the results of our correlational analyses revealed that in fact each cluster of events is related to more than one discrete affective state.

As a further extension of previous taxonomies, our findings emphasize the importance of taking into account the appraisal dimension of needs satisfaction for positive and negative work events. We found that three of the four positive event clusters were related to a high potential for the fulfillment of basic psychological needs whereas, apart from the event clusters *health problems and private issues, technical difficulties, problems with work utensils and equipment*, negative events were experienced when an event is appraised as hindering or threatening the satisfaction of needs (Ellsworth & Scherer, 2003; Scherer, 1988).

In sum, this study adds to previous research by providing a comprehensive yet parsimonious classification of both positive and negative work events. Based on our results, we developed a checklist including all event clusters from our taxonomy that can be used for future studies.[5] By applying this work events checklist in diary studies, future research may investigate relationships between the specific work event clusters and other

---

[5] The work event checklist can be obtained from the authors upon request. *(Note: The checklist is included in the appendix of this dissertation)*

distinct affective states not included in our study (e.g., feeling pride, sympathy, gratitude, frustration and hostility).

Theoretical contribution

Our study adds to the literature in at least three ways: First, this study contributes to the refinement of AET. It provides a basis for specifying some of the propositions of AET, according to which specific work events are related to distinct affective states. Also, by taking the appraisal dimension of needs satisfaction into account, our study was able to explain what constitutes an affective event.

Second, our study extends knowledge by identifying clusters of positive and negative work events as specific sources of affect. This enables to investigate more fine-grained relationships between work events, affect and affective consequences. Third, our taxonomy integrates previous theory and research by providing evidence on the kinds of experiences that are judged as important in the work day. Below, we will describe these contributions in more detail.

Refinement of AET

Our literature review reveals that only few studies have tested the main proposition of AET that proposes affective events to function as mechanisms in the relationship between job features and job attitudes (Weiss & Beal, 2005). We argued that one reason for this fact may be the lack of specific propositions about the kind of work events that elicit certain positive or negative affective states and the lack of consensus what kind of affective events are worth examining. By identifying 11 event clusters and examining the validity of our approach, this study provides a basis for specifying testable propositions.

AET states that the appraisal of events is important for the determination of affective events but previous categorizations of work events did not sufficiently integrate appraisal processes in the development and interpretation of their classifications. Our study contributes by examining the role of basic psychological needs as an important appraisal dimension that determines the perception of affective work events. The definition of affective events as "things [that] happen to people in work settings" (Weiss & Cropanzano, 1996, p. 11) to which "people react emotionally" can thus be refined.

Based on cognitive appraisal theories (cf. Elfenbein, 2007; Lazarus, 1991), we argued and found that the perception and affective evaluation of work events is driven

primarily from the conduciveness to the satisfaction of basic psychological needs such that events that are perceived to fulfill the needs for autonomy, competence and relatedness are evaluated to be positive whereas events that threat the needs for autonomy, competence and relatedness are more likely judged to be negative. For example, the cluster of *goal attainment, problem solving and goal progress* is characterized by the possibility to fulfill the need for competence. Individuals experiencing events of this kind may feel that they achieved something and experience enthusiasm as a result. This explanation is in line with findings that emotional well-being results from the satisfaction of psychological needs (Deci & Ryan, 2000; Reis, et al., 2000). Similarly, the negative work event clusters *conflicts and communication problems* and *managerial and internal problems, organizational climate* are characterized by high potential to threat the need for relatedness. Hence, this study provides evidence that all three basic psychological needs of autonomy, competence and relatedness are important for the determination of specific affective work events.

However as an exception, three of the eleven event clusters (*passively experienced, externally determined positive experiences; technical difficulties, problems with work utensils and equipment, health problems and private issues*) were unrelated to the fulfillment or threat of fulfillment of basic psychological needs. This indicates that apart from the appraisal dimension of relevance to basic needs, further appraisal dimensions, such as the availability of resources and the potential to cope with the perceived situation are also relevant for the determination of work events (cf. Ellsworth & Scherer, 2003; Scherer, 2001). For example, a problem with work utensils or equipment may be appraised as challenge or hindrance, depending on the level of resources available for coping with the event (Elfenbein, 2007; Podsakoff, LePine, & LePine, 2007). Further, a conflict with a customer might be appraised as obstructive or conducive to the need for competence depending on the level of resource availability and the ability to cope with the situation (Elfenbein, 2007; Scherer, 1988). Future research needs to look into this issue by investigating the role of these further dimensions relevant for the appraisal of affective events.

Although AET and cognitive appraisal theories of emotions highlight the importance of studying distinct affective states (cf. Weiss & Cropanzano, 1996), most research on affect at work has primarily focused on general positive (activating or

deactivating) and negative (activating or deactivating) affect rather than on distinct affect states (Lerner & Keltner, 2000; Weiss, Suckow, et al., 1999). Our study refines AET by showing that work events are differentially related to discrete affective states such that there are no two event clusters with identical relationships with the five affective states. This contradicts the unitary approach where positive and negative events are coded as unitary concepts that are assumed to have the same effect on employees' affect and outcomes of affective experiences (Gross, et al., 2011). Furthermore, this contradicts the unitary approach of affective states according to which broader concepts of positive and negative activating and deactivating affect are used by summarizing distinct affective states to composite concepts. This approach avoids specifying if and when distinct affective states of the same valence and level of activation are related to different predictors and have different effects on outcome variables (Lerner & Keltner, 2000). In accordance with previous research showing that distinct affective states have different causes and consequences (Keltner, Ellsworth, & Edwards, 1993), our study contributes by providing evidence for the usefulness of investigating distinct affective states beyond the mere consideration of valence and activation. For example, although *angered* and *worried* are both high activation negative affective states, their relationships with preceding events differed. Thus, in line with Weiss, Suckow et al. (1999), who argue that ignoring research on distinct affective states may reduce the possibility to predict more specific behaviors and affect-related consequences, our study provides a basis for future research to more differentially examine affective events, distinct affective states and more specific affective outcomes.

Following from the assumption that events are relevant for certain psychological needs, some basic needs may be more salient than others for individuals at certain times, even though the three basic needs can be universally applied (Deci & Ryan, 2000; Ryan & Deci, 2000). Based on the triple-match-principle (De Jonge & Dormann, 2006), one would expect positive events that help fulfillment of the same need that has been threatened in a negative event to lessen the effect of this negative event. For example, after the need for relatedness has been threatened by an event from the cluster *problems with clients or patients*, experiencing a positive interaction with a coworker would occur more relevant and might function as an effective means to restore momentary well-being. This argument is supported by recent research examining the strategies employees use to regulate their

daily affect (Binnewies & Fetzer, 2010; Daniels & Harris, 2005; Fritz, et al., 2011). Some strategies identified in this line of research have a focus on social interactions. For example, talking to others to regulate affect or to solve problems (Binnewies & Fetzer, 2010; Daniels & Harris, 2005), or doing others a favor (Fritz, et al., 2011) have been linked to the experience of activated positive affect. It might be that these relational, affiliation-related strategies are particularly helpful after experiencing an event in which the need for relatedness was threatened, for example after talking to a rude customer or experiencing a dispute with a coworker. In sum, our study helps to develop some clearer predictions which kinds of events will lead to affective states. Consequently, future research needs to take into account between-person and within-person variation in the salience of needs and relationships with affective states across time.

In addition, based on our findings future research can more systematically and differentially investigate the relationships between work features and specific work events that are proposed in AET (Weiss & Cropanzano, 1996). For instance, it can be expected that positive events such as *praise, appreciation and positive feedback* are more likely to be reported in an organizational environment with a strong feedback culture that provides high levels of informal supervisor and coworker feedback, that values a collective climate and supports social support such that people take a personal interest in one another (Humphrey, et al., 2007; Rosen, Levy, & Hall, 2006). In contrast, *conflicts and communication problems* might be more likely to occur in work environments where social support and interest in employees' welfare is low and where there is a lack of positive social climate (Frese, 1999; Morgeson & Humphrey, 2006). Events from the clusters *hindrances in goal attainment, obstacles in completing work tasks, overload* and *ambiguity, insecurity, loss of control* may be more likely reported in work environments that are low in job autonomy (Morgeson & Humphrey, 2006). In future research, these propositions may be examined in more detail.

Contribution to research on consequences of affective experiences

Previous research has examined the effects of affective experiences on different performance dimensions such as in-role performance, helping behavior, creativity, and proactive behavior (Binnewies, Sonnentag, & Mojza, 2009; Fay & Sonnentag, 2012; Fisher, 2002; Fritz & Sonnentag, 2009; Ilies, Scott, & Judge, 2006), and theoretical work has highlighted the processes explaining how affective experiences lead to performance

outcomes. However, there also have been requests for research on the sources of affective experiences at work (Seo, Feldman Barrett, & Bartunek, 2004).

By providing a differentiated approach of specific work events as sources of affective experiences, our taxonomy may contribute to our knowledge on the relationship between affect and performance. Examining the dynamic processes of daily performance, affect can either enhance the focus on the task at hand, or distract from it, thereby increasing or decreasing performance in so-called performance episodes (Beal, Weiss, Barros, & MacDermid, 2005). Beal and colleagues (2005) argued that positive affect attributed to a task can act as an attentional pull, thereby increasing task performance whereas positive affect resulting from other sources can distract from the task at hand. This argument points to the fact that it is necessary to know the source of affect when studying the affect-performance link. Our study contributes to this line of research by providing a differentiation of sources of affective experiences. Following the logic outlined above, an employee experiencing *goal attainment, problem solving, task-related success* would be better able to focus on the task at hand, and thus achieve better results than when the same employee receives *praise, appreciation, positive feedback.* Similarly, the negative affect resulting from negative events such as *hindrances in goal attainment, obstacles in completing work tasks, overload* might help an employee focus on the task and persist in his or her efforts whereas negative affect resulting from other, non-task related events would distract the employee. If these assumptions turn out to be valid, the research on affect-performance links can move beyond the assumption that positive affect generally has positive and negative affect negative effects on performance.

Moreover, recent empirical evidence reveals that the dynamic interplay between positive and negative affect determines work-related outcomes such as creativity or the positive affective-motivational state of work engagement (Bledow, Rosing, & Frese, in press; Bledow, Schmitt, Frese, & Kühnel, 2011). According to the affective shift model (Bledow, et al., 2011), negative affect can positively influence work engagement if it is followed by a sequence of positive affect. People who are able to shift to a positive affective state after having experienced negative affect can more effectively regulate affective states which impacts work-related consequences. Investigating the event clusters found in our study could complement knowledge on the external sources of the affective shift process with more differentiated predictions for work-related outcomes. For example,

for people who experience anger or worry due to *hindrances in goal attainment, obstacles in completing work tasks, overload* it may be possible to increase their level of motivation or creativity when they experience any event related to *goal attainment, problem solving, task-related success* due to its motivational, approach-related effect that is linked to the positive affective state of enthusiastic. In contrast, for people who first experience anger or worry and are subsequently confronted with *passively experienced, externally determined positive experiences* that are only marginally related to positive affective states, the motivational potential of the negative affective state is unlikely to unfold which in turn may decrease the person's level of work engagement. Our taxonomy provides the necessary means to more systematically analyze propositions of the affective shift model.

Integration of knowledge from different research traditions

Third, our taxonomy integrates previous theory and research by providing evidence on the kinds of experiences that are judged as important in the work day irrespective of certain research traditions. Whereas it becomes evident from our literature review that the categories of previous approaches on work events are based on researchers' theoretical assumptions and orientations (e.g., stress and occupational health; emotions; self-regulation), the event clusters that emerged from our analyses are recognized in different theoretical frameworks that can now be integrated. For instance, our taxonomy includes the positive event cluster *perceived competence in or through social interactions*. The emergence of this cluster is in line with recent research on relational job design demonstrating the relevance of rewarding social interactions at work (Grant & Parker, 2009; Saavedra & Kwun, 2000). Further, our taxonomy includes negative events that are related to ambiguity and insecurity at work. Theoretically, this category of work events has already been emphasized in role theory (Katz & Kahn, 1978) which includes role overload, role conflict and role ambiguity as stressors at work that have shown to be negatively related to well-being (cf. Sonnentag & Frese, 2003). Moreover, ambiguity and insecurity appear in the categorization of stressors based on action theory (Frese & Zapf, 1994) as hindering goal-oriented action.

The results based on our taxonomy suggest that it may be beneficial and useful to integrate previous taxonomies on work events by using a cognitive approach that accounts for the dimensions of appraisal processes. Dimensions of appraisal such as novelty, pleasantness, conduciveness to needs and potential for coping determine the occurrence of

an event and its affective content (Elfenbein, 2007; Scherer, 1988). Hence, the numerous research approaches dealing with positive and negative emotion-eliciting events such as stressful events (e.g., Elfering, et al., 2005), positive feedback, overload at work, interpersonal conflicts (e.g., Bolger, et al., 1989), and relationships between these event clusters and affective states, can obviously be integrated based on cognitive appraisal processes and the role of basic psychological needs for well-being that were noted in our study. For instance, whereas events from the clusters *conflicts and communication problems* and *managerial and internal problems, organizational climate* can be traced back to different research traditions and theoretical frameworks (Dimotakis, et al., 2011; Fitness, 2000; Grandey, et al., 2002), they were both consistently judged to threat the need for relatedness. Further, events from both clusters were significantly related to the negative activating state of angered and may thus have similar consequences for affect-related attitudes and behavior.

Limitations and future research

As with all research, this study is not without limitations. Although we used a heterogeneous sample of employees in our diary studies, the generalizability of our results might be limited to white collar workers from a Western culture who have the opportunity to access the internet during working time. The frequency and types of events might be specific for this sample. For instance, events in the cluster *problems in interactions with clients or patients* may appear more frequently in samples consisting of a higher proportion of service providers. More research is needed to determine the generalizability of our findings, potentially by using other data collection devices and by using samples that differ in professions and in cultural background.

We found some support for the idea that work events were characterized by the potential to fulfill or threat psychological needs. However, the ratings were made by independent raters according to the description of our qualitative results gathered from the concept mapping approach. We did not assess the relevance of basic needs for the occurrence of work events in the three diary studies. Future research will need to more thoroughly examine basic psychological needs as antecedents of affective states by assessing an individuals' appraisal affected by the work event.

Diary studies do not allow for clear causal inferences (Bolger, et al., 2003; Ohly, et al., 2010). Thus, the conclusion that the appraisal of work events <u>causes</u> affective states

might be premature. Specifically, it could be that individuals experiencing negative affect are more likely to report negative events because these types of events are more accessible in memory (mood congruence effect, Fiedler, 1990; Forgas, 1995). This differential accessibility would inflate the relationship between events occurrence and the experience of affective states. Although we cannot rule out this effect completely, our analyses also revealed that the events occurrence in general had incremental validity over and above trait affect, indicating that at least the differential accessibility due to dispositional influence might not be a great problem.

However, an exception was the positive activating affective state of *enthusiastic* where the distinct event clusters did not explain notable variance over and above trait affect and the broad assessment of positive work events as a dichotomous variable without clustering. One reason for this finding may be that trait positive affect acts as a confounding variable as it both influences the occurrence of positive events and predicts the positive affective state of *enthusiastic* (Watson, et al., 1988). Former empirical research revealed that trait positive affect predicted the likelihood of affect-congruent judgments of work events and predisposed individuals to experience more positive events in terms of life events (Magnus, Diener, Fujita, & Pavot, 1993; Zelenski & Larsen, 2002). Therefore, when controlling for trait positive affect or the occurrence of work events, the differentiation between specific event clusters does not explain incremental variance. Hence, differential accessibility due to dispositional influence might have been valid for the positive state of *enthusiastic*. Future research needs to further look into this issue by replicating our findings and examining further positive activating affective states (e.g., delighted, proud) as consequences of specific positive and negative work events.

In the three diary studies, participants differed in the number of events they reported. This difference in frequency does not mean that some individuals experienced fewer events. It could also be interpreted as a differential reporting due to individual differences. Based on our assumption that events can be characterized by the potential for psychological need satisfaction (Ellsworth & Scherer, 2003; Scherer, 2001), one could conclude that individuals who are dispositionally or situationally primed towards a specific need are more likely to report an event characterized by the potential to fulfill this need. Alternatively, individuals reporting of events might also depend on their willingness to invest the extra effort of describing an event in their own words, and previous research has

identified characteristics of responding (as opposed to non-responding) individuals (Spitzmuller, Glenn, Barr, Rogelberg, & Daniel, 2006). Future research should focus on individual differences such as conscientiousness (as it relates to response behavior), or the chronic use of expressive suppression as affect regulation strategy that may be associated with memory distortions regarding work events due to its cognitive costs of inhibiting outward signs of affect (Richards & Gross, 2006). Individual differences in the willingness to report and describe an event could be alleviated by using a more parsimonious checklist based on the results of our study.

Conclusion

The comprehensive taxonomy of affective workplace events developed in this study can be used to derive and test specific propositions based on AET and related research. By examining their causes and effects, a better understanding and a more integrated picture of affective experiences at work may be possible.

4.6 References

Amabile, T. M., & Kramer, S. J. (2011). The power of small wins. *Harvard Business Review, 89*, 70-80.

Basch, J., & Fisher, C. D. (2000). Affective events-emotions matrix: A classification of work events and associated emotions. In N. M. Ashkanasy, Härtel, C. E. J., Zerbe, W. J. (Ed.), *Emotions in the workplace: Research, theory and practice* (pp. 33-48). Westport: CT: Quorum Books, Greenwood Publishing Group.

Beal, D. J., Weiss, H. M., Barros, E., & MacDermid, S. M. (2005). An episodic process model of affective influences on performance. *Journal of Applied Psychology, 90*, 1054-1068.

Binnewies, C., & Fetzer, B. (2010). Affective states and affect regulation as antecedents of dynamic work engagement. In S. Albrecht (Ed.), *Handbook of Employee Engagement: Perspectives, Issues, Research and Practice* (pp. 245-252). Cheltenham, UK: Edward Elgar Publishing.

Binnewies, C., Sonnentag, S., & Mojza, E. (2009). Daily performance at work: Feeling recovered in the morning as a predictor of day-level job performance. *Journal of Organizational Behavior, 30*, 67-93.

Bitner, M. J., Booms, B. H., & Tetreault, M. S. (1990). The service encounter: diagnosing favorable and unfavorable incidents. *The Journal of Marketing, 54*, 71-84.

Bledow, R., Rosing, K., & Frese, M. (in press). A dynamic perspective on affect and creativity. *Academy of Management Journal*.

Bledow, R., Schmitt, A., Frese, M., & Kühnel, J. (2011). The affective shift model of work engagement. *Journal of Applied Psychology, 96*, 1246-1257.

Bolger, N., Davis, A., & Rafaeli, E. (2003). Diary methods: Capturing life as it is lived. *Annual Review of Psychology, 54*, 579-616.

Bolger, N., DeLongis, A., Kessler, R. C., & Schilling, E. A. (1989). Effects of daily stress on negative mood. *Journal of Personality and Social Psychology, 57*, 808-818.

Borg, I., & Groenen, P. J. F. (2005). *Modern multidimensional scaling: Theory and applications*. New York: Springer.

Brief, A. P., & Weiss, H. M. (2002). Organizational behavior: Affect in the workplace. *Annual Review of Psychology, 53*, 279-307.

Conway, N., & Briner, R. B. (2002). A daily diary study of affective response to psychological contract breach and exceeded promises. *Journal of Organizational Behavior, 23*, 287-302.

Daniels, K., & Harris, C. (2005). A daily diary study of coping in the context of the job demands-control-support model. *Journal of Vocational behavior, 66*, 219-237.

De Dreu, C. K. W., Harink, F., & Van Vianen, A. E. M. (1999). Conflict and performance in groups and organizations. In C. L. Cooper & I. T. Robertson (Eds.), *International review of industrial and organizational psychology* (Vol. 14, pp. 369-414). Chichester: Wiley.

De Jonge, J., & Dormann, C. (2003). The DISC model: Demand-induced strain compensation mechanisms in job stress. In M. F. Dollard, A. H. Winefield & H. R. Winefield (Eds.), *Occupational stress in service professions* (pp. 43-74). London: Taylor & Francis.

De Jonge, J., & Dormann, C. (2006). Stressors, resources, and strain at work: A longitudinal test of the triple-match principle. *Journal of Applied Psychology, 91*, 1359-1374.

Deci, E. L., & Ryan, R. M. (2000). The "what" and "why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry, 11*, 227-268.

Dimotakis, N., Scott, B. A., & Koopman, J. (2011). An experience sampling investigation of workplace interactions, affective states, and employee well-being. *Journal of Organizational Behavior, 32*, 572-588.

Dong, J., Martin, S., & Waldo, P. (2001). *A user input and analysis tool for information architecture*. Paper presented at the CHI '01 extended abstracts on Human factors in computing systems, Seattle, Washington.

Dormann, C., & Zapf, D. (2004). Customer-related social stressors and burnout. *Journal of Occupational Health Psychology, 9*, 61-82.

Elfenbein, H. A. (2007). Emotion in organizations: A review in stages. In A. Brief & J. Walsh (Eds.), *Annals of the Academy of Management* (Vol. 1, pp. 315-386). Amsterdam: Elsevier.

Elfering, A., Grebner, S., Semmer, N. K., Kaiser-Freiburghaus, D., Laupner-Del Ponte, S., & Witschi, I. (2005). Chronic job stressors and job control: Effects on event-related

coping success and well-being. *Journal of Occupational and Organizational Psychology, 78*, 237-252.

Ellsworth, P. C., & Scherer, K. R. (2003). Appraisal processes in emotion. In R.J. Davidson, K.R. Scherer & H. H. Goldsmith (Eds.), *Handbook of affective sciences* (pp. 572-595). New York: Oxford University Press.

Fay, D., & Sonnentag, S. (2012). Within-person fluctuations of proactive behavior: How affect and experienced competence regulate work behavior. *Human Performance, 25*, 72-93.

Fiedler, K. (1990). Mood-dependent selectivity in social cognition. *European Review of Social Psychology, 1*, 1-32.

Fisher, C. D. (2002). Antecedents and consequences of real-time affective reactions at work. *Motivation and Emotion, 26*, 3-30.

Fisher, C. D. (2008). Emotions in and around performance: the thrill of victory, the agony of defeat. In N. M. Ashkanasy & C. L. Cooper (Eds.), *Research companion to emotion in organizations* (pp. 120-135). Cheltenham, United Kingdom: Edward Elgar Publishing.

Fisher, C. D., & Noble, C. S. (2004). A with-in person examination of correlates of performance and emotions while working. *Human Performance, 17*, 145-168.

Fitness, J. (2000). Anger in the workplace: An emotion script approach to anger episodes between workers and their superiors, co-workers and subordinates. *Journal of Organizational Behavior, 21*, 147-162.

Forgas, J. P. (1995). Mood and judgment: The affect infusion model (AIM). *Psychological Bulletin, 117*, 39-66.

Frese, M. (1999). Social support as a moderator of the relationship between stress at work and psychological dysfunctioning: A longitudinal study with objective measures. *Journal of Occupational Health Psychology, 4*, 179-192.

Frese, M., & Zapf, D. (1994). Action as the core of work psychology: A German approach. In H. C. Triandis, M. D. Dunnette & L. Hough (Eds.), *Handbook of industrial and organizational psychology* (Vol. 4, pp. 271-340). Palo Alto, CA: Consulting Psychologists Press.

Frijda, N. H. (1993). Moods, emotion episodes, and emotions. In M. Lewis & J. M. Haviland (Eds.), *Handbook of emotions* (pp. 381-403). New York: Guilford Press.

Fritz, C., Lam, C. F., & Spreitzer, G. M. (2011). It's the little things that matter. *The Academy of Management Perspectives, 25*, 28-39.

Fritz, C., & Sonnentag, S. (2009). Antecedents of day-level proactive behavior at work: A look at job stressors and positive affect during the workday. *Journal of Management, 35*, 94-111.

Fuller, J. A., Stanton, J. M., Fisher, G. G., Spitzmueller, C., Russell, S. S., & Smith, P. C. (2003). A lengthy look at the daily grind: Time series analysis of events, moods, stress, and satisfaction. *Journal of Applied Psychology, 88*, 1019-1033.

Gaddis, B., Connelly, S., & Mumford, M. D. (2004). Failure feedback as an affective event: Influences of leader affect on subordinate attitudes and performance. *The Leadership Quarterly, 15*, 663-686.

Grandey, A. A. (2000). Emotion Regulation in the Workplace: A New Way to Conceptualize Emotional Labor. *Journal of Occupational Health Psychology, 5*, 95-110.

Grandey, A. A., Tam, A. P., & Brauburger, A. L. (2002). Affective states and traits in the workplace: Diary and survey data from young workers. *Motivation and Emotion, 26*, 31-55.

Grant, A. M., Campbell, E. M., Chen, G., Cottone, K., Lapedis, D., & Lee, K. (2007). Impact and the art of motivation maintenance: The effects of contact with beneficiaries on persistence behavior. *Organizational Behavior & Human Decision Processes, 103*, 53-67.

Grant, A. M., & Parker, S. K. (2009). Redesigning Work Design Theories: The Rise of Relational and Proactive Perspectives. *The Academy of Management Annals, 3*, 317-375.

Gross, S., Semmer, N. K., Meier, L. L., Kälin, W., Jacobshagen, N., & Tschan, F. (2011). The effect of positive events at work on after-work fatigue: They matter most in face of adversity. *Journal of Applied Psychology, 96*, 654-664.

Hackman, J. R., & Oldham, G. R. (1976). Motivation through the design of work: Test of a theory. *Organizational Behavior and Human Performance, 16*, 250-279.

Hahn, S. E. (2000). The effects of locus of control on daily exposure, coping and reactivity to work interpersonal stressors: A diary study. *Personality and Individual Differences, 29*, 729-748.

Herzberg, F. (1965). The motivation to work among Finnish supervisors. *Personnel Psychology, 18*, 393-402.

Herzberg, F. (1966). *Work and the nature of man*. Cleveland, OH World Publishing.

Hobfoll, S. E. (1989). Conservation of resources: A new attempt at conceptualizing stress. *American Psychologist, 44*, 513-524.

Hofmann, D. A., Griffin, M. A., & Gavin, M. B. (2000). The application of hierarchical linear modeling to organizational research. In K. J. Klein & S. W. J. Kozlowski (Eds.), *Multilevel theory, research, and methods in organizations* (pp. 467–511). San Francisco, CA: Jossey-Bass.

Humphrey, S. E., Nahrgang, J. D., & Morgeson, F. P. (2007). Integrating motivational, social, and contextual work design features: A meta-analytic summary and theoretical extension of the work design literature. *Journal of Applied Psychology, 92*, 1332-1356.

Ilies, R., Scott, B. A., & Judge, T. A. (2006). The interactive effects of personal traits and experienced states on intraindividual patterns of organizational citizenship behavior. *Acacemy of Management Journal, 49*, 561-575.

Izenman, A. J. (2008). *Multidimensional Scaling and Distance Geometry: Regression, Classification, and Manifold Learning*. New York: Springer.

Jackson, K. M., & Trochim, W. M. K. (2002). Concept mapping as an alternative approach for the analysis of open-ended survey responses. *Organizational Research Methods, 5*, 307-336.

Kane, M., Trochim, M. K., & Trochim, W. M. K. (2007). *Concept mapping for planning and evaluation* (Vol. 50). Thousand Oaks, CA: Sage Publications, Inc.

Kanner, A. D., Coyne, J. C., Schaefer, C., & Lazarus, R. S. (1981). Comparison of two modes of stress measurement: Daily hassles and uplifts versus major life events. *Journal of Behavioral Medicine, 4*, 1-39.

Katz, D., & Kahn, R. L. (1978). *The social psychology of organizations*. New York: Wiley.

Keltner, D., Ellsworth, P. C., & Edwards, K. (1993). Beyond simple pessimism: Effects of sadness and anger on social perception. *Journal of Personality and Social Psychology, 67*, 740-752.

Kluger, A. N., & DeNisi, A. (1996). The effects of feedback interventions on performance: A historical review, a meta-analysis, and a preliminary feedback intervention theory. *Psychological Bulletin, 119*, 254-284.

Kruskal, J. B., & Wish, M. (1978). *Multidimensional scaling. Beverly Hills*: CA: Sage.

Larsen, R. J., & Fredrickson, B. L. (1999). Measurement issues in emotion research. In D. Kahneman, E. Diener & N. Schwarz (Eds.), *Well-being: The foundations of hedonic psychology* (pp. 40–60). New York: Russell Sage Foundation.

Lazarus, R. S. (1991). Progress on a cognitive-motivational-relational theory of emotion. *American Psychologist, 46*, 819-834.

LePine, J. A., Podsakoff, N. P., & LePine, M. A. (2005). A meta-analytic test of the challenge stress-hindrance stress framework: An explanation for inconsistent relationships between stressors and performance. *Academy of Management Journal, 48*, 764-775.

Lerner, J. S., & Keltner, D. (2000). Beyond valence: Toward a model of emotion-specific influences on judgement and choice. *Cognition & Emotion, 14*, 473-493.

Locke, E. A., & Latham, G. P. (2002). Building a practically useful theory of goal and task motivation. *American Psychologist, 57*, 705-717.

Mackinnon, A., Jorm, A. F., Christensen, H., Korten, A. E., Jacomb, P. A., & Rodgers, B. (1999). A short form of the Positive and Negative Affect Schedule: Evaluation of factorial validity and invariance across demographic variables in a community sample. *Personality and Individual Differences, 27*, 405-416.

Magnus, K., Diener, E., Fujita, F., & Pavot, W. (1993). Extraversion and neuroticism as predictors of objective life events: A longitudinal analysis. *Journal of Personality and Social Psychology, 65*, 1046-1053.

Mignonac, K., & Herrbach, O. (2004). Linking work events, affective states, and attitues: an empirical study of managers' emotions. *Journal of Business and Psychology, 19*, 221-240.

Miner, A. G., Glomb, T. M., & Hulin, C. (2005). Experience sampling mood and its correlates at work. *Journal of Occupational and Organizational Psychology, 78*, 171-193.

Morgeson, F. P., & Humphrey, S. E. (2006). The Work Design Questionnaire (WDQ): Developing and validating a comprehensive measure for assessing job design and the nature of work. *Journal of Applied Psychology, 91*, 1321-1339.

Morris, W. N., & Schnurr, P. P. (1989). *Mood: The frame of mind*. New York: Springer Publishing.

Ohly, S., Sonnentag, S., Niessen, C., & Zapf, D. (2010). Diary studies in organizational research: An introduction and some practical recommendations. *Journal of Personnel Psychology, 9*, 79-93.

Ong, A. D., Bergeman, C. S., Bisconti, T. L., & Wallace, K. A. (2006). Psychological resilience, positive emotions, and successful adaptation to stress in later life. *Journal of Personality and Social Psychology, 91*, 730-749.

Podsakoff, N. P., LePine, J. A., & LePine, M. A. (2007). Differential challenge stressor-hindrance stressor relationships with job attitudes, turnover intentions, turnover, and withdrawal behavior: A meta-analysis. *Journal of Applied Psychology, 92*, 438-454.

Reis, H. T., Sheldon, K. M., Gable, S. L., Roscoe, J., & Ryan, R. M. (2000). Daily well-being: The role of autonomy, competence, and relatedness. *Personality and Social Psychology Bulletin, 26*, 419-435.

Richards, J. M., & Gross, J. J. (2006). Personality and emotional memory: How regulating emotion impairs memory for emotional events. *Journal of Research in Personality, 40*, 631-651.

Romesburg, H. C. (2004). *Cluster analysis for researchers*. Belmont, CA: Lifetime Learning Publications.

Roseman, I. J. (2001). A model of appraisal in the emotion system: Integrating theory, research, and applications. In K. R. Scherer, A. Schorr & T. Johnstone (Eds.), *Appraisal processes in emotion: Theory, methods, research* (pp. pp. 68-91). Oxford, UK: Oxford University Press.

Rosen, C. C., Levy, P. E., & Hall, R. J. (2006). Placing perceptions of politics in the context of the feedback environment, employee attitudes, and job performance. *Journal of Applied Psychology, 91*, 211-220.

Rossiter, J. R. (2002). The C-OAR-SE procedure for scale development in marketing. *International Journal of Research in Marketing, 19*, 305–335.

Rothbard, N. P., & Wilk, S. L. (2011). Waking up on the right or wrong side of the bed: Start-of-workday mood, work events, employee affect, and performance. *Academy of Management Journal, 54*, 959-980.

Ryan, M. R., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist, 55*, 68-78.

Saavedra, R., & Kwun, S. K. (2000). Affective states in job characteristics theory. *Journal of Organizational Behavior, 21*, 131-146.

Scherer, K. R. (1988). Criteria for emotion-antecedent appraisal: A review. In V. Hamilton, G. H. Bower & N. H. Frijda (Eds.), *Cognitive perspectives on emotion and motivation* (pp. 89-126). Norwell, MA: Kluwer Academic.

Scherer, K. R. (2001). Appraisal considered as a process of multilevel sequential checking. In K. R. Scherer, A. Schorr & T. Johnstone (Eds.), *Appraisal processes in emotion: Theory, methods, research* (pp. 92-120). Oxford: University Press.

Seo, M.-G., Feldman Barrett, L., & Bartunek, J. M. (2004). The role of affective experience in work motivation. *Academy of Management Review, 29*, 423-439.

Shirom, A. (2011). Vigor as a positive affect at work: Conceptualizing vigor, its relations with related constructs, and its antecedents and consequences. *Review of General Psychology, 15*, 50-64.

Shrout, P. E., & Fleiss, J. L. (1979). Intraclass correlation: Uses in assessing rater reliability. *Psychological Bulletin, 86*, 420-428.

Smith, M. J., Conway, F. T., & Karsh, B. T. (1999). Occupational stress in human computer interaction. *Industrial Health, 37*, 157-173.

Sonnentag, S., & Frese, M. (2003). Stress in organizations. In W. C. Borman, D. R. Ilgen & R. J. Klimoski (Eds.), *Handbook of Psychology Industrial and Organizational Psychology* (Vol. 12, pp. 453-491). Hoboken, N.J.: Wiley.

Spitzmuller, C., Glenn, D. M., Barr, C. D., Rogelberg, S. G., & Daniel, P. (2006). "If you treat me right, I reciprocate": Examining the role of exchange in organizational survey response. *Journal of Organizational Behavior, 27*, 19-35.

van Eck, M., Nicolson, N. A., & Berkhof, J. (1998). Effects of stressful daily events on mood states: Relationship to global perceived stress. *Journal of Personality and Social Psychology, 75*, 1572-1585.

Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS Scales. *Journal of Personality and Social Psychology, 54*, 1063-1070.

Weiss, H. M., & Beal, D. J. (2005). Reflections on affective events theory. In N. M. Ashkanasy, W. J. Zerbe & C. E. J. Härtel (Eds.), *The effect of affect in organizational settings* (Vol. 1, pp. 1-21). San Diego CA: Emerald.

Weiss, H. M., & Cropanzano, R. (1996). Affective events theory: A theoretical discussion of the structure, causes and consequences of affective experiences at work. *Research in Organizational Behavior, 18*, 1-74.

Weiss, H. M., Nicholas, J. P., & Daus, C. S. (1999). An examination of the joint effects of affective experiences and job beliefs on job satisfaction and variations in affective experiences over time. *Organizational Behavior and Human Decision Processes, 78*, 1-24.

Weiss, H. M., Suckow, K., & Cropanzano, R. (1999). Effects of justice conditions on discrete emotions. *Journal of Applied Psychology, 84*, 786-794.

Yukl, G. A. (2001). *Leadership in organizations*. Upper Saddle River, NJ: Prentice Hall.

Zelenski, J. M., & Larsen, R. J. (2002). Predicting the future: How affect-related personality traits influence likelihood judgments of future events. *Personality and Social Psychology Bulletin, 28*, 1000-1010.

Zohar, D. (1997). Predicting burnout with a hassle-based measure of role demands. *Journal of Organizational Behavior, 18*, 101-115.

Zohar, D., Tzischinski, O., & Epstein, R. (2003). Effects of energy availability on immediate and delayed emotional reactions to work events. *Journal of Applied Psychology, 88*, 1082-1093.

APPENDIX

Appendix A: Work Events Checklist Developed in Study 3 (German and
English Version)

Appendix A: Work Events Checklist Developed in Study 3 (German and English Version)

Dichotomous Response Format (yes/no)

1) Konnten Sie ein Problem in der Arbeit lösen, eine Aufgabe fertigstellen oder ist Ihnen eine bestimmte Aufgabe gut gelungen?

Did you solve any work-related problem, complete a work task, or did you succeed in a certain work-related task?

2) Haben Sie sich kompetent im Umgang mit Anderen (z.B. Kollegen, Vorgesetzten, Kunden) gefühlt oder gute Erfahrungen in Gesprächen und im Umgang mit Kollegen, Vorgesetzten oder Kunden gemacht?

Did you feel competent in interaction with others (colleagues, supervisors, costumers/clients), or do you have had any positive experience when talking to colleagues, supervisors or costumers?

3) Sind Sie mit positiven aber unerwarteten Nachrichten konfrontiert worden (z.B. einer Beförderung, einem neuen Arbeitsauftrag)?

Did you face positive but unexpected news or information (e.g., a promotion or a new work assignment)?

4) Konnten Sie Ihre Arbeit aufgrund bestimmter externer Einflüsse und Begebenheiten besonders genießen (z.B. aufgrund einer positiven Atmosphäre im Arbeitsteam)?

Did you enjoy your work because of certain external factors and influences (e.g., because of a friendly and positive atmosphere within your work team)?

5) Haben Sie ein Lob, eine erfreuliche Rückmeldung oder Dank von Anderen (z.B. Vorgesetzen, Kollegen, Kunden) erhalten?

Did you receive praise, positive feedback or thanks from others at work (e.g., supervisor, colleagues or costumers)?

6) Sind technische Probleme, Probleme mit dem PC oder mit anderen Arbeitsgegenständen aufgetreten?

Did any technical problems, problems with your PC or with other work tools occur?

7) Sind gesundheitliche Probleme bei Ihnen aufgetreten (z.B. Kopf-, Bauch- oder Rückenschmerzen, Unwohlsein)?

Did you experience any health issues (e.g., headache, stomach ache, backache or discomfort)?

8) Haben Sie in der Arbeit negative Nachrichten aus ihrem privaten Umfeld erfahren (z.B. Probleme von Ihnen nahe stehenden Personen oder Ereignisse, die in Ihrem privaten Umfeld aufgetreten sind)?

Did you perceive any negative news or happenings in your private environment while being at work (e.g., problems concerning close friends or family, events concerning your private life)?

9) Haben Sie Zeitdruck, Überforderung oder das Auftreten von Fehlern wahrgenommen, so dass es für Sie schwierig war, Ihre Arbeitsaufgaben zu erledigen?

Did you experience time pressure, excessive demands, or did you recognize mistakes which resulted in difficulties to fulfill your work tasks?

10) Sind Probleme im Umgang mit Kunden oder Klienten aufgetreten (z.B. Beschwerden, schwierige oder erfolglose Gespräche)?

Did you experience difficulties in direct contact to costumers or clients (e.g., complaints, difficult conversations or discussions)?

11) Sind in der Arbeit Situationen aufgetreten, die Sie als chaotisch wahrgenommen haben (z.B. eine unklare Aufgabenstellung, fehlende Informationen) oder Situationen, die mit Unsicherheit oder mit Verlust von Kontrolle bei Ihnen verbunden waren?

Did you experience any chaotic work situations (e.g., because of nonspecific tasks, lack of information) or situations that were related to uncertainty and loss of control?

12) Sind Konflikte oder Kommunikationsprobleme im Umgang mit Kollegen aufgetreten?

Did you experience any conflicts or communication problems with colleagues?

13) Sind Ereignisse aufgetreten, die das Betriebsklima betreffen und das Miteinander-arbeiten negativ beeinflusst haben (z.B. die Kündigung eines Kollegen, Probleme mit der Geschäftsleitung, Probleme im Umgang mit dem Vorgesetzten; ergebnislose Teamgespräche)?

Did you experience any situation that negatively affected the work climate and the cooperation among the people in your department/your company (e.g., dismissal of a colleague, issues dealing with the supervisor, unsuccessful team meetings)?