

# **Experiencing and regulating positive and negative emotions in social interactions: Two major parameters in the equation of human well-being**

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Experiencing and regulating positive and negative  
emotions in social interactions: Two major parameters  
in the equation of human well-being

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*N'oublions pas que les petites émotions sont les grands capitaines de nos vies et qu'à celles-là nous y obéissons sans le savoir.*  
Vincent Van Gogh, Extrait d'une lettre à son frère Théo



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# Abstract

In this dissertation I mainly focus on the relationship between positive and negative emotions experienced in social interactions, both at work and in private life, and end-of-day well-being. I concentrate on well-being at the end of the day as a core outcome because prior research has found end-of-day well-being to be an indicator of quality of life.

Indeed, prior research has shown that well-being at bedtime tends to spill over into the next working day and to influence sleep quality, which in turn is related to both psychological and physical health. I was therefore interested in studying well-being at bedtime going full cycle, from chronic conditions at work to emotions at work, after work, and bedtime mood.

In this dissertation, I also decided to concentrate on one specific link in the abovementioned chain: negative emotions felt in work-related interactions. More precisely, one of the main goals of the present dissertation is to investigate the short-term effects of those negative emotions felt along with the effects of the regulatory effort devoted to their suppression.

This dissertation is composed of a conceptual part (Chapters 1 and 2), a methodological part (Chapter 3) and an empirical part (Chapters 4 and 5) that presents two papers, each investigating the relationship between emotions experienced in social interactions and well-being. In both papers, the hypotheses were tested with field studies and the variables were assessed through an event-sampling methodology.

In the first study (Chapter 4), a sample of 101 participants took part in a general survey on enduring conditions at work (stressors, control, social conditions), in private life (social support), and personality. For the next seven days, participants reported every social interaction lasting at least ten minutes, or considered important, and reported the emotions felt during these interactions. At bedtime, participants reported their current mood.

Based on Affective Events Theory (AET) and spillover theories, we developed a model in which (1) chronic conditions at work predicted emotions experienced in social interactions at work, (2) emotions in social interactions at work predicted emotions in social interactions after work, and (3) emotions in social interactions at work and after work predicted bedtime mood. Hypotheses referring to paths 2 and 3 were confirmed, including the prediction of

positive emotions in social interactions after work by negative emotions at work under conditions of high partner support. This is the first study that investigates all parts of the hypothesized chain.

The second study investigates the impact of surface acting based on emotion regulation theories (Grandey, 2000) and the influence of the emotions felt on well-being after the interaction (studies 1 and 2) and on interaction quality (study 2). Study participants (N=75 and 67) provided information about emotion felt and surface acting in work-related interactions over a week using an event-sampling methodology. Results show that the negative effects of surface acting (SA) on well-being while suppressing negative emotions felt (SA\_neg) are no longer significant when controlling for the influence of emotion felt, whereas SA while suppressing positive emotions felt (SA\_pos) becomes negatively related to well-being. Study 2 replicates these findings and in addition shows that SA\_neg enhances perceived interaction quality whereas SA\_pos diminishes interaction quality. The results support assumptions suggested by the social interaction model of emotion work (Côté, 2005).

The primary contribution of the present dissertation was to provide, based on the basis of a micro-analytic research method, namely a variant of the Rochester Interaction Record (Nezlek, Wheeler, & Reis, 1983; Reis & Wheeler, 1991; Wheeler & Nezlek, 1977), a fine-grained analysis 1) of the relationship between positive and negative emotions experienced in everyday work-related and private social interactions and end-of-day well-being, and 2) of the relationship between surface acting and emotions felt in social interactions at work and situational well-being and interaction quality. Both studies have in common the investigation of the relationship between emotions experienced in social interactions and well-being.

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Keywords: emotion, emotion regulation, emotion work, social interaction, well-being, event-sampling methodology

Mots-clés: émotion, régulation émotionnelle, travail émotionnel, interaction sociale, bien-être, méthode par collecte d'événements

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I want to mention that the two empirical studies reported in the present dissertation are the result of a fruitful collaboration between Franziska Tschan, Norbert Semmer, Peter Totterdell (University of Sheffield) and myself for Study 1 and between Franziska Tschan, Norbert Semmer and myself for Study 2. For this reason, I use “we” when referring to what has emerged as a product of this collaboration (Study 1 and Study 2) and I use “I” when referring to my line of reasoning (mainly reflected in the umbrella part of the present dissertation).



# Introduction

*“Emotions, whether positive or negative, are usually triggered by events that are considered important personally – and this experience is neither random nor irrational. It actually follows certain social and personal rules” (Kiefer & Briner, 2003, p. 48)*

Emotions are omnipresent. Whether in private life or at work, people have to deal with them in their everyday life. While there are many occasions for affective experiences (Weiss & Cropanzano, 1996), social interactions are especially important – at work (Basch & Fisher, 2000) as well as in private life (Duck, 2007). Interactions can be defined as “any situation involving two or more people in which the behaviour of each person is in response to the behaviour of the other person. A conversation is the most obvious example of an interaction, but there are many other sorts of interactions as well [...] In order to count as an interaction, you must be responding to each other” (Reis & Wheeler, 1991, p. 288).

Doesn't the abovementioned definition of an interaction give us the feeling that today we spend most of our waking time interacting? The answer is undoubtedly yes. Moreover, past research has shown that these interactions influence the way we feel, be it at work (e.g. Ilies, Johnson, & Judge, 2005) or later at home (e.g. Repetti, 1993). Based on this observation, it becomes undeniable that a deep understanding of the way interactions are experienced must be part of the role of the work psychologist. I therefore decided to specifically focus my dissertation on the emotions employees experienced in their social interactions and their relationship with well-being.

We know from past research that negative experiences at work do not only impair immediate well-being (Brondolo et al., 2003), but that they may also spill over to influence bedtime mood (Story & Repetti, 2006). In this dissertation, I will therefore investigate the relationship between emotions experienced in social interactions and well-being at two different levels: at the day level and at the interaction level.

At the day level (Study 1), we will explore the relationship between emotions experienced in social interactions at work and in private life and end of day well-being. Well-

being at the end of the day is important as it represents an indicator of quality of life. Past studies have shown that well-being at bedtime influences sleep quality (Morin, Rodrigue, & Ivers, 2003), which, in turn, is related to both physical (Schwartz et al., 1999) and psychological (Scott & Judge, 2006) health. Moreover, well-being at bedtime tends to spill over into the next working day (Totterdell, Spelten, Barton, Smith, & Folkard, 1995). Investigating predictors of well-being at the end of the day therefore seems of primary concern. In the present dissertation, the relationship between emotions experienced in social interactions and well-being will be conceived as a chain from (a) general work characteristics to (b) emotions experienced in social interactions at work, from these to (c) emotions experienced in social interactions after work, and from there to (d) evening mood. Previous research has investigated only parts of that chain. In the first study presented in this dissertation (Study 1), we consider all elements of the proposed chain. First, we will explore how chronic conditions at work may predict emotions experienced in social interactions at work. According to the Affective Events Theory (Weiss & Cropanzano, 1996), conditions at work precipitate events that induce affective reactions. We extend this assumption by postulating that chronic conditions at work do not only induce events of an affective character (i.e. affective events) but also influence the affective tone of events that occur independently of these specific conditions, such as social interactions. Based on spillover theories (Edwards & Rothbard, 2000), we will then investigate how emotions experienced in social interactions at work relate to emotions experienced in social interactions after work. Finally, we will look at the influence of emotions experienced in social interactions at work and after work on bedtime mood.

At the interaction level (Study 2), we will investigate the impact of surface acting based on emotion regulation theories (Grandey, 2000) and the influence of the emotions felt on well-being after the interaction and on interaction quality. In interactions at work, employees cannot always show the emotions they feel, because general and organization-specific emotional display rules exist (Hochschild, 1983). Previous studies have consistently found that employees that suppress the display of a felt emotion (J. J. Gross, 1999), a process also called “surface acting” (Hochschild, 1983), show impaired well-being (Brotheridge & Grandey, 2002; Brotheridge & Lee, 2003; Grandey, 2003; Grandey, Fisk, & Steiner, 2005; Totterdell & Holman, 2003; Zapf, Seifert, Schmutte, Mertini, & Holz, 2001), and previous research has also suggested that surface acting lowers interaction quality (Grandey, 2000; Grandey, Fisk, Mattila, Jansen, & Sideman, 2005; Totterdell & Holman, 2003). However, in

most previous research investigating surface acting, the operationalization of surface acting did not allow to disentangle the effects of the underlying emotion felt from the effects of regulatory effort through surface acting. Given that previous research on emotion work has found that surface acting has an important influence on well-being and interaction quality, and previous research on emotions at work has stated that emotions felt influence well-being and interaction quality, these two potential effects should be tested simultaneously. The second study presented in this dissertation (Study 2) thus includes a measure for surface acting as well as a measure for the emotion felt in interactions. This enables us to disentangle the effects of emotions felt and surface acting on the dependent variables.

In short, the questions that are under investigation in the present dissertation should contribute to the field of social interactions and well-being because answering them will provide unique insights into the ebb and flow of employees' well-being as modulated by their everyday social interactions.

## **Overview of the present dissertation**

This dissertation is composed of an umbrella as well as of two papers (Paper 1 and Paper 2, respectively). The umbrella aims at providing a theoretical background that is broader than the theoretical part of each paper. In this sense, there will ineluctably be some redundancies between the umbrella and the papers. The umbrella is mainly composed of theoretical parts but also contains a methodological part where I discuss the methodology used in the present dissertation.

The present dissertation begins with a conceptual part (Chapters 1 and 2). *Chapter 1* has two main roles. First of all, it constitutes an overview of the major theoretical concepts which are under investigation in this dissertation. Secondly, it constitutes a review of literature on the effects of social interactions on well-being and the theoretical background for Study 1. *Chapter 2* constitutes a review of literature on emotion work and emotion regulation and the theoretical background for Study 2. A methodological chapter (*Chapter 3*) which mainly focuses on the methodology used in the present dissertation, its strengths and disadvantages is then proposed. In *Chapter 4*, I describe an empirical study that addresses the relationship between the emotional experience of work-related and private interactions and end-of-day well-being. In this study, we investigate (1) if conditions at work in general influence emotions felt in interactions at work, (2) how these emotions influence emotions in

interactions after work, and (3) how emotions in social interactions at work and after work influence bedtime mood. This model is developed based on Affective Events Theory (AET) and spillover theories.

In *Chapter 5*, I describe an empirical study that aims at investigating the impact of surface acting based on emotion regulation theories (Grandey, 2000) and the influence of the emotions felt on well-being after the interaction (studies 1 and 2) and on interaction quality (study 2).

As already mentioned, whereas in the first empirical study we will investigate how emotions experienced in social interactions at work and in private life influence well-being on the day level (i.e. bedtime mood), in the second study we will investigate how emotions experienced in social interactions at work influence well-being on the interaction level (i.e. situational well-being, that is, well-being as assessed immediately after an interaction) and interaction quality. In other terms, this dissertation presents two studies each investigating the relationship between emotions experienced in social interactions and well-being, but at two different levels: day level (end-of-day well-being, measured as bedtime mood) and interaction level (situational well-being).

Finally, in *Chapter 6* main findings are summarized and theoretical and practical implications are discussed. The main limitations and strengths of Studies 1 and 2 are discussed and some future perspectives are proposed.

# Chapter 1

Review of literature

## Emotional experience and its effects

*“Emotions are just normal feature of daily life and daily working life. [...] They are a core feature of much of our behaviour, thinking and experience” (Kiefer & Briner, 2006, p. 187)*

This first chapter constitutes an overview of the major theoretical concepts which are under investigation in this dissertation and in Study 1 (Paper 1) more particularly.

The first part of this chapter aims at defining the terms *affect*, *mood* and *emotion* as used in this dissertation on one hand, and the *structure* and *function* of negative and positive emotions on the other hand. This first part has to be considered as a theoretical background from a general point of view.

The second part of this chapter is more specific in that it constitutes the theoretical background for our first study on the relationship between emotions experienced in social interactions at work and in private life and bedtime mood. In order to refine the understanding of the effects of negative and positive emotions felt on psychological well-being, and since the literature focusing on the effects of positive and negative emotions experienced on well-being specifically is rather scarce, I will mainly report from literature dealing with the effects of positive and negative events in more general terms - and more particularly positive and negative social interactions. The underlying assumption in doing that is that positive events trigger positive emotions and that negative events trigger negative emotions (Basch & Fisher, 2000).

In particular, I will focus on the middle-term effects of positive and negative work-related and private interactions on individual well-being. First, I will deal with their direct effects. This can be illustrated by the following question: “Do positive and negative social interactions influence one’s well-being?”. I will then deal with the *combination* of positive

and negative interactions in terms of *buffering effects*. This refers to the question “do positive interactions play a role in reducing the negative impact of negative interactions on one’s well-being?”. I will also deal with the combination of positive and negative emotions in terms of *undoing effects*. I will then consider the influence of these combinations on well-being. Finally, I will discuss spillover effects of emotional experiences.

After having provided the theoretical background for Study 1, I will concentrate on another influence on individual well-being: emotion regulation. That part will constitute the theoretical background for Study 2 on the influence of emotion regulation and emotions felt in social interactions at work on situational well-being and interaction quality.

## 1 Defining affect, mood and emotion

*“The word “emotion” is used to designate at least three or four different kinds of things” (Ryle, 1949, p. 81)*

The difference between affect, mood and emotions has often been discussed by emotion psychologists (e.g. Frijda, 2000). Sometimes they are used interchangeably (e.g. Isen, 2000b), sometimes they are distinguished from each other (Fredrickson, 2001; J. A. Russell & Feldman Barrett, 1999; Watson, 2000; Watson & Clark, 1984). For some authors, affect refers to feelings implying pleasantness and unpleasantness in a broad sense (Frijda, 1994). For still others, it refers to a personality trait dimension<sup>1</sup> (Diener, Smith, & Fujita, 1995; Watson et al., 1988) or to an attitude (Scherer, 2000). *Affect* is also sometimes used as a general term that includes both emotions and mood (Kirouac, 1995).

As for *moods*, they are considered as diffuse affective states that tend to be generally of weak or moderate intensity but last relatively long (i.e. over hours or even days) (Scherer, 2005). They may often emerge without a particular object or cause that could be linked to specific appraisals (Ekman, 1994; Frijda, 1994; Izard, 1991; Parkinson, Totterdell, Briner, & Reynolds, 1996; Scherer, 2005). Moods are often described as positive and negative (e.g. Watson, 2000). Examples are being cheerful, relaxed, bored, disappointed, morose or energetic.

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<sup>1</sup> Trait or dispositional affect refers to the relatively stable tendency of an individual to experience certain emotions and moods (Watson & Clark, 1984; Watson, Clark, & Tellegen, 1988).

In contrast to mood, described as a rather low-intensity but more prolonged experience, the term *emotions* is used to refer to intense, rapidly-changing reactions precipitated by specific events (Lazarus, 1991b). Examples of such reactions could be joy, anger or shame.

In this dissertation I will refer to a *component process* definition of emotion, as proposed by Scherer (1984), Smith and Ellsworth (1985), Frijda (1986), or Roseman (1984)<sup>2</sup>, following which emotions are conceived as consisting of several components: cognitive (appraisal, evaluation of events and situations), physiological (bodily symptoms), motivational (action tendencies), motor expression (facial and vocal expression) and subjective feeling (emotional experience). Componential theories of emotion<sup>3</sup> particularly focus on the cognitive component of emotion, thus demonstrating the interdependence between emotion and cognition. According to a componential definition of emotion, an emotion corresponds to the synchronization of the responses on the different abovementioned components (physiological, behavioural, expressive, and experiential) following an individual's *subjective evaluation of a specific external or internal event that is relevant to his or her personally significant concerns (e.g. personal needs, goals, etc.)*. This subjective evaluation refers to the term of appraisal (Lazarus, 1991b). Thus, the ways in which people *appraise* an event or a situation will determine the emotion they will experience. "Whether emotion is generated in response to perceived, remembered, or imagined events, and by automatic or controlled processing, appraisal theories claim that *appraisals start the emotion process, initiating the physiological, expressive, behavioural and other changes that comprise the resultant emotional state*" (Roseman & Smith, 2001, p. 7).

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<sup>2</sup> Ellsworth, Frijda, Roseman, Smith and Scherer are all appraisal theorists who follow a *componential approach* to emotion.

<sup>3</sup> Componential theories of emotions correspond to a modern version of appraisal theories of emotion following which emotions result from how people evaluate – *appraise* – events and situations (Lazarus, 1991a).

Componential theories go beyond the view that emotions are just affective reactions to appraisals, claiming that emotions are complex multi-componential experiences (e.g. Scherer, 1984).

## 2 The structure of negative and positive emotions

*“Similar to the spectrum of color, emotions seem to lack the discrete borders that would clearly differentiate one emotion from another” (Posner, Russell, & Peterson, 2005, p. 719).*

Psychological research has not yet found a consensus with regard to the structure of emotions: There have been long debates as to whether emotions should be treated as discrete categories (Ekman, 1984, 1992; Izard, 1977; Panksepp, 1998; Plutchik, 1980; Tomkins, 1962) or dimensionalized into a few basic factors (J. T. Larsen & Diener, 1992). In what follows, I will briefly describe the two main traditions in affect research: The discrete approach and the dimensional approach to emotion theory.

On one hand, the discrete emotion models postulate a limited number of basic or fundamental distinct innate emotions (Ekman, 1984, 1992; Izard, 1977; Panksepp, 1998; Plutchik, 1980; Tomkins, 1962). These models propose that each emotion reflects a specific set of eliciting stimuli and triggers a characteristic range of distinct and recognizable motivational, behavioural (including action tendencies), physiological, expressive and experiential patterns. In these models, emotions are almost always thought of as discrete categories (e.g. fear, anger, joy, and the like) defined according to the semantic structure provided by natural languages (Scherer, 2005). Seeking to structure emotions as a set of discrete “basic” categories requires taking into account the various possibilities of organizing emotions. Various ways to divide emotions into basic categories have been proposed, based among them on facial expressions (Ekman, 1984), dimensions of cognitive appraisal through which the object of the emotion is interpreted<sup>4</sup> (Frijda, 1986; Scherer, 1984; C. A. Smith & Ellsworth, 1985), action tendencies (Frijda, 1986) or brain structures underlying emotions (Panksepp, 1982).

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<sup>4</sup> In contrast to discrete emotion theorists who propose a limited number of emotions, Scherer (1984, 1994) argues for a practically infinite number of potentially distinct emotions, since each emotion results from specific appraisals outcomes and their respective responses in the different components (physiological, behavioural, expressive, and experiential). However, Scherer (1994, p. 28) recognized that “[...] there are some major patterns of adaptation in the life of animate organisms that reflect frequently recurring patterns of environmental evaluation results” and has suggested to term the states resulting from these predominant appraisal patterns “modal emotions”.

On the other hand, the “dimensional approach” considers emotions (and moods) as systematically associated to a few underlying dimensions describing the affective space. Most of the researchers following this tradition (Feldman Barrett & Russell, 1999; Lang, 1994; J. A. Russell, 1980; Watson, Wiese, Vaidya, & Tellegen, 1999) agree on the two first dimensions<sup>5</sup>: *valence* (pleasantness or hedonic value; i.e. the extent to which one feels good or bad; e.g. *happy* vs. *sad*) and *activation* (arousal; i.e. the extent to which one is physiologically activated, mobilized; e.g. *excited* vs. *relaxed*). Some researchers have sometimes added a third dimension, finding valence and activation insufficient to account for all aspects of the structure of affect. This third dimension is often referred to as control<sup>6</sup>, tension, potency or dominance (J. A. Russell, 1997). However, given the difficulty of consistently identifying a third dimension, many modern proponents of dimensional models limit themselves to the valence and arousal dimensions. “[...] Additional dimensions (e.g. dominance) can be interpreted as cognitive construals of the causes and consequences of the affect state. That is, pleasantness and activation capture the core affective feelings involved in mood and emotion, but do not reflect all the components involved when people think of clear cases of emotion, such as falling in love, becoming jealous, or being ashamed of oneself” (Feldman Barrett & Russell, 1999, p. 11).

In what follows, I will briefly expose the two two-dimensional models - which essentially are rotational variants of one another - that have dominated the affect literature in the last decades. Both models agree in that circular structures are most adapted to mapping affective experiences in this two dimensional space. The circumplex structure (vs. simple structure) has been defined based on statistical analyses (Structural Equations Modeling procedures) indicating that self-reported emotion categories (i.e. items’ ratings) do not cluster at the axes (as it is typical with these statistical methods) but rather fall in a circular order around the periphery of the two-dimensional space (J. A. Russell & Feldman Barrett, 1999).

One of the abovementioned two two-dimensional circumplex models of emotion has been advocated by Russell (1980) who describes the affective structure in terms of a bipolar pleasure-displeasure dimension (pleasantness) and an orthogonal (independent) bipolar

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<sup>5</sup> Dimensional models of emotions posit that these two dimensions correspond to two fundamental neurophysiological systems (i.e. one related to valence and the other to arousal) common to all emotions.

<sup>6</sup> Reference to this third dimension is important in light of the appraisal dimensions Scherer (2005) used to define the structure of the emotion categories included into the Geneva Emotion Wheel (see below).

activation dimension<sup>7</sup>. In light of its robustness across a large number of studies and cultures, Watson and Tellegen (1985) declared the two-dimensional structure to be “basic”. These authors<sup>8</sup> developed a model similar to Russell’s (1980; J. A. Russell & Carroll, 1999) circumplex model. This model highlights two orthogonal (independent) dimensions of valence, termed positive affect and negative affect that emerge after a 45° rotation of the axes of Russell’s model (J. A. Russell, 1980). Both dimensions implicitly convey activation in the sense of Russell (1980) and were later renamed Positive Activation (PA) and Negative Activation (NA) (Watson et al., 1999).

One issue that ineluctably emerges from these bidimensional conceptualizations of affect pertains to whether positive and negative affective states are independent or bipolar opposites. Many researchers have claimed that pleasant and unpleasant affective states are independent of each other. For instance, Watson and Tellegen’s (1985) model defines the affective space in such a way (i.e. anchored with two independent dimensions, positive and negative activation) as to produce independence and not bipolarity. “Thus, in a two-dimensional space, if these two independent dimensions are named positive and negative, then the independence of positive and negative affect is achieved by definition” (Feldman Barrett & Russell, 1999, pp. 11-12). Such a structure of affect results in a correlation between positive and negative affective states of approximately zero (Feldman Barrett & Russell, 1999).

Besides independence “by definition”, other researchers have considered the issue of whether positive and negative affect are independent (vs. bipolar) based on empirical considerations. Weak correlations between pleasant and unpleasant affective states have often been observed (Watson & Clark, 1997). Among the reasons why the observed correlation between positive and negative affect appears much weaker than -1, that invoked by Diener and Emmons (1985) seems quite relevant in light of our measure of bedtime mood (Study 1).

Diener and Emmons (1985) have suggested that the question of the independence between positive and negative affect depends on the time period considered. Their results

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<sup>7</sup> “Pleasantness and activation typically emerge as the first two unrotated factors in analyses of self-rated mood” (Watson & Clark, 1997, p. 270) (see also J. A. Russell, 1980; Watson & Tellegen, 1985).

<sup>8</sup> In contrast to Russell (1980) who posits Pleasantness and Activation to be the basic dimensions of affect, Watson and Tellegen (1985) considered Positive and Negative Activation, two dimensions of valence, as the basic dimensions of affect.

indicated that when positive and negative affective states were measured over short time spans, they were inversely related (i.e. their statistical relation appeared to be negative); positive and negative affective states are unlikely to occur simultaneously within the same person (Diener & Emmons, 1985). However, their results also showed that when the time period considered became longer (i.e. weeks or more), the correlation between positive and negative affect decreased; indeed, over time, the extent to which a person feels positive is unrelated to the extent to which he or she feels negative. Thus, over time, positive and negative affective states become relatively independent (Diener & Emmons, 1985).

Thus, in Study 1, we will therefore measure mood at bedtime along a single continuum (higher scores indicating better mood); since positive and negative moods are measured simultaneously (i.e. at bedtime), they have to be considered bipolar opposites.

Because emotions are an extraordinarily complex human experience, it is possible to organize them in different ways. Above, we saw that the most appropriate categorization of different emotional states is determined based on the type of approach to emotion one opts for. According to the *component process* definition of emotion (see Scherer, 1984, 1994) I refer to in this dissertation, it seems quite reasonable to argue for a rich panoply of different emotions rather than postulating a small number of basic emotions. Indeed, Scherer (2005, p. 707) contended “that there are as many different emotions as there are distinguishably different profiles of appraisal with corresponding response patterning”.

“In reality, it is expected that a limited number of frequently encountered appraisal-outcome profiles produces a restricted set of *modal*<sup>9</sup> emotions, an assumption which shares some characteristics, but not the underlying theoretical rationale, with the notion of basic emotions” (Scherer, Wraniak, Sangsue, Tran, & Scherer, 2004, p. 562). This latter assumption finds empirical support in the large-scale survey on the frequency of different everyday life emotions conducted by Scherer et al. (2004). A quasi-representative adult sample from the German- and French-speaking part of the Swiss population were asked to report an emotion they had experienced the day before *in their own words* by choosing a verbal label or a brief

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<sup>9</sup> As already mentioned, *modal* emotions can be defined as the outcomes of frequently occurring patterns of appraisals or *prototypical* patterns of appraisal. Scherer (1994) invoked the lack of consensus as to the criteria that would justify defining emotions as basic or fundamental as the rationale for calling these emotions *modal* rather than basic. For a more comprehensive definition of modal, see Toward a concept of “modal emotions” (Scherer, 1994).

expression (Scherer, 2005). Respondents reported not less than 775 different words, word combinations and phrases, coded into a more limited number of emotion categories (thirty-eight), “[...] based on empirical studies of the number and type of verbal labels that are generally considered as emotions in a wide sense of the term” (Scherer, 2004, p. 511). Nevertheless, results showed that 8 emotion classes were mentioned by more than 40 participants and that the 30 remaining categories occurred much less frequently.

As an extension of the previous theoretical discussion, I will now briefly discuss the two major methods to obtain forced-choice self-reports of emotional experiences, namely the discrete emotions approach and the dimensional approach. This will constitute the basis to then discuss the Geneva Emotion Wheel as an instrument designed to avoid the shortcomings of the existing approaches.

#### Theoretical convictions drive methodological choice: the case of the Geneva Emotion Wheel

When researchers seek to obtain fine-grained scalar measurement on a few standard feeling states, the use of forced-choice self-reports of emotional experience is highly valued over the use of free-response format, where the participants can choose themselves the labels for their affective experiences (Scherer, 2005).

In order to get forced-choice self-reports of emotional experience, psychologists have used two major methods: (1) the discrete emotions approach and (2) the dimensional approach. The discrete emotions approach corresponds to the use of lists of emotion categories and standardized scales (e.g. Izard’s Differential Emotion Scale; Izard, 1991). The dimensional approach consists in representing emotions in terms of coordinates in an emotional space by asking respondents how positive or negative (valence) and how excited (arousal) they feel (e.g. PANAS; Positive and Negative Affect Schedule; Watson et al., 1988).

In a discussion of these methodological approaches, Scherer writes: “Which of this approach is preferable? Until now, researchers have rarely specified why they chose one method over another. Generally, methodological choice has followed theoretical convictions as to the degree of differentiatedness of the emotion system that psychologists need to adopt to understand and predict emotional responses” (Scherer, 2005, p. 719).

Researchers adopting the discrete approach assess self-reports by providing respondents with a list of emotion terms and by asking them to respond on scales with nominal<sup>10</sup>, ordinal<sup>11</sup>, or interval<sup>12</sup> characteristics. While this approach yields highly plausible and easily interpretable results (for details, see Scherer, 2005), the comparability of results across different studies appears very difficult because widely different assortments of emotions terms are used<sup>13</sup> (Scherer, 2005). From a statistical point of view, the abundance of missing data (given that some scales have 0 or none as values, because not all emotions are actually reported) and the difficulty of analyzing and interpreting a wide range of different emotional blends (e.g. Scherer & Ceschi, 2000) must also be mentioned as shortcomings.

The methodology used in the dimensional approach consists in positioning the emotional feeling in the valence-arousal space based on respondents' self-ratings of 1) their positive and negative feelings and 2) their physiological activation (or bodily excitation) (Scherer, 2005). While this method is rather simple and generally quite reliable, what the researcher obtains is restricted to self-reports of the extent to which the respondent feels positive or negative and activated or excited. Another shortcoming is that this method provides very little information on the type of emotion-eliciting stimulus and is not informative in terms of appraisal processes. Scherer (2005) still mentioned two other major shortcomings of the dimensional approach. One refers to the fact that this approach makes the distinction between the "intrinsic quality of an eliciting object" and "the quality of the feeling" (both reflected in the valence dimension) difficult<sup>14</sup> (Scherer, 2005, p. 719). The other major drawback refers to the difficulty of differentiating how intensely respondents experience a feeling from how bodily aroused they feel. "Thus, extremely intensive anger is likely to be characterized by high arousal whereas intense sadness may be accompanied by very low arousal" (Scherer, 2005, p. 719).

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<sup>10</sup> Respondents are asked to check the terms that best reflect the emotion they experienced.

<sup>11</sup> Respondents are asked to indicate to what extent they experienced the respective emotion on a Likert-type scale.

<sup>12</sup> Respondents are asked to indicate to what extent they experienced the respective emotion on a scale that is very similar to the ordinal scale (except that equal differences on the interval scale represent equal differences in the emotional experience).

<sup>13</sup> Researchers create their lists of emotion categories according to a specific research context (Scherer, 2005)

<sup>14</sup> The "intrinsic quality of an eliciting object" and "the quality of the feeling" need not coincide (Scherer, 2005, p. 719).

To conclude this theoretical discussion, I want to cite Scherer who argues that: “It is surprising that, given the central role of emotion self-report in this research area, there have been few attempts to develop new instruments that avoid some of the shortcomings of the existing approaches” (Scherer, 2005, p. 721).

In what follows, I will briefly expose the design characteristics for the Geneva Emotion Wheel<sup>15</sup> (see figure 1) as an instrument that avoids some of the shortcomings of the existing methodological approaches. Its characteristics have been formulated by Scherer (2005, p. 721):

- concentrating on the feeling component of emotion, in the sense of qualia, rather than asking respondents to judge concrete response characteristics such as sympathetic arousal;
- going beyond a simple valence-arousal space in order to be better able to differentiate qualitatively different states that share the same region in this space;
- relying on standard emotion labels in natural languages in order to capitalize on respondents’ intuitive understanding of the semantic field;
- allowing systematic assessment of the intensity of the feeling;
- going beyond the arbitrariness of choosing different sets of emotion terms and presenting them in very unsystematic fashion by building some emotion structure into the instrument;
- presenting the instrument in a graphical form that is user-friendly, allowing the respondent to rapidly understand the principle and use the instrument in a reliable fashion

The Geneva Emotion Wheel has been designed based on these characteristics. In order to define the structure of the emotion categories (as reflected in natural language labels) used in the instrument, Scherer (2005) used appraisal dimensions, and more precisely goal conduciveness (including valence) and coping potential (control/power)<sup>16</sup>.

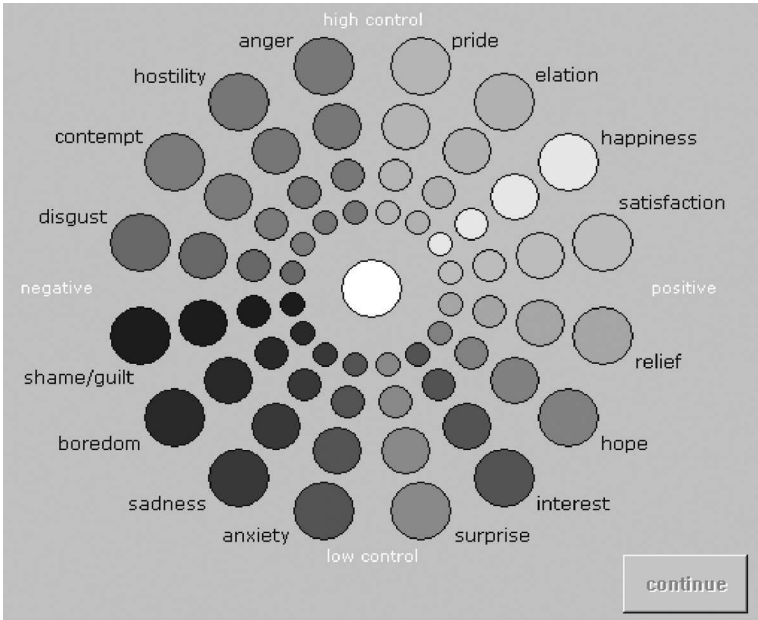
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<sup>15</sup> This instrument has been called the Geneva Emotion Wheel (GEW) because of its origin and shape.

<sup>16</sup> Numerous studies suggest that the two appraisal dimensions “goal conduciveness” (including valence) and “coping potential” (control/power) have the strongest impact on emotion differentiation (Scherer, 2005).

“[...] A number of frequently used and theoretically interesting emotion categories” were then arranged in the two-dimensional space constituted of goal conduciveness vs. goal obstructiveness on one side and high vs. low control/power on the other (Scherer, 2005, p. 722). Members of each emotion category were represented by a set of circles ordered like a spike in a wheel. The intensity of each emotion was represented by its distance from the origin of the wheel as well as by the size of the circles (increasing diameter of the circles indicating increasing intensity). In order to warrant the ease of reading, the number of emotions families was limited to 16. The emotion categories (or families) were also chosen to a large extent based on what are generally considered to be “basic emotions” or those frequently investigated in the field (Scherer, 2005). “[...] The Geneva Emotion Wheel may be the first such instrument to design the dimensional layout of the emotion qualities on pure appraisal dimensions (arrangement of emotion terms in two-dimensional space) and the intensity of the associated subjective feeling (distance from origin)” (Scherer, 2005, p. 724). Note that the study of the reliability and validity of the instrument continues.

*Figure 1.* Prototype version of the Geneva Emotion Wheel, a forced-choice response measure of emotions.



### 3 The function of positive and negative emotions

*The primary function of emotion is to mobilize the organism to deal quickly with important interpersonal encounters (Ekman, 1992, p. 171).*

The question of the functions of emotions has provoked some division within the social sciences. Whereas some theorists view emotions exclusively as disrupting ongoing activity and disorganising behaviour (Simon, 1967), the now predominant view sees emotions as primarily adaptative mechanisms, optimising the individual's adjustment to his or her physical and social environment (Ekman, 1992; Lazarus, 1991a; Scherer, 1984). According to Scherer (1984, p. 296), "one of the major functions of emotion consists of the constant evaluation of external and internal stimuli in terms of their relevance for the organism and the preparation of behavioural reactions which may be required as a response to those stimuli". Many also emphasize the significant role of emotions in motivating perception, thought, and actions (behaviour) (Frijda, 1986; Lazarus, 1991a). Moreover, in organizing and motivating an individual's characteristic way of thinking and acting, emotions are acknowledged as important factors of personality, which can be thought of as "established emotion-cognition-action patterns" (Izard, Libero, Putnam, & Haynes, 1993).

It is now generally agreed upon that one of the main functions of discrete emotions is linked to the action tendencies they evoke (Frijda, 1986; Lazarus, 1991a). Action tendencies can be viewed as states of readiness to execute a given kind of action. These states involve both physiological changes (bodily arousal) and psychological preparation following emotional appraisal<sup>17</sup>.

For example, anger-provoking episodes motivate to engage in a certain set of anger behaviours, like physical aggression or verbal attack. Indeed, when angry, people may feel a strong urge to react to some target. Preparing the organism for aggression and deterrence is nothing else than the evolutionary purpose of anger aiming at protecting an organism from

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<sup>17</sup> "From the point of view of appraisal theory, action tendencies and readiness are natural consequences of a given emotional appraisal of how to cope with the situation. They are also shaped by evolution and adaptation. In this view, different emotions serve different survival-related goals and therefore prepare the organism for adaptive behavioural response to the current situation" (Zhu & Thagard, 2002, p. 27).

enemies. Fear prepares for rapid escape from dangerous situations; anxiety may evoke the desire to run away (Zhu & Thagard, 2002). In general, these negative emotions *narrow* peoples' thought-action repertoires and prepare to execute the behaviour that seems the most adaptive in a particular situation (Fredrickson, 2004a).

However, one must keep in mind that an action tendency does not invariably lead to act out. Rather, emotions narrow in on a specific set of behavioural options. Even if a person feels intensely angry in a situation, he or she may be able to control his or her temper (Zhu & Thagard, 2002). We will discuss the possibility of emotion regulation later on.

Action tendencies are most clear and best described for negative emotions. However, similarly to negative emotions, the principal function of positive emotions also corresponds to the organization and motivation of characteristic response patterns. For example, interest motivates exploration and learning (Izard, 1977). Joy also raises openness to experience. Frijda (1986, p. 89) termed the action tendency associated with joy *free activation*: “[it] is in part aimless, unasked-for readiness to engage in whatever interaction present itself and in part readiness to engage in enjoyments”. According to Fredrickson, joy heightens the motivation to play and be playful, a thought-action tendency building enduring physical, social, intellectual and psychological resources (Fredrickson, 1998, 2001).

Although researchers contend that each emotion is inherently endowed with adaptive and coping functions (Izard, 1989; Lazarus & Smith, 1988; Leventhal, 1980; Plutchik, 1980) and the action tendencies described for negative emotions, are, as we have seen, relatively specific, those for positive emotions are rather vague (Fredrickson & Levenson, 1998). Whereas negative emotions tend to include action tendencies supporting quite specific goals (e.g. attack, fly), positive emotion states are characterized by less specific response tendencies oriented toward more general goals (e.g. exploration, affiliation) (Izard, 1977).

Thus, traditional models based on specific action tendencies work well to describe the function of negative emotions but are less well suited to describe the function of positive emotions. This led Fredrickson (2004a) to propose an alternative model that describes the unique function and effects of positive emotions. It is called the broaden-and-build theory of positive emotions, and I will present it in some more detail below. Fredrickson (2004a) parted from the observation that, from the evolutionary perspective, at first sight, positive emotions do not seem as useful as fear, anger or disgust. Fredrickson (2004a) contended that the

framework used to explain negative emotions may not apply directly to describe the function of positive emotions. She suggested that positive emotions solve problems concerning personal growth and development, instead of solving problems of immediate survival: “Experiencing a positive emotion leads to states of mind and to modes of behaviour that indirectly prepare an individual for later hard times” (Fredrickson, 2003b, p. 332). Her broaden-and-build theory contents that positive emotions broaden individuals’ thought-action repertoires and build enduring resources.

At the heart of this theory lie two basic assumptions. (1) First, positive emotions appear to be less prescriptive than negative emotions on which particular action should be taken and, as a consequence, do not necessarily yield specific action tendencies. (2) Secondly, instead of sparking tendencies for physical action, positive emotions primarily trigger changes in cognitive activity (Fredrickson, 2003b). In line with these two assumptions, Fredrickson refers to *thought-action tendencies* in place of only action tendencies. Moreover, instead of considering these as specific tendencies, she sees them as broadening an individual’s thought-action repertoire, in contrast to negative emotions that *narrow* this repertoire (Fredrickson, 2004a).

Empirical work by Isen and colleagues (reviewed in Isen, 2000a) has provided evidence that positive affective states indeed broaden cognition. According to Isen (1990, p. 89), positive affect yields “[...] a broad, flexible cognitive organization and ability to integrate diverse material”. For instance, studies assessing biases in attentional focus have shown that negative affect narrows attention, whereas positive affect expands it (e.g. Basso, Schefft, Ris, & Dember, 1996).

Fredrickson and Branigan (2005) tested the broaden(ing) hypothesis by showing research participants short emotionally evocative film clips to induce specific positive (i.e. joy and contentment) and negative emotions (i.e. anger and fear). A non-emotional film clip was also used as a neutral control condition. Immediately following each stimulus, they measured the breadth of participants’ thought-action repertoires by asking them to list all the things they would like to do *right now*. Participants in the two positive emotions conditions identify more things than those in the two negative conditions, and more importantly, than those in the neutral condition. This shows that positive emotion increased participants’ thought-action repertoires (Fredrickson & Branigan, 2005).

Besides of the broadening function, Fredrickson and colleagues (Fredrickson, 2003a; Fredrickson, Tugade, Waugh, & Larkin, 2003) suggested that positive emotions help to build personal resources, because they enable flexible and creative thinking. For example, joy creates the urge to play and be playful. Even though play is often aimless (e.g. Fredrickson, 2000b), over time, joyful playing can have the effect of *building* an individual's physical (e.g. development of strength), intellectual (e.g. problem-solving skills), and social resources (e.g. solidification of bonds). This also applies for other positive emotions. The new resources people gain through the experience of positive emotions may therefore be durable, and can be drawn on even after the positive experience has subsided (Fredrickson, 2003b).

To conclude, I want to underline the distinct but complementary function of positive and negative emotions (Fredrickson, 2000a). Positive and negative emotions seem to serve different functions and have different, adaptive effects. Fredrickson (2000a, p. 17) even contended that “[...] positive and negative emotions are fundamentally incompatible because a person's thought-action repertoire cannot be simultaneously broad and narrow”.

#### **4 Effects of negative and positive emotions on well-being**

*“At first blush, it might appear that positive emotions are important to the science of well-being simply because positive emotions are markers of optimal well-being [...] but this is far from their whole story” (Fredrickson, 2004a, p. 1367).*

For centuries, folk beliefs have promoted the idea that positive emotions are good for health. Rather than refuting these widespread sentiments, accumulating evidence is providing empirical support for them. So far, a number of beneficial psychological and physical effects associated with positive emotional states have already been documented. As for negative emotions, they have repeatedly been associated with poor health and well-being. These findings raise several questions: In which temporal framework do emotions need to unfold to produce their effects? Do emotions have short-term, middle-term and long-term effects? Which are these?

In our studies, we focus on two different time frames with regard to the effects of emotions: the day and the interaction. Since the major goal of Study 1 is to understand how

positive and negative emotions experienced in social interactions affect well-being in the evening, I will mainly concentrate my attention on these middle-term effects of emotions in the present chapter. As in Study 2 we will look at the way positive and negative emotions affect short-term situational well-being (i.e. well-being right after a social interaction), I will also provide an overview of the effects of emotions at the *interaction level (short-term effects)*. This will be done in the second part of chapter 2.

As I think it is interesting to parallel the effects of emotions in different time frames, I also briefly review the long term effects of positive and negative emotions.

I begin the present chapter with a definition of well-being. Second, I briefly discuss the relationship between negative and positive affectivity and health/well-being (*long-term-person-level*). Finally, I go through the effects of emotions on well-being at the *day level*.

### What is well-being?

Most researchers see well-being as a multidimensional concept encompassing people's emotional responses, domain-specific satisfactions (e.g. job satisfaction), and global and rather stable evaluations of their life satisfaction (Diener, Suh, Lucas, & Smith, 1999; Warr, 1999). As such, well-being refers to people's affective as well as cognitive evaluations of their lives. Whereas the affective part corresponds to a hedonic evaluation that is shaped by both positive and negative affective experiences, the cognitive part corresponds to appraisals of one's life ("to what extent my life corresponds to my expectations and my "ideal" life) (Diener, 1994). Although the affective and cognitive components are separable (see Lucas, Diener, & Suh, 1996), they are often substantially related, suggesting a higher order construct of subjective well-being (e.g. Stones & Kozma, 1985). In this dissertation, we focus on *momentary* well-being as well as on *situational* well-being (i.e. well-being experienced with regard to the interaction), both reflecting well-being *at a given moment*, in the first paper at bedtime, in the second paper immediately after the interaction.

#### *4.1 Middle-term effects of positive and negative emotions*

In this dissertation, I am particularly interested in the effects of positive and negative emotions experienced in social interactions at work and in private life after work on individual well-being – most often bedtime mood.

In order to refine the understanding of the effects of negative and positive emotions felt on psychological well-being, and since the literature focusing on the effects of positive and negative emotions specifically on well-being is rather scarce, we report here from literature dealing with the effects of positive and negative events in more general terms - and more particularly positive and negative social interactions. The underlying assumption in doing that is that positive events trigger positive emotions and negative events trigger negative emotions (Basch & Fisher, 2000).

Before I review the studies on the relationship between daily events and well-being, there are several points that deserve attention.

1. First, studies on the daily events-daily mood relationship tend to encompass a large number of daily events, ranging from work events to family and leisure related events through role juggling, resulting in a patchwork of findings concerning the daily events-mood relationship.
2. Second, there is considerable variation in how events are assessed. Whereas some studies focus on the frequency of occurrence of events during the day, others focus on their severity. This distinction is important since several studies have shown that the valence and intensity of the event may play a more important role in psychological well-being than its frequency (e.g. David, Green, Martin, & Suls, 1997).
3. Third, also the measurement of psychological well-being varies widely from study to study, and the correlates of various psychological well-being indicators differ, making it difficult to compare specific findings. In some studies, the measure of psychological well-being is mood (e.g. Bolger, DeLongis, Kessler, & Schilling, 1989; David et al., 1997), in others, it is distress (e.g. Barnett & Brennan, 1995; Pillow, Zautra, & Sandler, 1996); in yet others, physical symptoms (DeLongis, Folkman, & Lazarus, 1988).

4. Finally, besides the different types of measurements, time of measurement also varies from study to study, ranging from mood in the morning to mood at the end of the day and from one-time measurement to several measurements of mood during the same day.

Within work and organizational psychology, there is now good empirical evidence that work stressors negatively impact individual health and well-being (e.g. Kahn & Byosiere, 1992; Sonnentag & Frese, 2003). Such conclusions are drawn from studies that focus on chronic work conditions and assess to what extent certain stressors (e.g. time pressure, role conflict, work overload) and resources (e.g. job control) characterize work situations *in general* (see Kahn & Byosiere, 1992; Sonnentag & Frese, 2003). Nonetheless, the variance in individual health and well-being that can be ascribed to chronic conditions and stressors (as opposed to situational aspects of stress) is relatively small (Semmer, 1996; Zapf, Dormann, & Frese, 1996), and more precisely, does not go beyond 10% in most studies (Sonnentag, 2001).

On the other side, it is now well-established that daily hassles, which can be defined as small situational stressors or as relatively minor events arising in everyday life (e.g. a malfunctioning printer, arguments with children) are important determinants of daily psychological well-being. Researchers have increasingly considered the significant role daily events play in determining distress and well-being, in contrast with a more traditional focus on the role played by major life events or chronic role-related stressors (e.g. Bolger, DeLongis, Kessler, & Schilling, 1989; DeLongis, Coyne, Dakof, Folkman, & Lazarus, 1982; DeLongis et al., 1988; Eckenrode, 1984; Gable, Reis, & Elliot, 2000; Lazarus, 1984). Focusing on daily events and understanding the dynamics of stressors at the micro-level (e.g. day) may also shed light on the processes underlying the longer-term effects of chronic stressors (e.g. Grebner, Elfering, Semmer, Kaiser-Probst, & Schlapbach, 2004; Marco & Suls, 1993).

Studies that have focused on how events and mood unfold on a day-to-day basis have shown that daily mood covaries with a large variety of events. These events mainly include interpersonal conflicts (Bolger, DeLongis, Kessler, & Schilling, 1989), negative interactions with coworkers and supervisors, higher levels of perceived and actual workload (Repetti, 1993), role juggling (Williams, Suls, Alliger, Learner, & Wan, 1991), perceived daily stress (Watson, 1988), daily hassles (DeLongis et al., 1988), physical symptoms (Eckenrode, 1984), and (un)desirable events (Affleck, Tennen, Urrows, & Higgins, 1994; David et al., 1997; Marco & Suls, 1993; Stone, 1987). For instance, a study by Bolger et al. (1989) has evidenced

that daily stressors could explain up to 20% of the variance in mood, showing in addition that interpersonal conflicts were by far the most distressing events. This result has been supported in several studies, among which the study of Buunk and Verhoeven (1991) evidencing that of all stressful events that can happen on a day, the best predictor of negative affect at the end of the workday was interpersonal frustrations at work. Negative interactions at work have also been found to be the most influential factors on same-day mood (Almeida, Wethington, & Kessler, 2002; David et al., 1997; Stone, 1987).

Given these considerations – that daily minor stressors are important in determining individual well-being and that interpersonal stressors are among the most deleterious, I found valuable to study how the emotional experience of a specific type of daily events – social interactions at work and in private life – impact well-being at bedtime. Diary studies are best suited for this purpose and will be described in the method part of the umbrella (Chapter 3).

In this dissertation, I am interested in exploring how positive and negative emotions experienced in social interactions at work and in private life that unfold over a working day influence psychological well-being at bedtime. In what follows, I will focus on the literature linking social interactions and psychological well-being (at bedtime). First, I will report studies on social interactions *at work* and daily psychological well-being. Secondly, I will report studies on social interactions *in private life* and daily psychological well-being. Note that in this section, I will exclusively concentrate on the *direct* effects of daily social interactions on psychological well-being. Indeed, some studies have shown *combinatory* effects of positive and negative interactions on psychological well-being. These effects will be discussed later on.

That interactions are important influences on daily mood is shown in the study of Bolger, DeLongis, Kessler, & Schilling (1989) who investigated the influence of common daily stressors on mental health in a community sample. Respondents were asked to fill in a short daily diary questionnaire for six weeks. Daily stressors were assessed based on a daily event checklist completed once a day. Respondents indicated whether or not they experienced each of 21 daily stressors (e.g. overload at home, spouse argument, financial problems, etc.) in the previous 24 hours. Mental health was measured based on an inventory of 18 mood items from the Affects Balance Scale (Derogatis, 1975) designed to assess anxiety, hostility and depression. Respondents rated each of the items based on their emotional state over the previous 24 hours. Their responses were then summarized into a measure of distressed daily

mood. Bolger's et al. (1989) results indicated that interpersonal conflicts (work-related and private conflicts confounded), compared to other types of negative events, such as work overload and financial problems, were the most important kind of daily stressor to impact psychological well-being. These results suggest that it is important to study interpersonal events when seeking to better understand psychological well-being.

Associations between negative interpersonal experiences and mood have also been found in a study by Mohr et al. (2003). In their study, Mohr et al. (2003) investigated among others whether negative daily interpersonal experiences related to sad and nervous mood contemporaneously (concurrent effects) and at the end of the day (lagged effects). One hundred community residents recorded their moods and negative social interactions over a period of 30 days. Moods were recorded three times a day (once during the morning, afternoon and evening) on a hand-held computer. When alerted by the electronic interviewer, participants were asked to record how *sad* and *nervous* they felt during the previous 30 minutes from 0 (*not at all*) to 4 (*extremely*). Daily negative interpersonal experiences were assessed each day at bedtime with a modified version of the 15-item Test of Negative Social Exchange (TENSE; Ruhlman & Karoly, 1991) assessing three types of negative social exchanges (hostile, insensitive and interference<sup>18</sup>). Participants indicated for each of the negative exchanges 1) if it occurred and 2) the corresponding time of occurrence (morning, afternoon, evening). A composite score was then computed by summing the number of checked exchanges, higher values indicating a larger number of negative interpersonal experiences reported for a given time period. Regression analyses indicated that the relationship between negative interpersonal exchanges and both sad and nervous moods was positive and significant for all three time periods (i.e. morning, afternoon and evening), except for afternoon nervousness. Apart from these concurrent relationships between negative interpersonal experiences and mood, a lagged relationship was found between the occurrence of negative interpersonal experiences in the afternoon and sadness reported in the evening. However, although positive, this relationship was only marginally significant.

Another study on the relationship between daily social and achievement events and daily well-being has been led by Nezlek & Plesko (2003). Twice a week, for nine weeks, just

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<sup>18</sup> The hostile type was for instance reflected by items like « Today, did anyone yell at you ? », Insensitive type by « Today, did anyone take advantage of you ? » and Interference type by « Today, did anyone prevent you from working on your goals ? ».

before going to sleep, participants (introductory psychology students) run a data collection program to answer among others questions about events that occurred that day and daily mood. Daily mood was assessed with the state version of the PANAS (Watson et al., 1988). Daily events were measured using twenty-two of the 40 items constituting the Daily Events Survey (DES; A. C. Butler, Hokanson, & Flynn, 1994). Twelve positive and ten negative events were measured (with an equal distribution of social and achievement events). Additionally, combinations of events (positive-negative and social-achievement events) that were not listed were also measured. Each event and combination were assessed daily on a scale from 0 to 4 (0 = did not occur, 1 = occurred and not important, 2 = occurred and somewhat important, 3 = occurred and pretty important, 4 = occurred and extremely important). Positive and negative event scores (including differences in the importance of events) were then computed by averaging ratings of positive and negative events, respectively. Results indicated that psychological well-being significantly covaried with daily events: Positive affect (PA) was higher on days when more positive events occurred and negative affect (NA) was higher on days when more negative events occurred. However, it is unfortunate that no distinction between the achievement events and the social events have been made in the analyses. As such, we do not know exactly what type of daily events best explained daily mood.

#### *4.1.1 Positive and negative interactions at work and daily psychological well-being*

Several studies have looked at the relationship between work-related experiences and bedtime mood, thus suggesting that work-related experiences spill over into private life. All of these studies show that negative interactions at work impair mood after work. Methods and results of the most important studies are presented below.

A study by Stone (1987) supported the major role interpersonal events at work play in shaping mood. He examined which groups of daily events (based on the content of the events) were the most strongly associated with daily mood. For 112 consecutive days, participants assessed their mood for their entire day and marked those events that occurred during the day. This study encompassed a large variety of events, ranging from private (e.g. family-leisure, friends-relatives, personal-leisure, etc.) to work-related events (e.g. pressure at work, negative interactions and happenings with co-workers and employees, etc.). Mood was measured based on a variant of the Nowlis Mood Adjective checklist (MACL; Nowlis, 1965) made up of 12 mood adjectives combined in two mood scales (positive and negative moods). Events were

recorded based on a 80-item event checklist - The Daily Life Experience Inventory (DLE; Stone & Neale, 1982). Aside from the recording of the events, participants were asked to indicate to what extent each experienced event was desirable or undesirable. Results indicated that negative work-related events were most strongly related to mood. More precisely, the category “negative emotional interactions and/or happenings with co-workers, employees, etc.” were among the most influential influences on daily mood. Contrary to expectations, positive events at work also showed a negative relationship to mood, however, the effect was small. The author did not provide any explanation for this pattern. These results points to the importance of including both positive and negative interactions at work when investigating their effects on well-being.

In her study, Repetti (1993) also investigated how the quality of daily social interactions with co-workers and supervisors affect daily mood. For 3 consecutive days participants rated their daily positive mood on a 6-item scale (e.g. playful, energetic, and kindly) and their negative mood on a 10-item scale (e.g. tense, sad, nervous, and frustrated). They also indicated the quality of their social interactions on a 32-item scale (Negative Social Interactions at Work, see Repetti, 1987) reflecting the way they felt each day during interactions (a) with co-workers and (b) with supervisors. Positive social interactions were described based on nine adjectives (e.g. feeling appreciated, respected, or cared about), and negative social interactions based on seven adjectives (e.g. feeling tense, annoyed, or resentful), each adjective being rated on a scale from 1 (*rarely or never*) to 4 (*almost always*).

Results evidenced a significant relationship between workplace interactions and day-to-day changes in mood after work. Mood was more negative and less positive than the baseline on days in which interactions with co-workers and supervisors were described as more distressing. Again, this study indicates that well-being is influenced by work-related interactions.

Most of the studies that have investigated the effects of social interactions on well-being have focused on the negative side of social interactions. Here, we report a recent study by Ilies, Johnson, & Judge (2005) that has examined the effects of both positive and negative social interactions at work on employee’s well-being at work several times a day. Ilies et al. (2005) argued that positive social interactions at work should increase employees’ positive affect and decrease negative affect, whereas negative interactions at work should decrease positive affect and increase negative affect. Their participants completed web surveys three

times a day for two weeks and reported how often they had participated in positive and negative social interactions, as well as their momentary affect, using the PANAS scale (PANAS; Watson et al., 1988). Positive and negative social interactions were ticked off a checklist comprising items reflecting positive (personal support, instrumental support and rewarding companionship) and negative interactions (stressful/embarrassing interactions). The results supported the hypothesis that participating in more positive social interactions and less negative social interactions both aroused positive affect and dampened negative affect. As indicated by the results, no differences for positive and negative affect were found. Both positive and negative affect were equally affected by social interactions (although not in the same direction).

The previously cited studies measured immediate effects of social interactions at work on mood (Ilies et al., 2005), effects on the whole day (Stone, 1987), and effects on mood immediately after work (Repetti, 1993). One previous study by Story and Repetti (2006) also provides support that negative social interactions at work impair mood as long as until the end of the workday.

As a summary, I would underline that previous research suggests that both positive and negative social interactions at work should be considered when seeking to better understand people's psychological well-being. Whereas the effects of negative interactions at work on mood are straightforward (Ilies et al., manuscript; Repetti, 1993; Stone, 1987; Story & Repetti, 2006), for positive interactions at work, mood enhancing effects have been found (Ilies et al., 2005), but surprisingly, mood impairing effects of positive interactions have also been found (Stone, 1987).

Thus, there is still a lack of empirical evidence as to whether and how positive interactions at work are related to psychological well-being after work. This has also been noted by Heaphy and Dutton (2008) that summarized the research on physiological effects of positive social interactions at work. In Study 1, we thus include both positive and negative emotional experiences at work and focus on their effects on psychological well-being.

#### *4.1.2 Positive and negative interactions in private life and daily psychological well-being*

Work is not the only important domain for social interactions. On one side, robust findings suggest that positive social exchanges in private life have beneficial effects on human health (Heaphy & Dutton, 2008; Holt-Lunstad, Uchino, Smith, Olson-Cerny, &

Nealey-Moore, 2003), but also on momentary well-being (Nezlek, Richardson, Green, & Schatten-Jones, 2002; Reis, Wheeler, Kernis, Spiegel, & Nezlek, 1985; Rook, 1984, 2001). On the other side, negative social interactions in private seem to impair well-being. Indeed, a meta-analysis of 48 studies investigating the effects of negative social exchanges in general (mostly measured as the frequency of conflicts experienced) evidenced very consistent negative effects on general well-being (Finch, Okun, Pool, & Ruehlman, 1999); and this is corroborated by studies with different populations, such as patients (Kleiboer et al., 2007; Manne, Taylor, Dongherty, & Kemeny, 1997) or elderly (Newsom, Nishishiba, Morgan, & Rook, 2003; Rook, 1984, 2001).

In this dissertation, I am mostly interested in the effects of emotions experienced in interactions in private life *after work*. However, as I did not find any study that focused on this time-period, I report studies investigating effects of social interactions in private life without distinguishing the time of their occurrence. Many of these studies focus on particular social categories (e.g. elderly people, people with diseases or students). Although my interest lies in the combination of effects of work-related and private interactions on well-being, these studies can inform us about the importance of private interactions. Methods and results of two studies investigating social interactions in private life and mood on a daily basis are presented below.

Rook (2001) examined the association of positive and negative social interactions older adults experience on a daily basis and mood. For two weeks, at the end of the day, participants rated their mood and reported on their social interactions. Daily mood was assessed with 10 positive mood items and 10 negative mood items (20-items Affectometer 2; Kammann & Flett, 1983). Social interactions were reported on a checklist. Participants indicated whether or not (coded 1 or 0, respectively) a certain type of social interaction had occurred (e.g. visiting a friend, discussing a personal matter with someone, etc.). Based on the responses, a measure of daily positive interactions and a measure of daily negative interactions were then formed and used as predictors. Rook's (2001) results showed that negative social interactions experienced during the course of the day were more influential for daily mood than positive interactions; whereas positive interactions increased positive mood, negative interactions both increased negative mood and decreased positive mood. In this study, Rook (2001) found interesting combinatory effects of positive and negative social interactions that are reported below.

Another study investigated the impact of interactions with the partner on mood for a sample of multiple sclerosis patients (patients; Kleiboer et al., 2007). Both the patients and their partner were asked to complete an evening diary for 14 days. End-of-day mood was measured with the positive and negative affect schedule (PANAS; Watson et al., 1988). Negative responses from the partner received during the day were also assessed each evening. Participants reported the frequency with which they received each of four types of negative responses (e.g. “your partner made disapproving remarks of you”). A variable indicating the absence or presence of a negative response on a certain day was then computed based on the responses participants provided and were used as a potential predictor of end-of-day mood. Interestingly, contrary to the pattern found in Rook’s (2001) study, the results showed that receiving negative responses from the partner was unrelated to positive end-of-day mood but that receiving negative responses only aroused negative end-of-day mood (both patients’ and their partner’s mood).

Based on previous research, we conclude the following:

1. First, there is evidence that negative and positive social interactions, both at work and in private life, influence daily psychological well-being.
2. However, while the effects of negative interactions at work are well studied, we still know little about the effects of positive interactions at work, and previous research is contradictory, showing both positive and negative influences on mood and well-being, or non significant effects.
3. Studies that look at the effects of private interactions often include positive as well as negative social interactions. They point on the importance of influences of negative as well as positive interactions on well-being. However, most of the studies are done with a specific subset of participants (patients; Kleiboer et al., 2007; elderly; Rook, 1984; 2001). Thus, these studies do not include work-related interactions since they are not of primary concern. To the best of our knowledge, there is no study combining positive and negative interactions at work and after work on daily well-being. As we want to examine the impact of both interactions at work and in private life, we will therefore study emotions experienced in interactions at work and after work on working days.

#### 4.1.3 *Buffering effect of positive interactions on end-of-day mood*

In addition to the investigation of the direct effects of positive and negative emotions experienced in daily social interactions on psychological well-being, I find valuable to examine whether positive emotions buffered the effects of negative emotions on psychological well-being. A study by Rook (2001) has already lent support to the buffering hypothesis and we will try to replicate the buffering hypothesis in Study 1. More precisely, we will test if positive emotions experienced in social interactions play a role in reducing the adverse effects of negative emotions experienced in social interactions on well-being. To the best of my knowledge, no other study than Rook's (2001) study has investigated the role positive interactions play in buffering the adverse effects of negative social interactions on well-being. Studies that have examined the buffering effect on well-being have 1) mainly focused on more broad daily events and not on social interactions specifically (Affleck et al., 1994; S. Cohen & Hoberman, 1983; David et al., 1997; Nezlek & Allen, 2006; Nezlek & Plesko, 2003) or 2) have investigated either less transient dimensions of emotional health (depression; Davis, Rhodes, & Hamilton-Leaks, 1997; Okun & Keith, 1998), evaluations of daily self-worth (Nezlek & Plesko, 2003), or distress (Lepore, 1992; Shahar & Priel, 2002).

Before I report the study of Rook (2001), I want to report here from a study led by Peeters, Buunk and Schaufeli (1995). This study examined the role social interactions at work played in negative affect at the end of the workday using a daily event-recording method (DIRO; Daily Interaction Record in Organizations) that is very similar to ours. The DIRO was developed by Buunk and Verhoeven (1991) on the basis of the Rochester Interaction Record (RIR; Nezlek, Wheeler, & Reis, 1983; Wheeler & Nezlek, 1977; Wheeler, Reis, & Nezlek, 1983) and the work of Cutrona (1986). For five working days, a sample of secretaries recorded their interactions at work of 10 minutes or more<sup>19</sup> as well as any stressful events that occurred during the day. Each social interaction was assessed along four aspects of social support<sup>20</sup> (i.e. *emotional support*, *instrumental support*, *informational support*, *appraisal support*). Three additional items assessing *rewarding companionship*<sup>21</sup> (Rook, 1987) and *confidentiality* of the contact were also rated for each interaction. Participants were also asked to indicate the extent to which they experienced positive and negative feelings at the end of

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<sup>19</sup> A criterion of maximum five interactions per day applied in this study in order to limit participants' burden.

<sup>20</sup> These four aspects of social support have been described by House (1981).

<sup>21</sup> *Rewarding companionship* was assessed with these two items: "we had a casual chat" and "we made jokes and had fun".

each workday. Whereas Peeters et al. (1995) did not find any significant main effect<sup>22</sup> of social interactions on negative affect, they evidenced a significant interaction term between *instrumental support*<sup>23</sup> and the number of stressful events (also comprising interpersonal stressors, and more specifically interpersonal frustration<sup>24</sup>). They also found a significant interaction term between *intimate support*<sup>25</sup> and the number of stressful events. Both effects emerged in between-subject regression analyses. Altogether, these results indicated that those participants whose interactions are characterized by instrumental and intimate support are less likely to feel bad at the end of a workday when experiencing numerous stressful events. A significant interaction term between the number of stressful events and *instrumental support* also emerged in the within-subject regression analyses conducted. This result indicated that instrumental support was particularly useful in decreasing the occurrence of negative affect at the end of days where the secretaries had to face considerable levels of stress.

Altogether, Peeters' et al. (1995) results highlighted that whereas intimate and instrumental social support played a role in reducing the aversive effects of stress on affect, rewarding companionship did not have any buffering effect. These findings contradict Buunk and Verhoeven's findings (1991) evidencing companionship to be more effective than intimate and instrumental support in buffering job-related stress. However, the latter study has been conducted on a sample of male police officers and comparisons between studies must therefore be made cautiously.

To conclude, I want to mention that I found valuable to report the study of Peeters et al. (1995) based on two main rationales. First, whereas no main effects of social interactions on affect at the end of the workday were found, buffering effects of social interactions were evidenced. Indeed, whereas Peeters et al. (1995) study did not evidence any *main* effect of social interactions on affect at the end of the workday, it evidenced that some types of social

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<sup>22</sup> Neither within- nor between-subjects.

<sup>23</sup> *Instrumental support* was defined as a component encompassing all the instrumental (e.g. "helped me with a given task") and the informational (e.g. "gave me advice on how to handle things") support items, based on a principal component analysis.

<sup>24</sup> Examples are "colleague holds an extreme long telephone conversation in a quasi low tone, because it deals with so-called confidential issue".

<sup>25</sup> *Intimate support* was defined as a component encompassing all the emotional (e.g. "showed that he/she liked me") and appraisal (e.g. "showed that he/she appreciated the way I do my work") support items as well as the confidentiality item ("the contact was confidential").

interactions (i.e. characterized by instrumental and intimate support) played a role in reducing the adverse effects of stressful events on end-of-day affect (i.e. *buffering* role). This result points to the fact that supportive (i.e. positive) social interactions may spread their positive effects on well-being only when individuals have to cope with stressful, resources depleting experiences. Second, this study points to the differential role interactions characterized by different types of support play with regard to well-being. From this study, we have thus learnt that the way social interactions are measured should result from a cautious choice. In our first study, we do not have to deal with this issue since we measure social interactions through the emotions experienced during these interactions.

In examining how daily social interactions influence daily well-being, Rook (2001) looked at the potential role of positive social interactions in buffering the adverse effects of daily negative social interactions on emotional well-being (i.e. depression and loneliness). This question was addressed through hierarchical multiple regression analyses in which an interaction term between positive and negative interactions was entered. The dependent variables, depression and loneliness, were not assessed daily but were measured once<sup>26</sup> with the 20-item CES-D (Radloff, 1977) and with 10 items drawn from the UCLA Loneliness Scale (D. Russell, Peplau, & Cutrona, 1980), respectively. As suggested by the significant interaction term between positive and negative social interactions, positive interactions buffered the effects of negative interactions on depression<sup>27</sup>. This result indicated that the pervasive effects of experiencing negative social interactions on emotional well-being (assessed with the depression scale) were eroded by the experience of positive social interactions.

Here, I want to note that findings from this study must be interpreted carefully for two main reasons. First, this study has been designed to examine the effects of social interactions on older adults' mental and physical health. Some studies (e.g. Carstensen, Pasupathi, Mayr, & Nesselroade, 2000) have evidenced that age may affect how intensely people experience their positive and negative emotions. It would thus be interesting to replicate Rook's (2001) findings with a sample of working adults. Second, Rook's (2001) study highlighted a buffering effect on a *general* level; positive interactions were found to buffer the adverse

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<sup>26</sup> Depression and loneliness were measured during an interview conducted before the 2-week self-observation period (i.e. before the daily diary assessment).

<sup>27</sup> No significant interaction term was found for loneliness.

effects of negative interactions on emotional well-being as measured on a general level (i.e. depression) and not on a day-to-day basis.

Despite available data, in her study Rook (2001) did not investigate the buffering effect of positive social interactions on *daily* emotional well-being. I find important to mention that in Rook's (2001) study, the buffering effect has been found on a general level (versus on a daily basis) for this result may constitute a potential explanation for the abovementioned studies that have investigated the buffering role of positive events on daily affect or mood but that failed to support it (David et al., 1997; Nezlek & Plesko, 2003). If we refer to Fredrickson's broaden-and-build theory (Fredrickson, 2004a), this failure to support the buffering hypothesis on a daily basis may be due to a large extent to the fact that positive emotions help to build resources in the long term (Fredrickson, 2004a); therefore, investigating the buffering effect of positive emotions in the course of the day may lead us to miss the mechanisms involved in the buffering effect as explored in a longer time frame.

Another interesting rationale for the failure to evidence any buffering effect on well-being is provided by Nezlek and Plesko (2003). According to this rationale, we should not consider the failure to support the buffering hypothesis in light of the time frame in which it is investigated but rather in terms of the way well-being is operationalized. Indeed, Nezlek and Plesko (2003) argue that buffering effects may not appear for affective reactions but may appear for outcomes with more cognitive and self-evaluative aspects (e.g. depressogenic thinking, self-esteem, etc.). This assumption is consistent with previous studies that failed to evidence any buffering effects of positive events on daily affect (e.g. David et al., 1997) as well as with previous studies that found a buffering effect of positive events on well-being measured in terms of depressive symptoms (e.g. S. Cohen & Hoberman, 1983; Rook, 2001). The findings of Nezlek and Plesko (2003) are also in line with their rationale: Whereas positive events did not buffer the effects of negative events on daily affect<sup>28</sup> (measured with the PANAS), positive events buffered the effect of negative events on daily depressogenic thinking and daily self-esteem.

Whereas the PANAS measured how people feel (i.e. their mood state), measures of depressive symptoms or self-esteem pertain to the way people evaluate themselves, and more particularly judge their self-worth. Although these evaluations have an affective tone, they are

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<sup>28</sup> As indicated by a non significant interaction term between positive and negative daily events in the analyses of daily positive and negative affect.

not purely affective. “The changes in self-evaluations or optimism associated with negative events may be broader and different in focus than an affective response, and this difference in focus may make such changes more susceptible to being counteracted by positive events than changes in affect are. On days when more negative events occur, positive events may provide some sort of balance, leading perhaps to increased optimism, and a sort of “Life isn’t all bad” reaction may occur. Such reactions may be accompanied by smaller reductions in self-evaluations than on days when negative events occur in the absence of positive events” (Nezlek & Plesko, 2003, p. 594).

Nevertheless, as the potential role *positive interactions* may play in buffering the adverse effects of *negative interactions* on mood appears not to have been investigated on the day level, we will explore this issue in Study 1.

We will test the buffering hypothesis using multilevel moderated regression analyses. More precisely, we will test whether positive emotions experienced in private interactions after work buffer the potential aversive effects of negative emotions experienced in interactions at work on bedtime mood. From a statistical point of view, we will test the significance of a term representing the interaction of positive emotions experienced in interactions after work and negative emotions experienced in interactions at work. This last point leads us to continue with a theoretical part related to the undoing effect.

#### 4.1.4 *The undoing effect*

In the previous section, I discussed the buffering hypothesis stating that positive experiences may buffer or attenuate the adverse effects of negative experiences on psychological well-being. I dealt with this literature since the purpose of Study 1 is to investigate the relationship between positive and negative emotions experienced in social interactions as well as their combination and bedtime psychological well-being. This buffering effect has its counterpart in the literature on emotions (Fredrickson & Levenson, 1998; Fredrickson, Mancuso, Branigan, & Tugade, 2000). Fredrickson and colleagues (Fredrickson & Levenson, 1998) investigated whether positive emotions can reduce the adverse effects of negative emotions in laboratory studies as *undoing effect of positive emotions*. I present this effect because in Study 1 we will assess the positivity and negativity of social interactions through their emotional valence (i.e. through positive and negative emotions experienced in these social interactions).

The effects of positive emotions on individuals is well known. Examples are promoting flexibility in thinking and problem solving (Fredrickson & Branigan, 2005; Isen, Daubman, & Nowicki, 1987; Izard, 1977), facilitating adaptive coping (Folkman & Moskowitz, 2000), building enduring social resources (Fredrickson, 2004a, 2004b; Fredrickson & Branigan, 2005; Keltner & Bonanno, 1997), as well as triggering upward spirals of enhanced well-being (Fredrickson, 2000a, 2003a; Fredrickson & Joiner, 2002) (for a review, see Lyubomirsky, King, & Diener, 2005; Pressman & Cohen, 2005). In addition, positive emotions play a role in recovery processes. This has been described as the *undoing effect* of positive emotions by Fredrickson and colleagues (Fredrickson & Levenson, 1998; Fredrickson et al., 2000). They experimentally induced positive and negative emotions and showed that experiencing positive emotions after a negative experience speed cardiovascular recovery from negative emotional arousal. The *undoing effect* refers to the fact that the *subsequent* experience of positive emotions has the potential to reduce the activation of the autonomic nervous system triggered by the experience of negative emotions and thus may facilitate adaptive recovery (Fredrickson & Levenson, 1998; Fredrickson et al., 2000).

Based on the undoing effect and the buffering effects described above, we argue in Study 1 that positive emotions experienced in interactions after work may buffer the adverse effects of negative emotions experienced in interactions at work on bedtime psychological well-being. As the undoing effect has mostly been investigated in laboratory experiments (e.g. Fredrickson & Levenson, 1998), we intend to extend it to real data of emotions experienced in daily social interactions and thus see whether the undoing effect such as described at a physiological level transpose to everyday life. However, note that the cardiovascular recovery found in the original studies of the undoing effect is characterized in terms of seconds. In Study 1, we investigate a timeframe of hours.

#### 4.1.5 *Affective spillover effects*

After discussion of the relationships between social interactions at work and psychological well-being and social interactions in private life and psychological well-being, I now ask whether the emotional experience of social interactions at work influence the emotional experience of social interactions after work.

According to the spillover theory, work and family experiences are positively correlated (Crouter, 1984; Staines, 1980), and many studies found that what happens in one setting is affected by what happens in the other setting (Barnett, 1994; Williams & Alliger, 1994). The

term spillover refers to a transfer of mood, affect, or behaviour between domains (e.g. Bolger, DeLongis, Kessler, & Wethington, 1989; Edwards & Rothbard, 2000; Lambert, 1990; Repetti, 1987; Williams & Alliger, 1994).

Spillover between work and family has often been attributed to mood spillover (Barling & MacEwen, 1992; Burke & Greenglass, 1988; Edwards & Rothbard, 2000; Repetti, 1987). More precisely, several studies suggest that workers carry the emotions experienced at work into their home life (e.g. Kelly & Voydanoff, 1985; Piotrkowski & Crits-Christoph, 1981). For example, negative work-to-family spillover occurs when an employee is distracted and irritable at home because of a stressful workday. Moreover, the spillover of unpleasant affective states has been found to be more pronounced than the spillover of pleasant affective states (e.g. Williams & Alliger, 1994).

#### 4.1.6 *Symmetrical spillover effects: When positive emotions at work trigger positive emotions after work and negative emotions at work trigger negative emotions after work*

In Study 1, we investigate two types of spillover. First, we hypothesize that positive emotions in work-related interactions will trigger more positive emotions in interactions after work (positive spillover) and that negative emotions in work-related interactions will trigger more negative emotions in interactions after work (negative spillover). Here, we argue that two processes can be responsible for these *symmetrical* spillover effects.

##### *a) Mood-congruency hypothesis*

According to the mood-congruency theory, the current mood influences the interpretation of future events (Mayer, Gaschke, Braverman, & Evans, 1992). Indeed, previous research relating daily emotional experiences at work with mood or behaviour after work support the mood congruency hypothesis: higher stress at work negatively influenced the interaction quality between spouses after work (Crouter, 1984; Story & Repetti, 2006) and between parents and children after work (Repetti, 1987, 1994; Repetti & Wood, 1997). More specifically, fathers that experienced more distressing interactions with coworkers and supervisors or a generally more tense social climate at work reported increases in expressions of anger and greater use of discipline during interactions with their child later in the day (Repetti, 1994). In a similar vein, more negative social interactions or a more stressful day at work were followed by higher marital anger (Bolger, DeLongis, Kessler, & Wethington, 1989; Crouter, 1984) and this especially in high-conflict families (Story & Repetti, 2006).

All these studies evidencing a negative impact of stress and negative moods at work on interactions later in the day outside of work thus suggest that the spillover between emotions experienced in interactions at work and emotions experienced in interactions after work could be the result of specific behaviours in interactions after work, influenced by the emotions employees carry from work. Empirical evidence that negative mood mediates the relationship between stressful experiences at the workplace and marital behaviour has been provided in a study of Story and Repetti (2006).

Only few studies have investigated spillover of positive emotions from work to after-work experiences, but they also mostly support the mood congruency hypothesis. For example, positive assessments of mood at work were related to a congruent mood after work in a diary study (Song, Foo, & Uy, 2008), and daily job satisfaction has been found to influence after-work marital satisfaction (Heller & Watson, 2005) or mood after work (Judge & Ilies, 2004). However, mood congruency seems to be more prevalent for negative than for positive emotions; in an early study comparing work to family spillover of distress, fatigue, elation and calmness, Williams & Alliger (1994) found spillover effects only for negative, but not for positive emotions.

*b) Work-life balance research*

We believe that the depletion argument put forward in research on resource drain (Edwards & Rothbard, 2000) and role conflict (Greenhaus & Beutell, 1985) may also be a valuable explanation for the negative spillover effects we hypothesize in Study 1. According to the depletion argument, the depletion process begins when roles are stressful and trigger negative emotional responses to that role (i.e. strain; Greenhaus & Beutell, 1985; Repetti, 1987). The second step of this depletion process is referred to as spillover, a term that I have already discussed above. Because of these negative spillover effects and the experienced energy deficit that ensues, people reduce their engagement in another role (e.g. Rothbard, 2001). In Study 1, we do not investigate role engagement but rather the emotions experienced in social interactions at work and in private after work. We therefore postulate that negative emotions experienced at work are transported into the private life and trigger more negative emotions in social interactions outside from work. In accordance with the depletion process, we argue that people will be less interpersonally available and more irritable at home after a stressful day based on the energy deficit evidenced in the depletion process (e.g. Edwards & Rothbard, 2000; Rothbard, 2001).

So far, we have sought to better understand the negative spillover effects in light of the depletion argument. Another argument that have been put forward by research on role accumulation and multiple roles (Rothbard, 2001) can help us to better understand the positive spillover effects that we hypothesize. According to the enrichment argument, role engagement may provide people with resources and positive experiences (Rothbard, 2001). Under this perspective, being involved in one role may trigger positive emotional responses to that role that, in turn, enhance engagement in the other role. Again, note that we do not investigate role engagement but the emotions experienced in social interactions at work and in private after work. However, we think that the enrichment process just described could adequately support the positive spillover effects of emotions from work to home that we hypothesize. Positive emotions at work will be transposed into the private sphere and will then influence the interpersonal availability which, in turn, will foster subsequent experiences of positive emotions (Rothbard, 2001).

Based on these theoretical considerations and earlier empirical findings, we expect mood congruent spillover from negative as well as positive emotions experienced in interactions at work to positive and negative emotions experienced in interactions after work, respectively.

#### *4.1.7 Asymmetrical spillover effects or compensation effects: When negative emotions experienced at work trigger positive emotions after work*

Above I mentioned mood congruency effects as a potential explanation for the positive and negative spillover we hypothesize (i.e. symmetrical spillover effects) in Study 1. In other terms, I have argued that the spillover from work-related interactions to interactions after work will be mood-congruent. I will now argue that under some circumstances, negative experiences at work may lead to more positive experiences after work, implying a compensation effect. Edwards and Rothbard (2000) suggested that such reactive compensation (seeking contrasting experiences at home after undesirable experiences at work) is more likely after excess negative experiences. We thus expect that negative emotions experienced in interactions at work may also enhance the probability of experiencing positive emotions after work. We draw on mood regulation and recovery concepts to support this contention.

The mood regulation model postulates that people are generally motivated to feel well, and if they do not feel well, they make attempts to regulate their feelings through thoughts

and actions in order to obtain hedonic benefits (Baumeister, Bratslavsky, Muraven, & Tice, 1998; R. J. Larsen, 2000; Totterdell & Parkinson, 1999). It is thus likely that a person who has had many negative experiences at work may particularly seek out situations, or engage in behaviours, that allow mood regulation towards positive mood (Edwards & Rothbard, 2000). This is in line with recovery theories (Geurts & Sonnentag, 2006; Sonnentag & Zijlstra, 2006) which postulate that engaging in positive activities after work helps people to unwind, detach and recover from work. It is assumed that recovery activities are affect-regulation strategies (Sonnentag & Fritz, 2007). Again, most of the studies investigate recovery from work in general; however, there is growing support for the positive effects of recovery activities also on the day level (Geurts & Sonnentag, 2006; Sonnentag, 2001; Sonnentag & Zijlstra, 2006).

However, empirical evidence for a compensation effect in the sense that negative experiences trigger more positive experiences is scarce, for recovery experiences in general (Sonnentag & Bayer, 2005), and for social activities in particular; whereas in a study with teachers, social activities after work were related to better mood at bedtime (Sonnentag, 2001), another study with flight attendants showed more social activities to be associated with higher, rather than lower, bedtime depression (Sonnentag & Natter, 2004). In a similar vein, Repetti (1992) found that more stress at work led to more withdrawal and thus fewer interactions after work. She interpreted withdrawal as an activity that facilitates recovery and helps to restore a positive affective state. Thus, social interactions may not be helpful under all circumstances. Rather, they may require facilitating circumstances (Edwards & Rothbard, 2000), specifically, responsive and supportive behaviour of interaction partners. Indeed, in an earlier study, the presence of supportive others was a crucial factor in experiencing positive outcomes after negative daily experiences (Harlow & Cantor, 1995). The most important interaction partner in private life is likely to be one's partner. We thus assume that negative experiences at work trigger more positive interactions after work mostly for those who have high perceived social support from their partner. This argument is also in line with the contention made by Edwards and Rothbard (2000) that compensation effects are dependent on specific, facilitating circumstances.

## 4.2 *Long-term effects of positive and negative emotions*

Most of the long term effects of positive and negative emotions are related to personality-related general emotional tones:

“Some people are habitually anxious or sad, whereas others are calm and happy. Some people suffer many physical ailments, whereas others are rarely ill. It is now thought that these individual differences in health and well-being are rooted, in part, in enduring personality characteristics” (Bolger & Schilling, 1991, pp. 355-356).

A thorough discussion of the mechanisms that are thought to be responsible for the relationship between personality and health is beyond the scope of this dissertation, but I will briefly review some of the most important findings pertaining to the relationship between emotion-related personality characteristics and health outcomes.

Whereas negative emotion-related attitudes and traits have often been shown to be associated with poor health outcomes, positive emotion-related attitudes and traits have repeatedly been found to be beneficial in promoting health, well-being and even longevity (e.g. Danner, Snowdon, & Friesen, 2001; Peterson, Seligman, & Vaillant, 1988; Seligman & Csikszentmihalyi, 2000).

On one hand, it is clearly established that Type A personalities or people with a hostile interpersonal style are more prone to coronary heart diseases (Cooper, Detre, & Weiss, 1981; Friedman & Booth-Kewley, 1987; T. W. Smith, 1992). Emotion theorists have argued that individuals who are high on the affective trait of hostility should have a lower threshold for experiencing and expressing anger than individuals who are low on this trait (e.g. Ekman, 1984; Lazarus, 1991b; Rosenberg, Ekman, & Blumenthal, 1998). Hostility may thus lead to more health problems, because anger increases cardiovascular reactivity which may damage people’s health (Spence, Barnett, Manuck, & Jennings, 1997). In addition, neuroticism as one of the big-five personality dimensions and defined as “the general tendency to experience negative affects such as fear, sadness, embarrassment, anger, guilt and disgust” (Costa & McCrae, 1992, p. 14) has been found to be a clear determinant of symptoms of emotional distress (e.g. Costa & McCrae, 1980) and to constitute a risk factor for depression (L. A. Clark, Watson, & Mineka, 1994).

On the other hand, a number of studies suggest that a positive attitude and the optimistic explanatory style of individuals high in positive affectivity can lead to higher well-being, health and most likely even to longer life (Scheier & Carver, 1985; Seligman & Csikszentmihalyi, 2000). The famous nun study provides maybe the most striking evidence: analyses of the emotional content of autobiographic writings of 180 women in their early twenties revealed that individual differences in the use of positive emotion words predicted longevity six decades later (Danner et al., 2001). The nuns whose early life writings had a positive emotional content lived healthier and on average 10 years longer than those who had the least positive emotional content (Danner et al., 2001). Solid relationships between optimism or feeling good and longevity has also been found in other studies (e.g. Levy, Slade, Kunkel, & Kasl, 2002; Maruta, Colligan, Malinchoc, & Offord, 2000; Moskowitz, 2003; Ostir, Markides, Black, & Goodwin, 2000; Peterson, Seligman, Yurko, Martin, & Friedman, 1998).



# Chapter 2

Review of literature

## Emotion regulation and its effects

*“[...] Employees who repeatedly say “have a nice day!” and clearly do not mean it, are more likely to irritate than please customers” (Kiefer & Briner, 2006, p. 208).*

In the first chapter, I provided the theoretical background required to a better understanding of Study 1. In this second part, I will provide some theoretical elements required to a better understanding of Study 2. Whereas in Study 1 we focus on relationships at the day level, in Study 2 we focus on relationships at the interaction level. In Study 2, we will investigate the impact of surface acting based on emotion regulation theories (Grandey, 2000) and the influence of emotions felt on well-being after the interaction and on interaction quality.

Before I review some literature on emotion regulation and related aspects, I now seek to provide a brief explanation of how positive and negative emotions experienced in social interactions influence the evaluation of interactions in terms of 1) well-being and 2) perceived quality. Information related to situational well-being is provided by the study participants based on the question: “How did you feel during the interaction?” and information related to the perceived quality is based on the question: “How was the quality of the interaction?”. Answer format ranges from 1 to 5, five indicating higher well-being and quality.

### **1 Emotions felt in social interactions and situational well-being**

Here, I argue that the evaluations people made of their interactions in terms of well-being are constituted of both affective and cognitive components. This has repeatedly been found in studies investigating subjective well-being (e.g. Diener, Suh, & Oishi, 1997). Subjective well-being (i.e. psychological well-being) has often been defined as constituted by a cognitive component (global judgments of one’s life) and by an affective component

(hedonic balance, that is the relative balance of experiencing positive and negative affect). In Study 2, we investigate how positive and negative emotions felt in a social interaction influence well-being right after this social interaction and therefore we mainly focus on the affective component of well-being. “The experience of affect is, by definition, important to psychological well-being. [...] How individuals feel is an inherent component of well-being” (Gohm & Clore, 2002, p. 496). According to the assumption that “people experience abundant SWB when they feel many pleasant and few unpleasant emotions [...]” (Diener, 2000, p. 34), we argue that experiencing positive emotions in an interaction will increase people’s well-being whereas experiencing negative emotions will decrease people’s well-being. In our study, we ask participants: “Which emotion did you feel during the interaction?”. One of the three following answers is possible: a positive emotion, a negative emotion or a neutral emotion (i.e. no emotion at all). Based on the assumption that participants will report the “main” emotion experienced during the interaction, we argue that if participants indicate feeling a positive emotion, the hedonic balance (i.e. the relative balance of experiencing positive and negative affect) of the interaction will be positive. On the contrary, if participants indicate feeling a negative emotion, we argue that the hedonic balance of the interaction will be negative. On this basis, we argue that situational well-being will increase each time a positive emotion is reported (i.e. when the hedonic balance is positive) and will decrease each time a negative emotion is reported (i.e. when the hedonic balance is negative). I do not make any assumption relative to cases where no emotion is reported since I am interested in the effects of positive and negative emotions in this dissertation.

Note that we are aware of the fact that cognitive elements may also play a role in the way people assess how they feel right after a social interaction. In particular, I think that the evaluation of the extent to which one’s goals related to the interaction have been achieved is very likely to influence our emotional state right after the interaction. According to Carver and Scheier (1990), negative emotions are generated in response to and as indicators of insufficient progress towards desired goals; on the contrary, positive emotions are elicited in response to and as indicators of sufficient progress toward desired goals<sup>29</sup>. Given that many organizations prescribe display rules for interactions with customers (Gosserand & Diefendorff, 2005; Hochschild, 1979), but also for interactions between colleagues or with superiors (Henderson & Argyle, 1986; Tschan, Rochat, & Zapf, 2004), I argue that social

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<sup>29</sup> See Carver and Scheier (1981) for an overview of their seminal model of self-regulation.

interactions at work are not without goals. An employee who tries to convey a friendly impression to a customer while feeling anger constitutes an example of such interactional goals. I therefore argue that achieving one's goals is very likely to positively influence one's well-being (and conversely that not achieving one's goals is very likely to negatively influence one's well-being) through the emotions elicited in response to the extent to which one's goals have been achieved. Extending this line of reasoning is beyond the scope of this dissertation since in Study 2 we do not investigate the influence of achieving or not a particular goal on well-being but limit ourselves to the effects of emotions and their regulation in social interactions at work.

## **2 Emotions felt in social interactions and interaction quality**

Here, again, I suggest that self-ratings of the quality of a social interaction are based among others on a consideration of one's affective states during the interaction. I found support for this assertion in the study of Beal, Trougakos, Weiss, and Green (2006) evidencing a negative relationship between an employee's experience of negative emotions and self-ratings of affective delivery (i.e. the extent to which one is able to comply with the organizational requirements to express certain emotions in a given situation) (see also Grandey, 2003; Tsai & Huang, 2002). Beal et al. (2006, p. 1055) argued that "people often use self-relevant information as the basis for other judgments of self, particularly if the two domains are very similar". In Study 2, we do not formulate any hypothesis relative to affective delivery. Rather, the point here is that in Study 2 the outcome variable is perceived quality of the interaction (i.e. an overall rating that reflects the way the interaction has unfolded) and I content that this outcome variable, as a self-rated dimension, may also be subjected to affective influences. I therefore draw a parallel with the study of Beal et al. (2006), arguing that experiencing negative emotions in a social interaction will decrease the perceived (i.e. self-rated) quality of the interaction. I further argue that experiencing positive emotions will increase the perceived quality of the interaction.

I now turn toward the literature on emotion work and emotion regulation in order to provide the theoretical background to the hypotheses tested in Study 2.

### *2.1 Emotion regulation, well-being and interaction quality*

Up until now, I have argued that the experience of positive and negative emotions will influence the way people evaluate their social interactions in terms of well-being and

perceived quality. Here, I argue that the emotions employees feel cannot always be displayed. While at work, employees often have to maintain expressive display requirements (Grandey, 2003; Tsai & Huang, 2002). These requirements, often referred to as *display rules*, correspond to organizational expectations on what emotions are appropriate in a given situation (Ekman, Sorenson, & Friesen, 1969; Goldberg & Grandey, 2007). The extent to which employees comply with these requirements is referred to as *affective delivery* (Grandey, 2003). With the shift to a service-oriented economy, the importance of affective delivery is increasing (e.g. Morris & Feldman, 1996). In many cases, the interaction between the service provider and the client constitutes the service itself (Gutek, Cherry, & Groth, 1999), and as a consequence, customers assess service quality based on the provider's behaviour (Ashforth & Humphrey, 1993). Above, I argued that employees rate the quality of an interaction based on their internal feelings, at least to a large extent. Given that observers are not privy to internal states of employees and therefore do not have access to this self-relevant information, it is very likely that they mainly base their ratings on observable cues. Above, I noted that many organizations prescribe display rules for interactions with customers, but also for interactions between colleagues and with superiors. Something that I want to add here is that most of these rules prescribe friendly and positive behaviours. For instance, in Lewig and Dollard's study (2003), 73% of employees reported having to comply with positive emotional display requirements several times a day, against 2% for negative emotional display requirements. Consequently, it is reasonable to argue that outside observers rate interaction quality based on outward expressions of positive affect.

At this point one could ask whether an employee's positive displays warrants that he or she will positively rate perceived quality of interactions. Here, I argue that an employee who experience negative emotions while having to meet requirements prescribing positive emotional displays will probably rate interaction quality as worse than an employee experiencing and having to display positive emotions. I do not argue for that based on the discrepancy between the emotion experienced and the emotion displayed but rather based on the assumption that experiencing negative emotions will lead the employee to negatively rate the quality of the interaction.

Above, I argued that outside observers (e.g. customers) are not aware of how employees feel during an interaction, at least to a large extent. As such, they might rather base their judgments relative to interaction quality on observable cues. As we mentioned, employees'

positive affective displays play a major role in outside observers' ratings of interaction quality. However, employees do not always feel internally positive and may thus be required to display emotions that are discordant with the emotions they actually feel. This assertion leads us to deal with the concept of emotional dissonance (Morris & Feldman, 1996) that lies at the heart of the literature on emotion work.

Emotional dissonance refers to the discordance between an employee's actual emotional experience and the emotions required to be displayed (e.g. Fischbach, 2003; Morris & Feldman, 1996; Rafaeli & Sutton, 1987; Zapf, Vogt, Seifert, Mertini, & Isic, 1999). "Workers may experience emotional dissonance when the emotional expression required by the job's display rules clashes with their inner or "real" feelings" (Morris & Feldman, 1996, p. 992). As seen above, most of the time it is positive displays that are required, and as such, "emotional dissonance typically occurs when employees experience negative emotions and display rules require the expression of positive emotions" (Beal et al., 2006, p. 1054).

When such a discrepancy between inner feelings and organizationally desired emotions occurs at the workplace, employees often need to manage or regulate their emotional state in order to meet the organizational display rules in force (Ashforth & Humphrey, 1993; A. A. Grandey, 2000; Morris & Feldman, 1996b). In work and organizational psychology, emotion regulation is most often studied as "*emotion work*" (or *emotional labour*<sup>30</sup>), based on the general notion that employees have to manage or regulate their emotions in order to comply with organizational display rules for customer-related transactions (Fischbach, 2003; Gosserand & Diefendorff, 2005; Grandey, 2000; Hochschild, 1983; Rafaeli & Sutton, 1987; Zapf, 2002).

Organizational researchers distinguish between two main strategies people use in order to display organizationally-desired emotions: surface acting and deep acting (A. A. Grandey, 2000, 2003; Hochschild, 1983). Whereas surface acting refers to efforts to "pain on" affective displays, to manipulate the outward expression of emotions, deep acting refers to efforts to manage the actual emotional experience. Both strategies can further be differentiated based on findings evidencing that they differently predict various outcomes (Brotheridge & Grandey, 2002; Brotheridge & Lee, 2003; Grandey, 2003).

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<sup>30</sup> This term was first coined by the sociologist Hochschild (1979, 1983).

In what follows, I will deal with the effects of managing one's emotions. According to Hochschild (1983), emotional labour generates stress and may lead to burnout. "To date, however, the specific mechanisms in understanding the relation of emotional labour with stress outcomes have been unclear" (Grandey, 2000, p. 95). The consequences of influencing one's felt and displayed emotions have however well been documented in emotion regulation theories (E. A. Butler & Gross, 2009; J. J. Gross, 1998b; J. J. Gross, Richards, & John, 2006). Grandey (2000) suggests to deal with emotion regulation "[...] as a guiding theory for understanding the mechanisms by which emotional labour may be stressful to individuals but still be useful to the organizations" (Grandey, 2000, p. 95). Gross defined emotion regulation as "the processes by which individuals influence which emotions they have, when they have them, and how they experience and express these emotions" (J. J. Gross, 1998b, p. 275). In his process model of emotion regulation, Gross (1998a) distinguishes between antecedent-focused emotion regulation and response-focused emotion regulation. When people act on the precursors of emotion (e.g. the situation or its appraisal), they engage in antecedent-focused emotion regulation. When people modify the emotional expression of their emotional reaction to the situation, they engage in response-focused emotion regulation.

Grandey (2000) has related surface acting to response-focused emotion regulation strategies and deep acting to antecedent-focused emotion regulation strategies. In what follows, I will mainly focus on the effects of response-focused emotion regulation strategies since in Study 2 we are interested in the effects of surface acting.

When surface acting, people modify the outward expression of what they feel inside. This implies that they suppress the emotion they experience and display no or another emotion, or that they amplify the emotion experienced. In Study 2, we are interested in cases where employees suppress the emotion experienced (i.e. positive or negative) and display no or another emotion (i.e. negative or positive, respectively). Suppression can be defined as "the conscious inhibition of ongoing emotion-expressive behaviour" (J. J. Gross, 1998a, p. 226). Both emotion work theories and emotion regulation theories assume that suppressing the expression of an emotion experienced is deleterious for the person who suppresses<sup>31</sup>. The negative effects of suppression have been shown in several experimental studies. On a general level, Gross and John (2003) have found suppression to be negatively associated with well-

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<sup>31</sup> Note that negative consequences of suppression have also been found for the suppressors' social partners (see Butler et al., 2003; Gross 2002).

being. Their study (J. J. Gross & John, 2003) evidenced that individuals who typically use suppression as an emotion regulation strategy report increased levels of depressive symptoms, are less satisfied with their life, are less optimistic about the future and have lower self-esteem. On a more specific level, Gross and colleagues (J. J. Gross, 1998a; J. J. Gross & Levenson, 1997) have also repeatedly found the suppression of emotional expressive behaviour (both positive and negative) to lead to increased sympathetic activation of the nervous system. Other studies (Richards & Gross, 1999, 2000) have also evidenced deleterious cognitive consequences of suppression, and more particularly memory impairments for information presented during the period of suppression.

In a similar way, studies on surface acting have consistently shown that engaging in surface acting impairs well-being (e.g. Brotheridge & Lee, 2002; Grandey, 2003; Hochschild, 1983; Pugliesi, 1999; Zapf et al., 1999) and various self-relevant life and work outcomes (Brotheridge & Grandey, 2002; Erickson & Wharton, 1997; Grandey, 2000; Zapf, 2002). For instance, Pugliesi (1999) has shown that attempts to manage the outward expression of emotions at work were deleterious for psychological distress as well as for job satisfaction.

Support for the negative effects of surface acting on psycho-physiological well-being comes from research demonstrating that suppression of emotional expression leads to increased physiological activity (J. J. Gross, 1998a, 2002). Managing one's emotions, especially by engaging in strategies like suppression, is costly for the physiological system of individuals because it triggers an increased activity of the autonomic nervous system, which in turn leads to a decrease in both physical and psychological well-being (Grandey, 2000; J. J. Gross, 1998a).

## *2.2 Emotional experience and emotion regulation: Two influences on situational well-being and interaction quality*

So far, we have seen that at least two sources of negative effects could alter employees' well-being. On one hand, we saw that experiencing negative emotions is deleterious for one's well-being. As I exposed in the first part of the umbrella, the experience of negative emotions has consistently been found to be deleterious for one's momentary well-being. On the other hand, I also noted that emotion regulation, and particularly the suppression of emotional expression, has negative effects on well-being. Additionally, we have seen that most organizational display rules require the suppression of the expression of a negative emotion felt. When assessing the effects of surface acting (i.e. suppression) on well-being and

interaction quality, the two abovementioned sources of negative effects (i.e. negative emotions felt and the regulatory effort itself) should therefore be taken into account. In other terms, both sources of negative effects may potentially be confounded and therefore should be disentangled when investigating well-being and interaction quality.

Most of the research that has investigated surface acting has operationalized surface acting by asking participants about the regulatory effort directly. We could cite numerous examples of items aiming at the assessment of surface acting. Examples are “I put on a “mask” in order to display the emotions I need for the job” (Diefendorff, Croyle, & Gosserand, 2005), “I hide my true feelings about a situation” (Brotheridge & Grandey, 2002), “I put on an act in order to deal with customers in an appropriate way“ (Grandey, 2003), “How often in your job do you have to display emotions that do not agree with your actual feelings towards the clients?” (Zapf, Mertini et al., 2001), etc. These operationalizations do not allow assessing the relative contribution of emotions felt and of the emotion regulatory effort on well-being. In Study 2, we therefore argue that we need to disentangle the effects of the emotional experience from the effects of the emotion regulatory effort on situational well-being and interaction quality.

Assessing the relative contribution of emotions felt and of the emotion regulatory effort on a general level may be difficult to do, and we will therefore conduct Study 2 at the interaction level. For a long time, researchers have considered emotion work as part of some professions, and in particular of service-oriented professions, such as nursing (James, 1989, 1992), supermarket cashiers (e.g. Rafaeli, 1989a, 1989b; Sutton & Rafaeli, 1988), but also police officers (Martin, 1999), and bill collectors (Sutton, 1991). Progressively, emotion work has also been considered as characterizing social interactions and not only certain types of professions and has thus been investigated at the interaction level (Beal et al., 2006; Totterdell & Holman, 2003; Tschan, Rochat, & Zapf, 2005). Tschan’s et al. (2005) study even shows that emotion work takes place with colleagues and not only with customers.

In this dissertation, I agree with Beal et al. (2006, p. 1054) arguing that “[...] emotion regulation occurs on a episode-to-episode basis. That is, because emotions are experienced episodically, with punctuated beginnings and limited life spans (Frijda, 1993), emotion regulation, too, must occur on an episode-to-episode basis. Therefore, if we are to better understand the process of emotional labour, we should examine it within a similarly time-bound, episodic framework”.

Study 2 therefore presents an episodic study of the effects of 1) emotions felt and 2) emotion regulatory effort on well-being right after a social interaction and on interaction quality. We will use an event-sampling methodology that we believe well-suited towards our aim of disentangling the effects of negative emotional experiences and the effects of the regulatory effort devoted to the suppression of the expression of these experiences on an episodic basis.

To conclude, I want to note that through our second study, we aim at contributing to the emotion work literature by investigating if the negative effects of emotion regulatory effort evidenced by experimental studies also transpose on a “everyday level” or if, once the negative emotions felt are controlled for, the effects of the emotion regulatory effort vanish. The latter assumption is in line with our hypothesis that the negative emotional experience explained much more variance in well-being than the regulatory effort itself. Through Study 2, we also hope to show that emotion regulation has positive effects, and particularly on interaction quality, once the effects of negative emotional experience are removed.



# Chapter 3

## Assessing emotions and their regulation in social interactions with an event-sampling methodology

It has been a long tradition in social sciences to study general aspects of life. Since the '70s, researchers progressively also focused on daily events. Based on the assumption that minor daily events may also have important consequences, especially if they are recurrent (DeLongis et al., 1988; Stone, Neale, & Shiffman, 1993), it became important to devote efforts in their investigation. Along with these considerations, considerable methodological developments have been made, with regard to methods for data collection as well as methods for statistical analyses.

In this chapter, I introduce everyday experience methods from both a conceptual and practical view. Under the heading of “everyday experience methods” are compiled the diverse protocols by which researchers can study daily experience. These techniques have in common the fact that they all provide the researcher with a picture of the ordinary activity in all its complexity, richness and informativeness.

Before I describe the different protocols designed to study everyday experience (event-, interval-, and signal-contingent recording), I want to address the major distortions / biases that everyday experience methods allow to overcome, at least to a large extent. Finally, I discuss the limitations and drawbacks of the event-sampling methodology since it is the methodology used in our two empirical studies.

### **1 Methodological considerations regarding everyday experience methods**

#### *1.1 Methodological relevance of daily event-recording methods*

If a person is asked “All things considered, how satisfied are you with your interactions at work?”, on what information will she or he base the answer? Although people have no difficulties to provide an answer to this question, survey researchers agree that reconstruction

(or recollection) is a process that can be influenced by heuristics and thus biased by recency or salience effects (Reis & Gable, 2000). More specifically, to answer global questions, people report global impressions of daily experiences. The recollection and integration of these experiences is based on three stages, namely the *selection* of representative events, *recall* of the features of those events, and mental *aggregation* of multiple events (Reis & Wheeler, 1991). As I will show, all these stages may be influenced by biases, and I will argue why an everyday experience methodology may attenuate those problems.

First, in global self-report measures, biases might alter the *selection of representative events* upon which the answer is based (Halverson, 1988; Reis & Gable, 2000). Without explicit instructions, participants use their own criteria for delimiting the field of responses, based on what matters most for them (e.g. unusualness of the event, intensity, or emotional *salience*) (Reis & Gable, 2000). The cognitive availability of the events is thus likely to lead to inaccuracy in recollection (Reis & Wheeler, 1991). To the extent that study methods provide the person with a clear definition of the events to remember, they attenuate selection bias since participants report all occurrences of a specific predetermined event.

Second, *the recall of the content* of events is also likely to be affected by memory processes, mainly forgetting, *recency* or motivated distortions (e.g. dissonance reduction). In addition, people tend to reinterpret their experiences in light of current circumstances or to confirm implicit self-conceptions and beliefs<sup>32</sup> (Reis & Gable, 2000), which again may influence their responses (Ross, 1989). Reporting experiences as soon as possible after the event may minimize potential recall biases (Reis & Wheeler, 1991).

Third, if participants are asked to globally assess their experiences, they have to mentally *aggregate the events*. As a result, the researcher gets personalized impressions created from the combination of multiple events rather than descriptions of actual experiences. This limits the diversity of experiences, and thus global ratings based on mental aggregation often substantially diverge from composites computed from event data (Reis & Wheeler, 1991).

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<sup>32</sup> This important heuristic for social psychological research is referred to as “sense-making” in Reis and Gable (2000).

Based on the criticism allotted to methods of global assessment of experiences, researchers developed methods to capture participants' life as lived in its natural context<sup>33</sup>. In the next section, I will review some of the most known methods, and then present the method used in our two empirical studies.

## *1.2 Different methods for recording everyday experiences*

The interest in assessing daily life events through ongoing self-reports led to the development of different procedures (see Bolger, Davis, & Rafaeli, 2003; Reis & Gable, 2000; Stone, Kessler, & Haythornthwaite, 1991). After identifying the question(s) that guide their investigation, researchers have to choose the protocol that best fits the question(s) they seek to answer. This selection is important considering that it will determine to some extent the findings researchers obtain. The differing protocols did not merely differ in procedural details but primarily in the sampling frame used to collect data. "Selection among the different protocols is based on several considerations: research goals, the relative frequency with which the central variables occur or vary, the time frame in which report accuracy is likely to degrade, and participants burden" (Reis & Gable, 2000, p. 199). Wheeler and Reis (1991) distinguish event-, interval-, and signal-contingent protocols. In this section, I will present each of these protocols and then present the method used in the present dissertation.

### *1.2.1 Event-contingent protocols*

In the event-contingent protocol people report each of their experiences the researcher has defined. Examples include "stressful event", "interaction", "conflict with your spouse", "meals", etc. This requires a clear and unambiguous definition of the event(s) under investigation (Reis & Gable, 2000). Any ambiguity as to which events fall within that definition may lead to systematic distortions in the reporting. However, "criteria should not be so inclusive as to overburden participants (and thereby invite sloppiness or noncompliance), but should be broad enough to include all instances of the target event" (Reis & Gable, 2000, p. 206).

Event-contingent protocols are particularly useful and effective 1) when researchers are interested in identifying a specific class of relatively low-frequency events or states, 2) when those events or states can be clearly (i.e. unambiguously) defined, 3) when it is important to

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<sup>33</sup> Capturing ongoing experiences, thoughts, behaviours as lived in their natural context warrants *ecological validity* (DeLongis, Hemphill, & Lehman, 1992).

obtain many episodes of these events or states and 4) to compare relatively infrequent variations within a class of events. Finally, this protocol is also effective when susceptibility to retrospection bias is high (Reis & Gable, 2000).

One of the most well-known methods of event-sampling is the Rochester Interaction Record (RIR), developed by Wheeler and Nezlek (1977) to study everyday interactions. Participants complete rating scales and descriptive items for each social interaction lasting 10 minutes or longer<sup>34</sup>. Similar protocols have been used to investigate conflicts (Jensen-Campbell, 1996), conversations (Duck, Rutt, Jurst, & Strejc, 1991), lies (DePaulo, Kashy, Kirkendol, Wyer, & Epstein, 1996), social comparisons (Wheeler & Miyake, 1992), self-presentation (Leary et al., 1994), smoking (Shiffman et al., 1994), food and drink consumption (Decastro & Pearcey, 1995), and sex (Hurlburt & Apt, 1995).

### 1.2.2 *Interval-contingent protocols*

Interval-contingent recording, sometimes called *time-contingent recording*, is usually used to study the prevalence of events in daily life (e.g. stressful experiences; Bolger, DeLongis, Kessler, & Schilling, 1989) or fluctuation of experiences over time (e.g. daily mood, alcohol consumption). Participants provide reports of their experiences at some regular, pre-arranged times (or predetermined interval). Typically, these intervals must represent meaningful units of time (e.g. the end of each day, every 4 hours) and have to be spaced reasonably (Reis & Gable, 2000).

Interval-contingent recording is effective when retrospection bias is low or when the time between the occurrence of the event and its description is short, or when the event itself is easily remembered.

A very well known example of interval-contingent recording is the National Study of daily experiences (Almeida, 1997). There, a large sample of adults completed telephone interviews about their daily experiences over eight consecutive days, and they were asked about their experiences for the day. Given that the day is a meaningful unit for most people

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<sup>34</sup> Event criteria are often established for this methodology (see for instance Peeters et al., 1995; Tschan, Semmer, & Inversin, 2004). From a theoretical point of view, interactions lasting less than 10 minutes are seldom regarded as meaningful social events (Nezlek et al., 1983). From a practical point of view, the 10-minute cut-off allows taking participant burden into account (participants do not have to describe all of their interactions) and thereby to enhance their compliance.

(e.g. “How was your day?”), single-days units are indeed very common in these studies. “The value of once-daily recording is consistent both with intuition and empirical evidence that sleep-and-awakening provides a discrete break in biological and psychological cycles” (Reis & Gable, 2000, p. 198). Moreover, when intervals are relatively lengthy and predictable (such as the day), interval-contingent recording allows minimizing participant burden, and thereby facilitates data collection over longer periods of time (Reis & Gable, 2000). A further advantage of this protocol refers to the fact that it is not as intrusive and disruptive than protocols requiring reports right after a signal or a predefined event has occurred, because respondents have some control over the exact moment of completing records (Almeida, 1997; Reis & Gable, 2000; Stone et al., 1991).

### *1.2.3 Signal-contingent protocols*

In the signal-contingent recording paradigm, participants yield reports of their current activities each time a signalling device indicates it. Beepers, telephone calls, or programmable wristwatches signal at fixed, random, or a combination of fixed and random intervals when experiences should be reported. These protocols are particularly useful to assess the relative frequency and distribution of activities and states in everyday life (e.g. mood, health symptoms, coping with everyday stressors, interaction between adolescents and their parents etc.), and particularly when these events are unpredictable and signals are at random. Random signalling allows to gather representative data since they prevent self-selection or regularities in activities or states of mind, and respondents cannot modify their activities in anticipation of a signal. Note that signal-contingent recording, as event-contingent recording, are well-suited when susceptibility to retrospection bias is high (Reis & Gable, 2000).

The best-known example of signal-contingent recording is the experience sampling method (ESM; Csikszentmihalyi, Larson, & Prescott, 1977), first used to describe adolescents’ daily activities and the quality of their experiences in an ecological context (Csikszentmihalyi et al., 1977). In this study, participants were asked to report their current activity, thoughts, and feelings each time they were cued by an electronic signal programmed to occur at random (and hence unpredictable) moments throughout the day.

The signal-contingent methodology is also often the method of choice if answers of different participants need to be matched in time. For example, in a family study (e.g. Perrez, Schoebi, & Wilhelm, 2000), the signal-contingent assessment assured that all members of the family recorded the information simultaneously.

Note that signal-contingent recording is more intrusive than interval or event-contingent recording because it requires immediate responses and may interrupt ongoing activities.

What we have learnt in this section is that there are several types of protocols to record everyday experience and that all three protocols are particularly useful when researcher need proximal indicators of people's behavioural and/or emotional experiences in situ (and not indicators of how people remember and reconstruct their experiences retrospectively) (Reis & Gable, 2000). What the researcher must keep in mind when choosing among the three protocols is that the sampling frame and duration of recording must provide a sufficient number of representative reports (Reis & Gable, 2000).

Because we are interested in a specific type of events – social interactions – the event-recording methodology is the most suited approach to our studies. Before we describe the Rochester Interaction Record (RIR; e.g. Wheeler & Nezlek, 1977), namely the method of event-recording we use in studies 1 and 2, I will now discuss the limitations of the event-recording methodology.

### *1.3 Disadvantages of event-recording methods*

The methods described above have their shortcomings. While everyday experience methods may be a means to respond to shortcomings of global self-report, they are still self-report data and are not distortion-free. However, event-recording requires focusing on specific momentary behaviours. It thus seems clear that they are substantially less influenced by memory-based biases and reflect everyday experience almost certainly more accurately than global self-reports.

There are, however, more concerns for using this methodology:

“By nature, event-sampling research depends on participants' ability and willingness to comply with instructions” (Reis & Gable, 2000, p. 207). Filling out diaries is time- and resources-consuming for both researchers and participants. First, diary studies require participation over a certain period of time. Second, reliable and valid data can only be obtained with committed and dedicated participants that researchers must manage over the length of the study. Third, detailed training sessions aiming at explaining the protocol and clarifying questions and ambiguities also contribute to an increased workload (Reis & Gable, 2000). One of the consequences may be that people who agree to participate might not be

representative of the population (Tennen, Suls, & Affleck, 1991). Attrition over time might be another problem (Stone et al., 1991).

Several strategies have been suggested to address these concerns. First, in order to minimize fatigue effects and participant withdrawal, investigators usually design instruments that are short and easy to complete. For instance, Reis and Gable (2000) suggested that reports provided once daily should not exceed 15 minutes, and if events are recorded several times a day, responding time should not exceed 5 to 7 minutes. Increased compliance could also be achieved by developing a personal relationship with an initial interview or by keeping frequent contact with the participants (e.g. reminders, feedback, thanks, etc.) and thereby creating an atmosphere of trust and concern (Nezlek et al., 1983). Providing participants with a comprehensive factual base about the issue under investigation and emphasizing their role as collaborative also constitute means to increase their involvement (Reis & Gable, 2000). Finally, it is not uncommon to use incentives and to reward participants (Wheeler et al., 1983).

The second concern with these methods is the potential effect of record keeping on the events that are being investigated (Tennen et al., 1991; Wheeler & Reis, 1991). Some authors have suggested that introspection and monitoring of one's daily life may increase awareness of the behaviour investigated, and result in reactivity (Affleck, Zautra, Tennen, & Armeli, 1999; Bolger et al., 2003). Reactivity can be defined as "changes in the variable under study as a function of that variable being monitored or observed (Neslon, 1977)" (Merrilees, Goeke-Morey, & Cummings, 2007, p. 255). In our studies, reactivity thus would refer to changes in the individual's responses to social interactions due to the repeated completion of diary records about the phenomenon over time. However, past studies have shown that the potential for reactivity is minimized if participants do not get feedback about their data during the collection period, and if they report on multiple variables (Hayes & Cavior, 1980). Asking participants to mail back their diaries at frequent interval (e.g. the day following the completion) could also be a means of decreasing reactivity to daily monitoring procedures.

Studies that have looked at the effects completing diaries has on participants' responses have provided little evidence that reactivity threatens the validity of diary studies. Rather, these studies suggest that effects over time in reporting are minimal (e.g. Hufford, Shields, Shiffman, Paty, & Balabanis, 2002; Merrilees et al., 2007; Stone et al., 2003). Some authors (Litt, Cooney, & Morse, 1998; Thomas & Diener, 1990) argued that diaries may be less

subjected to reactivity than other forms of data collection because of a habituation process. On the other hand, habituation, that is the development of a habitual response style when recording experiences over an extended period, may also be a concern for event-recording studies. Specific signs of habituation may include among others responses' omission<sup>35</sup> and ratings stereotypy (e.g. Bolger et al., 2003; Reis & Gable, 2000).

To conclude, at present there is still little evidence of the unintended effects of reacting to events differently (i.e. reactivity) or habituating to events (i.e. habituation) (see Bolger et al., 2003). Nevertheless, these methodological issues deserve further attention<sup>36</sup>. On the other hand, I want to note that the process of "self-reflective" recording may be interesting in itself. As underlined by Reis and Gable (2000, p. 208), "the impact of repeated self-recording on behaviour and subjective experience warrants study not only as a methodological question but also as an intrinsically interesting phenomenon". I find this assumption even more interesting in light of a study by Hufford et al. (2002) evidencing as an effect of the daily diaries' completion motivational reactivity, and more specifically an increased readiness to change certain behaviours. Therefore, as seen above, if most of the studies investigating the effects of self-monitoring have failed to document any effect on emotional or behavioural reactivity (i.e. effective changes on the emotional or behavioural level), effects on the intention to change have been evidenced (Hufford et al., 2002). This observation is promising as well for the researcher (reactivity does not pose a threat to diaries' validity) as for the participants (who may thus gain awareness and knowledge of some behaviours and also motivation to change dysfunctional behaviours). On this basis, I argue that considering diary-keeping from a therapeutic perspective could constitute a promising avenue for future research.

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<sup>35</sup> Stone et al. (1991) discusses procedures available (e.g. weighting) for addressing non-response and attrition

<sup>36</sup> Note that Stone et al. (1991) discusses model-based corrections relative to these issues

## 2 The Rochester Interaction Records

In this dissertation, I am interested in everyday interactions, but also in day-to-day variations in mood. I therefore use a combination of event-recording methodology, since participants reported their daily social interactions, and time-contingent methodology, since participants also reported their mood each evening at bedtime.

This dissertation focused on social interactions as emotion-eliciting events. Given that we are interested in a type of events that can be easily defined (i.e. social interactions), we used a variant of the Rochester Interaction Record (RIR) developed by Wheeler and Nezlek (1977) in our two empirical studies. I will first shortly present the original methodology, and then present our adaptation of the RIR.

Originally, Nezlek and colleagues (e.g. Nezlek et al., 1983; Wheeler & Nezlek, 1977; Wheeler et al., 1983) were interested in the quantitative assessment of interactions (number of interactions per day, average interaction duration, number of interaction partners, etc.), but also in qualitative aspects (perceived intimacy, other-disclosure, satisfaction, etc.). They thus asked participants to describe their interactions, and also rate their quality (see Figure 1 for the original version of the Rochester Interaction Record).

Figure 1. Original version of the Rochester Interaction Record.

Date _____	Time _____	a.m. _____	Length: _____	hrs. _____	mins. _____				
Initials: _____	_____	_____	p.m. _____	If more than 3 others: _____					
Sex: _____	_____	_____	No. of females _____	No. of males _____					
Intimacy: .....	superficial	1	2	3	4	5	6	7	meaningful
I disclosed: .....	very little	1	2	3	4	5	6	7	a great deal
Other disclosed: .....	very little	1	2	3	4	5	6	7	a great deal
Social integration: .....	did not feel like	1	2	3	4	5	6	7	felt like part of
	part of a group								a group
Quality: .....	unpleasant	1	2	3	4	5	6	7	very pleasant
Satisfaction: .....	less than expected	1	2	3	4	5	6	7	more than expected
Initiation: .....	I initiated	1	2	3	4	5	6	7	other initiated
Influence: .....	I influenced more	1	2	3	4	5	6	7	other influenced more
Nature: Job	Task	Pastime	Conversation	Date					

Nezlek et al. (1983) encouraged adaptations of this basic format, depending on the research question. Indeed, most authors have modified and adapted the methodology. For instance, Hays (1989) who investigated differences between close and casual relationships included a measure of costs and benefits received in social interaction, and Cutrona (1986) assessed whether interactions were supportive or not (for other adaptations, see Buunk & Verhoeven, 1991; Peeters et al., 1995; Tschan, Semmer et al., 2004).

### **3 Assessing aspects of everyday interactions in the current study**

In the next pages, I will describe the methodology used in Studies 1 and 2. As this methodological section is broader than the methodological part of each paper, it provides the required elements in order to better understand what we did in our two empirical studies (Studies 1 and 2). This is the main reason why I describe the methodology we used in our two empirical studies before presenting these studies.

In this dissertation, we developed a variant of the Rochester Interaction Record based on Tschan, Rochat, and Zapf (2005). Because of our special interest in emotions, we included two emotion wheels (see below for an extended presentation of this aspect), asking participants to choose among 16 emotions those that they felt and those that they displayed during each of their interactions (Study 1). For Study 2, we used a simpler means to assess felt and displayed emotions (see below).

Several dimensions from the original RIR have been kept in both variants (i.e. date, time, duration, initials of the interaction partner(s), sex of the interaction partner(s), intimacy, quality, satisfaction and initiation).

In Study 1 (see Figure 2), participants noted the time the interaction started and its duration. For each other person in the interaction (up to 4), they provided information about age, sex, initials, and 'category' (colleague, superior, client, family, romantic partner, friend, or other). They were asked to report the context of the interaction, that is if the interaction occurred at work and was task-related (e.g. discussing a project with a colleague), occurred at work but was not task-related (i.e. private interaction at work; e.g. telling the week-end to a colleague in the hallway), or occurred outside of work (i.e. private interaction).

Participants were asked to evaluate the interaction on several dimensions. First, they indicated (a) who initiated the interaction and (b) who controlled the interaction. Both dimensions were rated on a 5-point Likert scale indicating that initiative or control was (1) clearly taken by the interaction partner(s), (2) rather taken by the interaction partner(s), (3) mutual or shared, (4) rather taken by the respondent, or (5) clearly taken by the respondent.

Participants also rated (c) the quality of the interaction, referring to the way the interaction unfolded, (d) the degree of conflict / disagreement in the interaction, (e) the degree of intimacy, referring to participants' degree of personal involvement in the interaction, and (f) the degree of satisfaction with the interaction, referring to the expectations with regard to the interaction.

In the variant used for Study 1 participants were in addition asked to report (1) the extent to which they made efforts to manage their emotions in the interaction, (2) the extent to which they were exhausted right after the interaction, and (3) if they attend to their goal in the interaction.

In the variant used for Study 2 (see figure 3; Tschan et al., 2005), participants also reported their degree of well-being during the interaction.

All dimensions were rated on 5-point Likert scales.

Figure 2. An example of interaction record used in Study 1.

Début de l'interaction :		_____ h _____	Durée de l'interaction :		_____ h _____ min
	Initiales	Age	Sexe	Catégorie	
1 <sup>ère</sup> personne			<input type="checkbox"/> , femme <input type="checkbox"/> , homme	<input type="checkbox"/> , famille <input type="checkbox"/> , partenaire <input type="checkbox"/> , ami proche <input type="checkbox"/> , collègue <input type="checkbox"/> , supérieur <input type="checkbox"/> , client / patient <input type="checkbox"/> , subordonné <input type="checkbox"/> , autre : _____	
2 <sup>ème</sup> personne			<input type="checkbox"/> , femme <input type="checkbox"/> , homme	<input type="checkbox"/> , famille <input type="checkbox"/> , partenaire <input type="checkbox"/> , ami proche <input type="checkbox"/> , collègue <input type="checkbox"/> , supérieur <input type="checkbox"/> , client / patient <input type="checkbox"/> , subordonné <input type="checkbox"/> , autre : _____	
3 <sup>ème</sup> personne			<input type="checkbox"/> , femme <input type="checkbox"/> , homme	<input type="checkbox"/> , famille <input type="checkbox"/> , partenaire <input type="checkbox"/> , ami proche <input type="checkbox"/> , collègue <input type="checkbox"/> , supérieur <input type="checkbox"/> , client / patient <input type="checkbox"/> , subordonné <input type="checkbox"/> , autre : _____	
4 personnes ou plus			_____ femmes _____ hommes	<input type="checkbox"/> , famille <input type="checkbox"/> , partenaire <input type="checkbox"/> , ami proche <input type="checkbox"/> , collègue <input type="checkbox"/> , supérieur <input type="checkbox"/> , client / patient <input type="checkbox"/> , subordonné <input type="checkbox"/> , autre : _____	
Dans quel contexte l'interaction s'est-elle déroulée ?			<input type="checkbox"/> , hors travail, privé <input type="checkbox"/> , au travail, tâches <input type="checkbox"/> , au travail, privé <input type="checkbox"/> , au travail, officiel		
Décrivez le contenu de l'interaction en quelques phrases :					
Qui a pris l'initiative de l'interaction ?		(es) autre(s)	<input type="checkbox"/> , <input type="checkbox"/> , <input type="checkbox"/> , <input type="checkbox"/> , <input type="checkbox"/> , vous		
Qui a contrôlé l'interaction ?		(es) autre(s)	<input type="checkbox"/> , <input type="checkbox"/> , <input type="checkbox"/> , <input type="checkbox"/> , <input type="checkbox"/> , vous		
Quelle était la qualité de l'interaction ?		très mauvaise	<input type="checkbox"/> , <input type="checkbox"/> , <input type="checkbox"/> , <input type="checkbox"/> , <input type="checkbox"/> , très bonne		
Quel était le degré de désaccord / conflit ?		très faible	<input type="checkbox"/> , <input type="checkbox"/> , <input type="checkbox"/> , <input type="checkbox"/> , <input type="checkbox"/> , très élevé		
Quelle était l'intimité de l'interaction ?		très impersonnelle	<input type="checkbox"/> , <input type="checkbox"/> , <input type="checkbox"/> , <input type="checkbox"/> , <input type="checkbox"/> , très intime		
Etes-vous satisfait-e de cette interaction ?		très insatisfait-e	<input type="checkbox"/> , <input type="checkbox"/> , <input type="checkbox"/> , <input type="checkbox"/> , <input type="checkbox"/> , très satisfait-e		
Avez-vous fait beaucoup d'effort pour gérer vos émotions lors de cette interaction ?		peu d'effort	<input type="checkbox"/> , <input type="checkbox"/> , <input type="checkbox"/> , <input type="checkbox"/> , <input type="checkbox"/> , beaucoup d'effort		
Etiez-vous épuisé après cette interaction ?		pas du tout épuisé	<input type="checkbox"/> , <input type="checkbox"/> , <input type="checkbox"/> , <input type="checkbox"/> , <input type="checkbox"/> , très épuisé		
Avez-vous atteint votre objectif dans cette interaction ?		pas du tout	<input type="checkbox"/> , <input type="checkbox"/> , <input type="checkbox"/> , <input type="checkbox"/> , <input type="checkbox"/> , absolument		
			<input type="checkbox"/> , Je n'avais pas d'objectif		

	Non	Positive (p. ex. amabilité)	Négative (p. ex. colère)	Neutre ou pas d'émotion
Dans cette situation, y avait-il une consigne ou une attente externe concernant l'expression d'une émotion de votre part ?	<input type="checkbox"/> ,	<input type="checkbox"/> ,	<input type="checkbox"/> ,	<input type="checkbox"/> ,
<p><b>Dans cette situation, quelle(s) émotion(s) avez-vous ressentie(s) ?</b></p> <p>Signalez par des croix les émotions ressenties et leur intensité</p>				
<p><b>Dans cette situation, quelle(s) émotion(s) avez-vous montrée(s) ?</b></p> <p>Signalez par des croix les émotions montrées et leur intensité</p>				

Figure 3. An example of interaction record used in Study 2.

Début de l'interaction :	_____ h _____	Durée de l'interaction :	_____ h _____ min
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	Initiales	Age	Sexe	Catégorie
1 <sup>ère</sup> personne			<input type="checkbox"/> 1 femme <input type="checkbox"/> 2 homme	<input type="checkbox"/> 1 famille <input type="checkbox"/> 2 partenaire <input type="checkbox"/> 3 ami proche <input type="checkbox"/> 4 collègue <input type="checkbox"/> 5 supérieur <input type="checkbox"/> 6 client / patient <input type="checkbox"/> 7 autre : _____
2 <sup>ème</sup> personne			<input type="checkbox"/> 1 femme <input type="checkbox"/> 2 homme	<input type="checkbox"/> 1 famille <input type="checkbox"/> 2 partenaire <input type="checkbox"/> 3 ami proche <input type="checkbox"/> 4 collègue <input type="checkbox"/> 5 supérieur <input type="checkbox"/> 6 client / patient <input type="checkbox"/> 7 autre : _____
3 <sup>ème</sup> personne			<input type="checkbox"/> 1 femme <input type="checkbox"/> 2 homme	<input type="checkbox"/> 1 famille <input type="checkbox"/> 2 partenaire <input type="checkbox"/> 3 ami proche <input type="checkbox"/> 4 collègue <input type="checkbox"/> 5 supérieur <input type="checkbox"/> 6 client / patient <input type="checkbox"/> 7 autre : _____
4 personnes ou plus	/	/	_____ femmes _____ hommes	<input type="checkbox"/> 1 famille <input type="checkbox"/> 2 partenaire <input type="checkbox"/> 3 ami proche <input type="checkbox"/> 4 collègue <input type="checkbox"/> 5 supérieur <input type="checkbox"/> 6 client / patient <input type="checkbox"/> 7 autre : _____

Dans quel <b>contexte</b> l'interaction s'est-elle déroulée ?	<input type="checkbox"/> 1 hors travail, privé <input type="checkbox"/> 2 au travail, tâches <input type="checkbox"/> 3 au travail, privé <input type="checkbox"/> 4 au travail, officiel
---------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Décrivez le **contenu** de l'interaction en quelques phrases :

Qui a pris l' <b>initiative</b> de l'interaction ?	l(es) autre(s)	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5    vous
Qui a <b>contrôlé</b> l'interaction ?	l(es) autre(s)	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5    vous
Quelle était la <b>qualité</b> de l'interaction ?	très mauvaise	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5    très bonne
Quel était le degré de <b>désaccord / conflit</b> ?	très faible	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5    très élevé
Quelle était l' <b>intimité</b> de l'interaction ?	très impersonnelle	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5    très intime
Êtes-vous <b>satisfait-e</b> de cette interaction ?	très insatisfait-e	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5    très satisfait-e
Comment vous êtes-vous <b>senti-e</b> ?	très mal	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5    très bien

	Non	Positive (p. ex. amabilité)	Négative (p. ex. colère)	Neutre ou pas d'émotion
Dans cette situation, y avait-il une <b>consigne</b> ou une <b>attente externe</b> concernant l'expression d'une émotion de votre part ?	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
Dans cette situation, quelle émotion avez-vous <b>montrée</b> ?		<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
Dans cette situation, quelle émotion avez-vous <b>ressentie</b> ?		<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3

## 4 Including the emotion wheel into the Rochester Interaction Record

Both variants of the RIR we used include emotional aspects of everyday interactions.

### 4.1 *Using the emotion wheel to assess emotions felt*

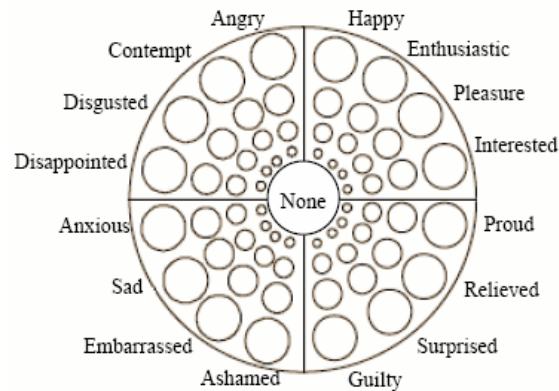
Emotions felt during the interaction were assessed using a variant of the Geneva Emotion Wheel (Baenzinger, Tran, & Scherer, 2005; Scherer, 2005; Scherer et al., 2004). To the best of our knowledge, we are the first to use the Geneva Emotion Wheel as part of the RIR methodology.

The Emotion Wheel was devised as a means for the verbal report of discrete emotions. It is a graphical tool that represents 16 discrete emotions, each one as a set of circles with increasing diameter, ordered like a spike in a wheel. Each emotion is labeled. Participants were asked to report for each interaction and each emotion whether they had felt it, and also indicated with their choice of circle size (from 1 to 4), in what intensity they experienced the emotion ("In this situation, what emotion(s) have you felt? Please indicate the emotions felt as well as their intensities on the wheel"). If no emotion was felt, they crossed the 'none' circle in the middle of the wheel.

We included seven positive emotions (happiness, enthusiasm, pleasure, interest, pride, relief, and surprise) and nine negative emotions (anger, contempt, disgust, disappointment, anxiety, sadness, embarrassment, shame, and guilt). Given that there are many different labels for emotions (Scherer et al., 2004), we choose the emotions to include based on an analysis of several studies investigating discrete emotions at work (Tschan & Messerli, 2005).

Based on findings that surprise can be affectively positive, negative or neutral (e.g. Ortony & Turner, 1990; Zevon & Tellegen, 1982), it cannot be labeled as positive and negative. More negative than positive emotions are included in the wheel because many studies indicate that people differentiate more negative than positive emotions (e.g. Clore, Ortony, & Foss, 1987).

Figure 4. A variant of the Geneva Emotion Wheel.



For each interaction reported, participants were asked to indicate all emotion(s) felt in this interaction on the Emotion Wheel. If they did not feel any emotion, they checked the middle of the wheel.

Participants also reported, with the same methodology, all emotion(s) they displayed during an interaction. Given that we did not use this information for Study 1, I do not present the specifics of this assessment here.

#### 4.2 *Including a simple way to assess emotions felt and emotions displayed in the Rochester Interaction Record*

In Study 2, we used the methodology developed by Tschan, Rochat, and Zapf (2005) that allows to assess emotional regulation processes in specific interactions. Instead of assessing many discrete emotions felt and displayed, they asked participants to indicate whether they felt a positive, a negative, or no emotion, and whether they displayed a positive, a negative or no emotion during an interaction. This constitutes a very simple variant of the emotion wheel (see figure 3).

#### 4.3 *Summary*

Everyday experience methods capture the fact that most of our waking time we do small trivial things (Wheeler & Reis, 1991). Research methods that allow capturing these experiences

as they occur are useful, because retrospective or generalized judgments may be affected by biases, which may be attenuated using these methods (Reis & Wheeler, 1991). Given the aim of this dissertation, we choose an event-recording methodology and developed a variant of the Rochester Interactions Record. Given the richness of the data collected, I am convinced that it is worth using this particular methodology.

## Chapter 4

# Bedtime mood as a function of emotions experienced in social interactions at work and in private life

This chapter is devoted to testing the relationships between emotions experienced in social interactions at work and in private after work on evening well-being. The following manuscript is under review in the *Journal of Organizational Behaviour*. It was submitted with Franziska Tschan (University of Neuchâtel, Switzerland), Norbert Semmer (University of Bern, Switzerland) and Peter Totterdell (University of Sheffield, England).

### Abstract

A sample of 101 participants filled in a general survey on enduring conditions at work (stressors, control, social conditions), in private life (social support), and personality. For the next seven days, participants reported every social interaction lasting at least ten minutes, or considered important, and reported the emotions felt during these interactions. At bedtime, participants reported their current mood. Based on Affective Events Theory (AET) and spillover theories, we developed a model in which (1) chronic conditions at work predicted emotions experienced in social interactions at work, (2) emotions in social interactions at work predicted emotions in social interactions after work, and (3) emotions in social interactions at work and after work predicted bedtime mood. Hypotheses referring to paths 2 and 3 were confirmed, including the prediction of positive emotions in social interactions after work by negative emotions at work under conditions of high partner support. This is the first study that investigates all parts of the hypothesized chain.

## Introduction

Well-being at the end of the day is important for a number of reasons. First, it is important by itself, as it represents an indicator of the quality of life. Second, well-being at bedtime tends to spill over into the next working day (Totterdell et al., 1995). It also influences sleep quality (Morin et al., 2003), which in turn, is related to health, both physical (Schwartz et al., 1999) and psychological (Scott & Judge, 2006). It therefore seems important to investigate predictors of well-being at the end of the day. Moreover, such investigations should not only assess general levels, but also intra-individual fluctuations over several days (Sonnentag & Bayer, 2005).

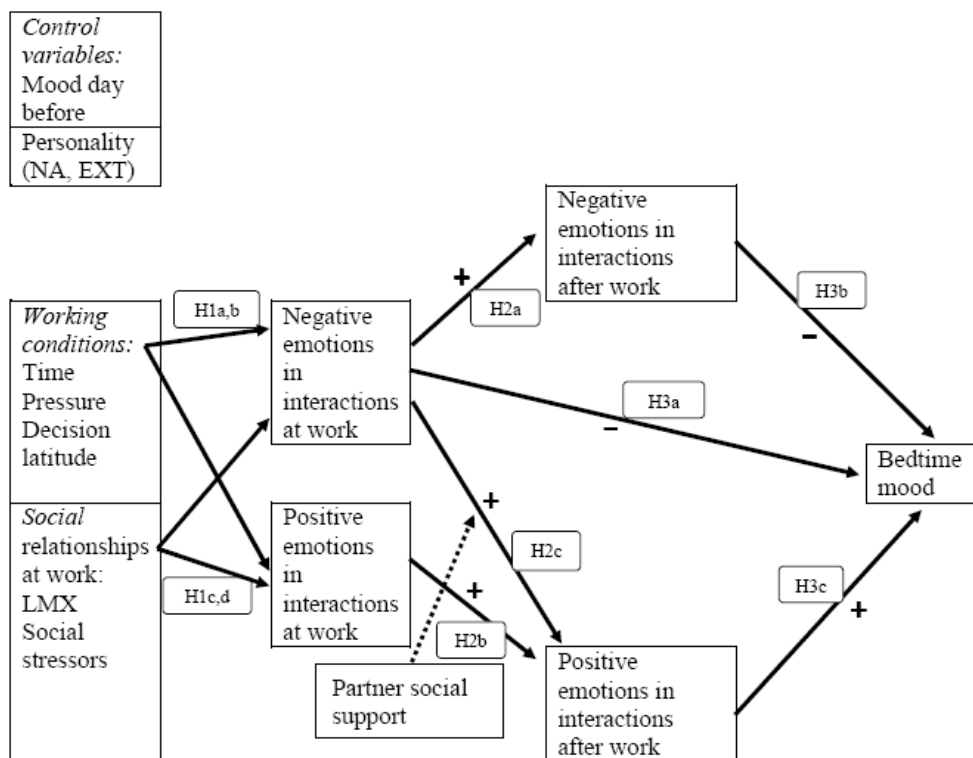
End of day well-being depends on many things, including affective experiences at work (Repetti, 1993; Story & Repetti, 2006) and after work (Sonnentag & Zijlstra, 2006). While there are many occasions for affective experiences (Weiss & Cropanzano, 1996), social interactions are especially important – at work (Basch & Fisher, 2000) as well as in private life (Duck, 2007; Repetti, 1989). Our study focuses specifically on emotions experienced in social interactions.

Affective experiences after work are influenced by affective experiences at work (Bolger, DeLongis, Kessler, & Wethington, 1989; Story & Repetti, 2006); and affective experiences at work are influenced by general characteristics of the work situation (Weiss & Cropanzano, 1996). Focusing on affective experiences in terms of emotions experienced in social interactions, one might therefore construe a chain from (a) general work characteristics to (b) emotions experienced in social interactions at work, from these to (c) emotions experienced in social interactions after work, and from there to (d) evening mood. This chain is depicted in Figure 1. Previous research has investigated only parts of that chain. The first, and most important, contribution of the current study is that it considers all elements of the proposed chain.

We asked our participants to report their social interactions at work and after work over a week, and to report the emotions they experienced during these interactions. They also reported mood before bedtime every day. Furthermore, at the beginning of the study, they filled in a general survey about their working and social conditions. We tested the relationships depicted in Figure 1 by (1) regressing emotions felt in social interactions at work on general working conditions (demands, control, social stressors, and Leader-Member-Exchange). (2) We further

regressed emotions in social interactions after work on emotions in social interactions at work and on general working conditions, and (3) we regressed bedtime mood on emotions experienced in social interactions at work as well as after work, general working conditions, and general characteristics of the private situation in terms of social support by the spouse. In all regressions, we controlled for personality variables, gender, and evening mood the day before.

Figure 1. Research Model



Previous research has, for the most part, failed to consider positive and negative experiences in a balanced way, that is, (a) together, and (b) with a comparable methodology (Newsom, Nishishiba, Morgan, & Rook, 2003). Studies investigating the effect of affective experiences at work typically have concentrated on negative affect (Ashkanasy & Ashton-James, 2007; Lyubomirsky et al., 2005); the influence of positive affect at work on well-being is still understudied (see S. Gross et al., 2009, for an exception; Heaphy & Dutton, 2008; Roberts, 2006). On the other hand, studies investigating the effects of social exchanges in private life have predominantly focused on the positive aspect of supportive social ties, and have somewhat neglected the effect of negative private interactions (Newsom et al., 2003; Schuster, Kessler, &

Aseltine, 2004; Walen & Lachman, 2000). Furthermore many studies have used non-comparable measures for the positive and negative aspects of social exchanges (e.g. because they were of different dimensionality; Newsom et al., 2003), which may have biased the results (Finch et al., 1999). In this study, we assessed positive and negative emotions experienced during social interactions with the same methodology. Thus, a second contribution of this study is that we could analyze the impact of positive and negative emotions separately. Furthermore, we analyzed their interactive effects.

Most studies investigating emotions have asked participants to either ‘summarize’ their emotional experiences over a given period of time or to recall emotionally marked events (e.g. stressors and uplifts, or emotional episodes). However, results that are based on reflecting emotionally salient events may underestimate the importance of regular everyday experiences (Fisher, 2002). Previous research has shown that even mild affect states can influence behaviours and mood (Forgas, 2006; Isen & Baron, 1991). In asking participants to first report social interactions, and then the emotions felt in these interactions, we avoided using emotional experiences as a selection criterion. Thus, a third contribution of this study is that it included mild emotional experiences in everyday social interactions, rather than using emotional experiences as the cue for reporting events.

In the following, we provide theoretical backgrounds for the different parts of the model. Given the research questions, we cannot draw on a single theory, but use several theoretical concepts to explain the links in our model. We present the model in terms of a temporal progression, starting with general influences on emotions felt at work to spillover from emotions felt at work to emotions in interactions after work to their combined influences on bedtime mood. First, however, we will discuss the issue of positive vs. negative affect, as this distinction plays an important role in the present research.

### *Positive and Negative Affect*

Positive and negative affect are not simply opposite poles of a single dimension, but rather constitute (relatively) independent dimensions (Watson et al., 1999). A strong negative correlation between positive and negative affect is observed only when both are measured at the same point in time. When measured in general or over a longer time frame, they tend to be

correlated only modestly (see Daniels, 2000; Diener & Emmons, 1985; Saavedra & Kwun, 2000). The predictors for experiencing positive and negative affect overlap, but are not the same (Basch & Fisher, 2000). Furthermore, the effects of positive and negative affect may differ, in that negativity is dominant (Baumeister, Bratslavsky, Finkenauer, & Vohs, 2001), especially over the long term (Newsom et al., 2003). Over the short term, however, domain-specific effects may be observed, with positive affect predicting positive outcomes, and negative affect predicting negative outcomes (Newsom et al., 2003).

In the research presented here, we measured positive and negative emotions experienced during social interactions (see Methods section). There are two reasons for treating them separately. First, social interactions evolve over time, and both positive and negative emotions may be experienced during a given interaction. Second, aggregating the emotions experienced during social interactions over a day (as we did) makes it even more likely that both positive and negative emotions will be experienced, without an exceedingly strong correlation between them. We therefore treated positive and negative emotions separately, and some of our hypotheses explicitly predict differences with regard to positive and negative emotions.

End of day mood (bedtime mood) was also measured in both positive and negative terms (e.g. joyful; nervous). However, bedtime mood questions referred to the participants' *current* feelings at a specific moment, suggesting a high negative correlation between positive and negative feelings. We consequently combined them into one scale (Diener & Emmons, 1985).

### *General Conditions at Work and Emotions Felt at Work*

It is well established that the work environment is related to affective well-being (De Lange, Taris, Kompier, Houtman, & Bongers, 2003; Sonnentag & Frese, 2003; Warr, 2007; Zapf, Dormann et al., 1996). The bulk of this research focuses on enduring, or chronic, conditions at work, and also on chronic affective variables. It is, however, plausible to assume that chronic conditions at work are also related to momentary affective reactions, as postulated by Affective Events Theory (Weiss & Cropanzano, 1996). According to AET, conditions at work predispose events that induce affective reactions. However, studies that investigate the effect of stable conditions at work on momentary affective reactions are scarce.

Using multilevel analysis, Sonnentag (2001) found time pressure (level-2) to predict well-being before going to bed (level-1). Similarly, Elfering et al. (2005) found chronic job stressors to predict well-being in a stressful situation, over and above situational characteristics, such as its stressfulness. Sonnentag & Zijlstra (2006) found time pressure (pos.) and control (neg.) to predict need for recovery after work, which, in turn, predicted well-being at bedtime. Similarly, Sonnentag and Bayer (2005) found chronic workload to predict psychological detachment from work, which, in turn, also predicted well-being at bedtime. Finally, Grebner, Elfering, Semmer, Kaiser-Probst, and Schlapbach (2004) found chronic job control to predict successful calming down in stressful situations. Similar results were reported by studies that assessed affective reactions over a longer time frame. Thus, Daniels (2000) as well as Saavedra and Kwun (2000) assessed affective reactions aggregated over one week, which places them between momentary reactions and chronic reactions. Daniels (2000) found high work demands to be related to more negative affect, and control to be related to less negative and more positive affect. The latter finding was also reported by Saavedra and Kwun (2000).

Thus, although not many studies have investigated the effect of chronic conditions at work on momentary affective outcomes, available research suggests that work-related stressors (typically in terms of job demands) and control at work are promising predictors. Our study adds to this research, but also extends it by postulating that chronic conditions at work not only induce events of an affective character (i.e. affective events) but also influence the affective quality of events that may occur independently of these specific conditions, such as social interactions. As suggested by Forgas (2006) affect infusion model, affect exerts an influence on information processing, and thus on behaviour. It is therefore reasonable to assume that negative affect induced by affective events will “color” social interactions, in that people will be less understanding, more easily provoked, more easily irritated, etc. By contrast, events that induce positive affect may make people more understanding, tolerant, and supportive, and thus induce positive emotions in social interactions. Alternatively, a social interaction may itself be an affective event, as when time pressure is attributed to coordination problems in a team and therefore triggers an unfriendly exchange. In sum, it is reasonable to expect chronic conditions at work to shape the affective quality of social interactions (Fisher, 2002).

There are many chronic conditions at work that might be candidates for predictors of the affective quality of social interactions at work, and no single study can take all of them into account. We decided for two domains, assessing two variables in each of these. The two domains are (a) job characteristics, and (b) social aspects of work.

### *Job characteristics*

Job demands and control have been shown to be important for (chronic) affective well-being in many studies, and many theoretical approaches refer to them. The best-known theoretical framework in this respect is Karasek's Job-Demands-Control theory (Karasek & Theorell, 1990; Theorell & Karasek, 1996). Although the interaction between demands and control postulated by this model has not been found very frequently, their main effects on affective well-being are well established (De Lange et al., 2003; Sonnentag & Frese, 2003; van der Doef & Maes, 1999). As shown above, demands and/or control have been dominant in the few studies on the effect of chronic conditions at work on momentary affective reactions. Assessing demands and control therefore seems justified both theoretically and empirically. Time pressure is a common way of operationalizing demands, and we followed this tradition.

Based on the considerations presented above, we assume that time pressure induces negative affect which, in turn, influences the emotional quality of social interactions, increasing negative affect and decreasing positive affect. By contrast, control may foster positive affect, because it fulfills a human need for influence (Frese, 1989b). Furthermore, control may reduce stress-appraisals and may offer coping possibilities, thus leading to reduced negative affect (Spector, 1998). We therefore postulate:

***Hypothesis 1a:*** Chronic time pressure at work is related to more negative and fewer positive emotions experienced in social interactions at work;

***Hypothesis 1b:*** Chronic control at work is related to more positive and fewer negative emotions experienced in social interactions at work.

### *Social conditions at work*

Besides job characteristics, the quality of social relationships with colleagues and superiors is an important influence on affective well-being (Warr, 2007), and on emotions felt at work

(Basch & Fisher, 2000; Kark & Medler-Liraz, 2007; Weiss & Cropanzano, 1996). There is ample evidence that social stressors, such as social conflicts (Spector, 1998) or bullying (e.g. Zapf, Knorz, & Kulla, 1996), and generally strained social relationships at work (Dormann & Zapf, 2002) are related to lower well-being. Spector and colleagues (Spector, Zapf, Chen, & Frese, 2000) claim that social stressors at work may influence affective reactions even more than other stressors. We thus assume that general social tensions at work influence work-related interactions and the emotions felt in these interactions.

***Hypothesis 1c:*** Higher social stressors at work will be related to more negative and fewer positive emotions in interactions at work.

Relationship quality among colleagues and with the superiors may have different impact on emotions (Grandey, Kern, & Frone, 2007). Superiors play an especially important role in influencing and shaping the emotions of their subordinates (Basch & Fisher, 2000; Kark & Medler-Liraz, 2007; Miner, Glomb, & Hulin, 2005; Scherer et al., 2004), as superiors assign tasks, provide feedback, impose constraints or provide autonomy, etc. It has been suggested that the quality of the superior-subordinate relationship is the most important influence on employee's emotions (Dasborough, 2006; Game, 2008; Kark & Medler-Liraz, 2007). The quality of superior-subordinate relationships has indeed been shown to influence satisfaction with supervision, but also general job satisfaction (Gerstner & Day, 1997). Furthermore, Wegge and colleagues (Wegge, van Dick, Fisher, West, & Dawson, 2006) showed that it was the emotions felt that mediated between superior support quality and job satisfaction.

Research on how everyday subordinate emotions are influenced by their leaders is still scarce (Game, 2008). In an event-sampling study with young workers, Grandey and colleagues (Grandey, Tam, & Brauburger, 2002) found superiors to be important influences for anger and pride episodes, and two studies showed that leaders play an important role especially for negative emotional events reported at work (Basch & Fisher, 2000; Stone & Neale, 1984).

Leader-member exchange (LMX) theory states that superiors have relatively close relationships with a few subordinates, and more distant relationships with others (Graen & Uhl-Bien, 1995). High LMX is characterized by high trust between superior and subordinate, superior support for the employee, and superior consideration. Thus, LMX measures describe positive

qualities of the relationship between superiors and subordinates (Liden, Wayne, & Stilwell, 1993). This leads to the contention that high LMX may enhance the probability of positive emotions felt. Furthermore, high LMX may influence stress appraisals and offer coping possibilities, and thus also reduce negative emotions felt. Furthermore, high LMX implies that the subordinate is part of the inner circle of trusted members, and thus indicates the employee's standing in a team. We therefore assume that high LMX not only influences the emotions in interactions between superior and subordinate, but also shapes the emotional tone of work-related interactions in general (Kark & Medler-Liraz, 2007; Wegge et al., 2006).

***Hypothesis 1d:*** A better relationship with the superior (LMX) will be related to more positive and fewer negative emotions in interactions at work.

#### *Spillover of Emotions Felt in Interactions at Work to Interactions After Work*

The second part of the model refers to spillover from experiences at work to experiences after work. We expect two types of effects, which are (a) mood-congruent effects, and (b) compensation effects.

##### *a) Mood-congruent spillover of emotions felt at work to emotions felt after work*

It is well established that experiences at work spill over into the private domain (Edwards & Rothbard, 2000). It is assumed that mood spillover occurs through changes in perceptions, interpretation of events, and changes in cognitive functioning due to the initial emotional state (Mayer et al., 1992).

Positive emotions increase divergent and creative thinking (Fredrickson, 2001) and facilitate positive interactions with others (Lyubomirsky et al., 2005; Staw, Sutton, & Pelled, 1994). Therefore, positive emotions experienced in earlier interactions (at work) may lay ground for more positive interactions after work, and one can thus expect mood-congruent spillover from work to after work. Negative emotions, on the other hand, reduce self efficacy and tend to lead to rumination (Nolen-Hoeksema, Parker, & Larson, 1994) and to a less positive interpretation of events (Isen & Baron, 1991). Based on such findings, one can expect that negative emotions at work enhance the probability of experiencing more negative emotions after work, and we thus assume mood-congruent spillover of negative emotions at work to after-work experiences.

Indeed, previous research relating daily emotional experiences at work to mood or behaviour after work support the mood congruency hypothesis: Higher stress at work negatively influenced the interaction quality between spouses after work (Crouter, 1984; Story & Repetti, 2006) and between parents and children after work (Repetti, 1987, 1994; Repetti & Wood, 1997). More specifically, fathers that experienced more distressing interactions at work, or a generally more tense social climate, reported more negative emotions in interactions with their children after work (Repetti, 1994). In a similar vein, more negative social interactions, or a more stressful day at work were followed by higher marital anger (Bolger, DeLongis, Kessler, & Wethington, 1989; Crouter, 1984), especially in high-conflict families (Story & Repetti, 2006).

Only few studies have investigated spillover of positive emotions from work to after-work experiences, but they also mostly support the mood congruency hypothesis. For example, mood assessments at work were related to a congruent mood after work in a diary study by Song and colleagues (Song et al., 2008), and daily job satisfaction has been found to influence momentary marital satisfaction (Heller & Watson, 2005) and mood after work (Judge & Ilies, 2004).

The strength of mood congruency effects seems to be higher for negative than for positive emotions: Thus, Williams and Alliger (1994) found spillover effects only for negative (distress, fatigue) but not for positive emotions (elation and calmness). In a recent study by Gross et al. (2009), negative affective experiences at work were followed by increased fatigue after work, whereas the impact of positive experiences was weaker, just missing the conventional level of statistical significance. Nevertheless, it would be premature to conclude that positive spillover effects do not occur. We therefore formulate the following hypotheses:

***Hypothesis 2:*** We expect mood congruent spillover for negative (*Hypothesis 2a*) as well as positive (*Hypothesis 2b*) emotions experienced in interactions at work to emotions experienced in interactions after work.

*b) Compensation effects*

So far, we have argued that spillover from work-related interactions to interactions after work will be mood-congruent. We will now argue that, under some circumstances, negative experiences at work may lead to more positive experiences after work, implying a compensation effect (Edwards & Rothbard, 2000).

People are generally motivated to feel well. If they do not feel well, they try to regulate their feelings through thoughts and actions in order to obtain hedonic benefits (Baumeister et al., 1998; R. J. Larsen, 2000; Totterdell & Parkinson, 1999). It is thus likely that a person who has had many negative experiences at work may particularly seek out situations, or engage in behaviours, that allow mood regulation, with the aim of achieving a positive mood (Edwards & Rothbard, 2000). This is in line with recovery theories (Geurts & Sonnentag, 2006; Sonnentag & Zijlstra, 2006) which postulate that engaging in positive activities after work helps people to unwind and recover from work. While most of the studies investigate recovery from work in general, there is growing support for the positive effects of recovery activities also on the day level (Geurts & Sonnentag, 2006; Sonnentag & Zijlstra, 2006).

Given that the need to belong is a powerful motive (Baumeister & Leary, 1995), social interactions should have the potential to aid people in improving their mood. The positive effects of social support (Viswesvaran, Sanchez, & Fisher, 1999) are in line with this assumption. Indeed, social activities after work were related to better mood at bedtime in a study with teachers (Sonnentag, 2001). However, another study with flight attendants showed more social activities to be associated with higher, rather than lower, bedtime depression (Sonnentag & Natter, 2004). In a similar vein, Repetti (1992) found that more stress at work led to more withdrawal and thus fewer interactions after work, and she interpreted withdrawal as an activity that facilitates recovery and helps to restore a positive affective state. Thus, social interactions are not helpful under all circumstances. Rather, they may require facilitating circumstances (Edwards & Rothbard, 2000), specifically, responsive and supportive behaviour of interaction partners. Only if people expect such supportive behaviours will they seek to interact, and profit from the interaction. In line with these arguments, Harlow and Cantor (1995) found the presence of supportive others to be a crucial factor in experiencing more positive and less negative states after negative daily experiences. The most important interaction partner in private life is likely to be one's partner. We therefore postulate a statistical interaction:

***Hypothesis 2c:*** More negative emotions felt in interactions at work will enhance the probability to experience more positive emotions in interactions after work, but only if partner social support is high.

### *Influences of Emotions Felt in Social Exchanges at Work and After Work on Bedtime Mood*

We turn to the last part of the model, predicting bedtime mood from experiences in social interactions at work and in private life. Negative events at work may not only impair immediate well-being (Brondolo et al., 2003), or lower mood after work, but may also spill over to influence mood at bedtime (e.g. Story & Repetti, 2006).

*Negative interactions.* Among various daily events studied, it was *negative interactions at work* that had the strongest impact on same-day bedtime mood in several studies (Almeida et al., 2002; David et al., 1997; Stone, 1987). For example, flight attendants that recalled more negative social interactions at work were in a more negative mood at bedtime, even after controlling for other daily stressors (Repetti, 1993). These findings are in line with meta-analytical findings that negative social exchanges in general – this also includes private life - showed very consistent negative effects on general well-being (Finch et al., 1999); and this is corroborated by studies with different populations, such as patients (Manne et al., 1997) or elderly (Rook, 1984, 2001).

*Positive interactions.* Again, as for spillover from work to behaviour after work, empirical evidence for the effects of positive emotions experienced at work on bedtime well-being is less clear than for negative emotions. Ilies et al. (2005) who measured positive and negative interactions at work using daily checklists, found the hypothesized positive effect for positive interactions and negative effect for negative interactions on daily mood. On the other hand, in a study investigating the influence of social and nonsocial events on same-day well-being, positive work-related events did not influence daily mood (David et al., 1997), and Stone (1987) even found that positive experiences at work *lowered* daily mood.

Thus, the influence of positive interactions at work on daily well-being remains unclear. On the other hand, the positive effects of positive social exchanges in *private* life in general are well-known. Robust findings suggest that positive social interactions and social relationships have beneficial effects on human health (Heaphy & Dutton, 2008; Holt-Lunstad et al., 2003), but also on momentary well-being (Nezlek, Richardson, Green, & Schatten-Jones, 2002; Peeters et al., 1995; Rook, 1984, 2001).

*Negativity, positivity, importance, and proximity.* Negativity theory suggests that positive experiences are less intense and shorter lasting than negative experiences (e.g. Baumeister et al., 2001). It is therefore not surprising that negative interactions have quite consistently been found to affect bedtime mood, regardless of whether they take place at work or after work. By contrast, effects of positive interactions are found consistently only for private interactions. This result can be explained by several mechanisms. First, exchanges in private have more positive valence than those at work (Stone, 1987), and private relationships are more important than relationships at work (Duck, 2007). Furthermore, interactions after work are more proximate in time to bedtime mood than interactions at work, the effects of which may have worn off at bedtime. These arguments lead to the contention that positive effects on bedtime mood can be expected from private positive interactions, but we cannot assume that positive interactions at work will necessarily spill-over to bedtime mood. We thus formulate the following hypotheses:

***Hypothesis 3:*** Negative emotions experienced in interactions at work (*Hypothesis 3a*) and negative emotions in interactions after work (*Hypothesis 3b*) will spill over to negatively influence bedtime mood.

***Hypothesis 3c:*** Positive interactions after work will improve bedtime mood.

#### *Combined Effects of Positive and Negative social Exchanges on Bedtime Mood*

Besides direct effects of negative and positive emotions experienced at work and after work, the combination of positive and negative emotions at work and after work may also be important for evening mood. First, persons experiencing many positive social interactions after work may be less vulnerable to the negative effects of earlier negative interactions at work, implying that positive social exchanges may buffer against the negative effect of negative social exchanges (Rook, 2001). This contention is consistent with theories on the interplay of positive and negative emotions. According to the ‘broaden and build’ theory of Fredrickson (1998), experiencing positive emotions builds resources that may shield against the effects of negative events. This has been found in experimental research for cardiovascular reactivity (Fredrickson et al., 2000). Empirical evidence for a buffering or ‘undoing’ effect in applied settings on well-being is, however, scarce. A diary study with elderly participants found that positive emotions mediated the negative effect of stress on negative emotions (Ong, Bergeman, Bisconti, &

Wallace, 2006). Similarly, Gross et al. (2009) found positive affective events to buffer the effects of negative affective events on fatigue after work. However, several other studies did not find significant effects (David et al., 1997; Manne et al., 1997; Rook, 2001). One reason for these inconsistent findings may be that positive events at work are less powerful than positive events after work, as argued above. However, to the best of our knowledge, no study has yet tested whether positive interactions *after* work buffer against the negative effects of negative interactions *at* work. We formulate the following hypothesis:

***Hypothesis 3d:*** Positive emotions after work buffer against the effects of negative emotions at work on bedtime mood.

Besides the buffering effect, there are other potential combinatory effects between emotions felt in interactions at work and after work. According to resource draining and resource building theories (Fredrickson & Losada, 2005; Hobfoll, 1989), a combination of high negative experiences at work and after work could be particularly damaging for bedtime mood (downward spiral), whereas a combination of high positive experiences at work and after work could combine into an upward spiral to particularly enhance bedtime mood. Empirical evidence for such effects is sparse, and the time-frame of previous studies examining spiraling effects is much longer than a day (Lyubomirsky et al., 2005; Wells, Hobfoll, & Lavin, 1999). Thus, we do not formulate hypotheses but test these combinatory effects in an exploratory manner.

## Method

### *Sample and Procedure*

*Participants.* A sample of 101 professionals from different occupations participated in the study. Mean age was 32.7 years ( $SD = 11.5$ ), and 49% were female. Mean percentage of employment was 90% of a full-time equivalent ( $SD = 16.5$ ). Average job tenure on the current job was 5 years ( $SD = 6.75$ ). Of the 105 participants who initially agreed to participate, we obtained questionnaires from 102 participants, and complete data is available for 101 people.

*Procedure.* Participants were recruited by research assistants and were asked to participate in a study on daily interactions at work and in private life. The research assistants recruited

participants among employees they knew personally, and asked them to recommend the study to their colleagues and friends. Thus, a snowball recruiting was used.

Participants first filled out a survey questionnaire. The following seven days constituted the self-observation week, during which they completed event-sampling and diary questionnaires. Participants were given a face-to-face instruction by a research assistant, and were contacted twice during the self-observation week, to resolve any problems with reporting and to maintain motivation. Participants returned the questionnaires directly to the university in prestamped envelopes. In exchange of their participation, they received a small gift.

## *Measures*

### *Survey Questionnaire*

The survey questionnaire contained demographic questions, personality scales, and work-related scales. Scales were translated from their original language (English or German) into French and controlled by back-translation. The following scales were used:

*Dispositional affectivity.* Neuroticism and extraversion are two of the “Big Five” dimensions of personality dimensions (Costa & McCrae, 1995; McCrae & John, 1992). They were measured by a bipolar adjective list developed by Schallberger and Venetz (1999), based on Ostendorf (1990). Each dimension was assessed with six items, using a 6-point scale. Cronbach’s alpha was .80 for neuroticism and .73 for extraversion.

*Time pressure.* Time pressure at work was measured by a four-item scale from the “Instrument of Stress-Related Task Analysis” (ISTA; Semmer, Zapf, & Dunckel, 1995). An item example is “How often does it occur that you cannot take your break as scheduled because of too much work?” Participants answered on a scale from 1 to 5, higher scores indicate higher time pressure. Cronbach’s alpha was .80.

*Decision latitude* was measured by 2 items from the “Instrument of Stress-Related Task Analysis” (ISTA; Semmer et al., 1995). Items were “to what extent can you decide yourself how to go about your work?” and “to what extent can you plan your work independently?”.

Participants answered on a scale from 1 to 5, higher scores indicate higher decision latitude. The inter-correlation between the items was  $r = .43$ .

*Leader-member exchange (LMX)* was measured with a seven-item scale developed by Liden, Wayne and Stilwell (Liden et al., 1993). Sample items are “My supervisor understands my problems and needs” or “I count on my supervisor to ‘bail me out’ even at his or her own expense, when I really need it”. Participants answered on a scale from 1 to 5, higher scores indicate higher LMX. Cronbach’s alpha was .85.

*Social stressors at work* were assessed with an eight-item scale developed by Frese and Zapf (1987) asking for social animosities and interpersonal tensions at work. Sample items are “I have to work with people who can’t take a joke” or “one has to pay for the mistakes of others”. Participants answered on a scale from 1 to 5, higher scores indicate higher social stress. Cronbach’s alpha was .89.

*Social support from partner* was assessed with two items from Frese’s (1989a) social support scale. Participants had to indicate to which point their partner was ready to listen to and help them with work-related and private difficulties. Participants answered on a scale from 1 to 5, higher scores indicate higher social support. Participants ticked off a box in case they did not have a partner. Cronbach’s alpha was .84.

#### *Event-sampling and daily questionnaire*

*Daily social interactions* were assessed with a variant of the Rochester Interaction Record (RIR; Wheeler & Nezelek, 1977). This method is well-validated (Nezelek et al., 1983; Reis & Wheeler, 1991) and allows assessing social interactions across a wide array of naturally occurring situations. Participants were asked to report each interaction lasting ten minutes or longer (Wheeler & Nezelek, 1977) and to report shorter interactions if they judged them to be important. During the instruction, we provided examples to clarify what counted as an interaction (e.g. a conversation, a meeting) and what did not (e.g. sitting next to a stranger in the bus). Participants were asked to complete the interaction records immediately after each interaction or as soon afterward as possible. For each interaction, participants noted the time the interaction had begun and ended, and indicated if the interaction took place at work (work-

related interaction) or in a non-work context (private interactions). Private interactions *after work* were the non-work interactions that took place after the last interaction at work had ended.

*Emotions felt during the interaction* were assessed using a variant of the Geneva Emotion Wheel (Scherer, 2005). This graphical tool represents 16 discrete emotions, each one as a set of circles with increasing diameter, ordered like a spike in a wheel. For each interaction, participants were asked to indicate the intensity of each emotion by choosing a circle size (from 1 to 4). If an emotion was not felt, it received a value of 0. If none of the 16 emotions was felt during the interaction, participants crossed the 'none' circle in the middle of the wheel. Many studies indicate that people distinguish more negative than positive emotions (e.g. Averill, 2004; Clore et al., 1987). We therefore included nine negative emotions (anger, contempt, disgust, disappointment, anxiety, sadness, embarrassment, shame, and guilt), but only six positive emotions (happiness, enthusiasm, pleasure, interest, pride, and relief). Surprise, which was included as well, was eliminated from the current analyses, because it can be affectively positive, negative or neutral (e.g. Ortony & Turner, 1990).

*Building day level terms of positive and negative interactions at work and after work.* To assess the positive and negative emotionality of daily interactions at work and after work, we computed the mean intensity of positive as well as negative emotions felt, and then aggregated these data across work-related interactions and interactions after work for each day, which yielded the mean intensity of positive and negative emotions felt a) at work, and b) after work.

*Bedtime mood.* Mood before bedtime was assessed once a day with a variant of the Positive and Negative Affectivity Schedule (PANAS; Watson et al., 1988), asking participants to indicate the extent to which they currently felt concentrated, joyful, sad, angry, afraid, nervous, frustrated, contemptuous, surprised and happy on a 5-point scale (1 = *not at all* and 5 = *absolutely*). Since mood was assessed at a specific moment, it is appropriate to compute a single, one-dimensional scale (Diener & Emmons, 1985; Emmons & Diener, 1986). We therefore computed evening mood as a mean score after reversing the negative items, so that higher values indicate more positive mood. Cronbach's alpha of the scale was .76.

## Analyses

*Multilevel modelling.* Our data include measures on the person level (level 2, e.g. neuroticism) and measures on the day level (level 1, e.g. mean positive emotions felt in work-related interactions; bedtime mood). As days are nested within persons, hypotheses were tested by multi-level modeling (MLwiN 2.02; Rasbash, Steele, Browne, & Posser, 2005). This analytical technique allows estimating variance at different levels for hierarchically structured data. It takes into account the non-independence of observations and allows for an unequal number of level 1 observations per level 2 units, and is well-suited for diary data (Nezlek, 2003a). The estimated null model for each dependent variable showed a significant proportion of variance on the day level (work: positive emotions 66.2%, negative emotions 65.4%; after work: positive emotions 73.1%, negative emotions 97.8%; bedtime mood 71.8%). Multi-level modelling is therefore appropriate (Nezlek, 2003b).

For each hypothesis, we began by assessing an unconditional model, including only the intercept and no predictor variables. In a second step, we introduced the predictor variables, and in a third step we included interaction terms. Continuous predictors for which zero was not a meaningful value were grand mean centered (Hox, 2002; Snijders & Boskers, 1999). We expected between-subject differences regardless of the predictor variables. Therefore, we allowed for individual differences in modeling intercepts as random effects. As we did not make any a-priori assumptions concerning individual differences in the association of situational predictors with dependent variables, we modeled fixed effects with regard to slopes. However, to assess whether a random slope model would fit the data better, we tested the random slope variance as well as the covariance between slopes and intercept for each predictor variable (Raudenbush & Bryk, 2002). In the final model, we included only significant estimates of slope variance. Note that all analyses are related to working days.

*Control variables.* Control variables tested on the person level included *gender*, because some studies indicate gender differences in mood and mood management (Hess, Kacen, & Kim, 2006). Neuroticism and extraversion as aspects of *dispositional affectivity* were controlled for because personality predisposes people toward experiencing certain emotions and moods (e.g. J.

J. Gross, Sutton, & Ketelaar, 1998) and because people high in neuroticism are also more susceptible to mood spillover (Suls & Martin, 2005).

We further included *the mood reported for the previous evening (prior mood)* as a control variable in all analyses. We therefore can rule out that associations between emotions felt in interactions and evening mood are simply due to prior mood (e.g. Brett, Brief, Burke, George, & Webster, 1990; Liu, Karasawa, & Weiner, 1992).

## Results

To provide some context of emotions experienced in everyday social interactions, we first report some descriptive statistics. The 101 participants reported 2807 interactions. Of these, 53.4% took place outside of the work context. Two participants did not report any work-related interaction, and one participant did not report any private interaction. The mean number of days the interactions records were returned was 6.82 ( $SD = .71$ ). Participants reported an average of 2.99 ( $SD = 1.90$ ) interactions at work and 1.73 ( $SD = 1.03$ ) interactions after work per working day. They experienced no emotions at all in only 2.2 percent of their interactions at work, and in 0.8% of their interactions after work.

On a given day, the mean intensity of positive emotions experienced across all interactions ( $M = 1.15$ ;  $SD = .59$ ) was significantly higher than the mean intensity of negative emotions ( $M = .26$ ;  $SD = .27$ ) ( $t(468) = 27.71$ ,  $p < .05$ ). This was true for each kind of interactions (see Table 1). Mean intensity of positive emotions felt was significantly higher in interactions after work ( $M = 1.42$ ;  $SD = .82$ ) than in interactions at work ( $M = 1.04$ ;  $SD = .63$ ) ( $t(278) = 8.639$ ,  $p < .05$ ), whereas mean intensity of negative emotions did not differ significantly between in interactions at work ( $M = .29$ ;  $SD = .36$ ) and after work ( $M = .26$ ;  $SD = .37$ ).

**Table 1.** Mean intensities of positive and negative emotions felt in daily interactions

	<i>Positive Emotions</i>		<i>Negative Emotions</i>		<i>t (df)</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
All interactions	1.15	.59	.26	.27	$t(468) = 27.71$ , $p < .05$
Work-related interactions	1.04	.63	.29	.36	$t(418) = 18.42$ , $p < .05$
Interactions after work	1.42	.82	.26	.37	$t(283) = 18.89$ , $p < .05$

### Predicting emotions felt in interactions at work

We predicted that time pressure increases negative, and decreases positive emotions in interactions at work (*H1a*), and that control at work has the opposite effects (*H1b*). The influence of social stressors was hypothesized to mirror those of time pressure (*H1c*), whereas LMX should have the same effect as control (*H1d*). Tables 2 and 3 show the intercorrelations between all study variables, Table 3 the results with regard to the two first hypotheses; separately for positive and negative emotions felt in interaction at work.

**Table 2.** Means, standard deviations and correlations between level-1 study variables

		Range	Mean	SD	1	2	3	4	5
1	Mean intensity of negative emotions felt at work	0-4	0.29	.36	-				
2	Mean intensity of positive emotions felt at work	0-4	1.04	.63	<b>-.337**</b>	-			
3	Mean intensity of negative emotions felt after work	0-4	0.26	.37	<b>.184**</b>	.010	-		
4	Mean intensity of positive emotions felt after work	0-4	1.41	.82	.123*	<b>.266**</b>	<b>-.427**</b>	-	
5	Bedtime mood same day	1-5	4.10	.59	<b>-.247**</b>	.092	<b>-.357**</b>	<b>.274**</b>	-
6	Bedtime mood prior day	1-5	4.08	.61	<b>-.162**</b>	.103	-.100	.063	<b>.405**</b>

Note. Based on 284 to 476 working days. \*  $p < .05$  \*\*  $p < .01$

**Table 3.** Means, standard deviations and correlations between level-2 study variables

		Mean	SD	1	2	3	4	5	6	7	8
1	Sex	NA	NA	-							
2	Neuroticism	2.87	.77	<b>-.351**</b>	(.80)						
3	Extraversion	3.81	.81	-.159	<b>-.263**</b>	(.73)					
4	Time pressure	3.15	.97	.184	-.078	.007	(.80)				
5	Decision latitude	3.95	.88	.035	-.184	.022	.058	(.43)			
6	LMX	3.77	.74	-.157	-.136	.031	-.084	<b>.254*</b>	(.85)		
7	Social stressors	1.86	.76	<b>.197*</b>	.132	.015	<b>.396**</b>	<b>-.312**</b>	<b>-.499**</b>	(.89)	
8	Social support from partner	4.61	1.33	-.050	-.010	.097	-.031	-.068	-.090	-.030	(.84)

Note. Based on data from 98 to 101 participants. Internal consistencies in the diagonals are Cronbach's Alphas; for decision latitude, the correlation between the two items

Time pressure predicted neither positive nor negative emotions in interactions at work, so Hypothesis 1a is not supported. Control shows the hypothesized effect on negative emotions, but this effect disappears when the social variables are added to the model. With regard to positive emotions, control has no effect as long as the social variables are not in the model; once they are, control becomes statistically significant in a direction that is opposite to the effect hypothesized. This indicates that some aspects of control may be detrimental (see Meier, Semmer, Elfering, & Jacobshagen, 2008), and these aspects become apparent when LMX and social stressors are partialled out, reflecting a suppressor effect. Hypothesis 1b is not supported.

Social stressors and LMX predict positive but not negative emotions in social interactions at work, and the effect of social stressors is only marginally significant. Thus, Hypothesis 1c, (social stressors) receives very weak support; Hypothesis 1d (LMX) is partly supported.

#### *Spillover of emotions felt at work to emotions felt after work*

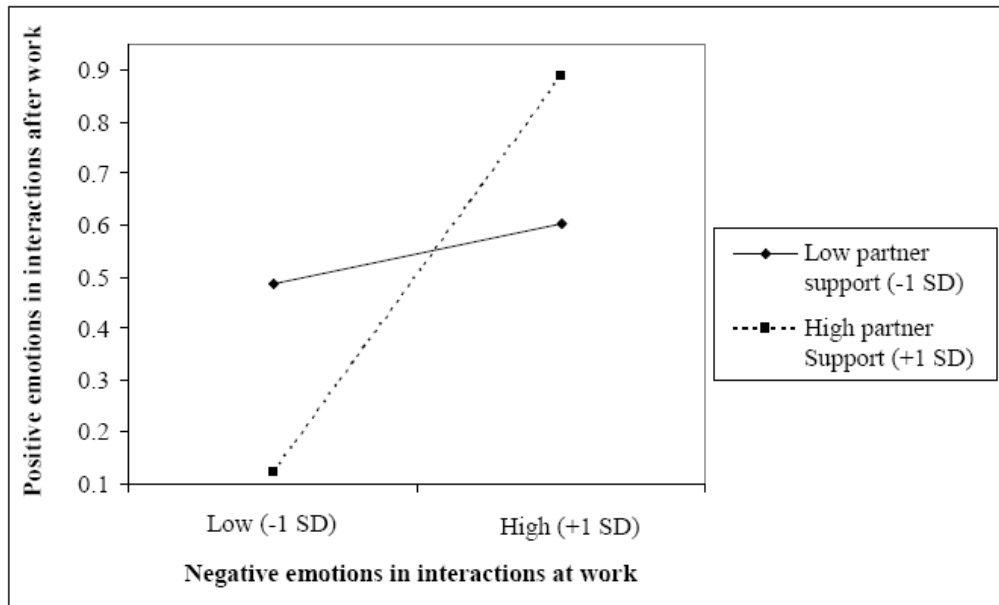
We expected mood-congruent spillover of emotions felt in interactions at work to emotions felt in interactions after work, both for negative (*H2a*) and for positive (*H2b*) emotions. We also expected compensatory effects in that negative emotions at work should generate more positive emotions after work, but only if partner social support is high (*H2c*). Controlling for gender, neuroticism, extraversion, chronic conditions at work (time pressure, control, LMX, social stressors) and prior day mood, emotions experienced in interactions at work predicted the same emotions experienced after work (for negative emotions  $B = .193$ ,  $SE = .072$ ; for positive emotions,  $B = .455$ ,  $SE = .101$ ) (see Table 4). Thus, Hypotheses 2a and 2b are supported, confirming the mood-congruency hypothesis. Furthermore, negative emotions at work also predicted positive emotions after work ( $B = .450$ ,  $SE = .151$ ). This effect was, however, qualified by an interaction with partner support ( $B = .356$ ,  $SE = .124$ ). To illustrate this effect, we plotted the slopes for high and low partner social support using the formula developed by Preacher and colleagues (2006). Figure 2 shows that the main effect of negative emotions at work on positive emotions in interactions after work is due to participants with high partner social support, supporting Hypothesis 2c. Although we had not hypothesized it, we also tested for the interaction effect of partner social support with positive emotions at work. This did not yield significant results.

**Table 4.** Predicting negative and positive emotions felt in interactions at work and after work

Variable	Negative emotions in interactions at work			Positive emotions in interactions at work			Negative emotions in interactions after work		Positive emotions in interactions after work		
	Unconditional model	Model 1	Model 2	Unconditional model	Model 1	Model 2	Unconditional model	Model 1	Unconditional model	Model 1	Model 2
Intercept	0.299(0.026)	0.345(0.040)	0.357(0.087)	1.038(0.045)	1.033(0.064)	0.982(0.062)	0.259(0.023)	0.158(0.112)	1.406(0.062)	0.935(0.155)	0.887(0.152)
Level 2											
Gender (male=1)		-0.077(0.057)	-0.109(0.060)		-0.018(0.093)	0.067(0.090)		0.019(0.059)		-0.183(0.130)	-0.171(0.125)
Neuroticism		0.024(0.038)	0.003(0.039)		-0.056(0.060)	-0.003(0.057)		-0.019(0.039)		0.026(0.086)	0.060(0.083)
Extraversion		0.011(0.035)	0.003(0.036)		<b>0.174(0.053)*</b>	<b>0.188(0.051)*</b>		-0.036(0.036)		0.092(0.079)	0.108(0.077)
Timepressure		0.030(0.031)	0.016(0.032)		-0.001(0.053)	0.056(0.053)		0.015(0.028)		-0.043(0.063)	-0.070(0.061)
Decision latitude		<b>-0.076(0.031)*</b>	-0.059(0.035)		-0.046(0.050)	<b>-0.103(0.049)*</b>		<b>-0.076(0.034)*</b>		0.121(0.075)	0.144(0.073)*
LMX			-0.064(0.042)			<b>0.141(0.065)*</b>		0.001(0.042)		-0.066(0.094)	-0.047(0.090)
Social stressors			0.004(0.045)			<b>-0.137(0.072)+</b>		-0.008(0.045)		0.129(0.098)	0.152(0.094)
Social support from partner								-0.024(0.020)		-0.022(0.045)	-0.137(0.095)
Level 1											
Bedtime mood prior day		-0.045(0.033)	-0.042(0.033)		0.046(9.057)	0.030(0.057)		-0.052(0.045)		0.125(0.090)	0.133(0.089)
Mean negative in interactions at work								<b>0.193(0.072)*</b>		<b>0.450(0.151)*</b>	-1.040(0.552)
Mean positive in interactions at work								0.068(0.049)		<b>0.455(0.101)*</b>	0.461(0.099)*
Social support partner * negative emotions at work											<b>0.356(0.124)*</b>
Social support partner * positive emotions at work											0.019(0.068)
VAR Level 1	0.087(0.007)	0.086(0.008)	0.089(0.008)	0.264(0.021)	0.267(0.024)	0.276(0.026)	0.134(0.013)	0.142(0.013)	0.487(0.049)	0.528(0.062)	0.521(0.060)
VAR Level 2	0.046(0.010)	0.033(0.012)	0.033(0.012)	0.135(0.029)	0.059(0.027)	0.049(0.025)	0.003(0.007)	0.000(0.000)	0.179(0.053)	0.054(0.044)	0.037(0.040)
Var time pressure		0.013(0.011)	0.011(0.011)		0.076(0.033)	0.063(0.027)					
Covariance timepressure / intercept		-0.013(0.007)	-0.013(0.007)		0.059(0.021)	0.062(0.019)					
-2*log(lh)		220.188	216.643	743.663	584.497	558.451	240.600	197.759	669.255	510.410	501.730

Note. Dependent variables are emotions felt in work-related interactions. + p<.10; \* p<.05, based on the Wald-Test

Figure 2. Social support from partner as a moderator of the relationship between negative emotions experienced in work-related interactions and positive emotions experienced in private interactions after work



### Predicting bedtime mood

We hypothesized that negative emotions experienced at work would influence same day bedtime mood (*H3a*), and that negative (*H3b*) as well as positive (*H3c*) experiences after work would influence same day bedtime mood. Table 5 shows the result of multi-level analyses, controlling for gender, extraversion, neuroticism, time pressure, decision latitude, LMX, social stressors, partner social support as well as for bedtime mood the prior day. The analyses revealed that negative emotions significantly lowered bedtime mood. This was true for negative emotions at work ( $B = -.203, SE = .101$ ) as well as for negative emotions after work ( $B = -.329, SE = .101$ ), confirming Hypotheses 3a and b. Positive emotions enhanced bedtime mood only if felt during interactions after work ( $B = .171, SE = .50$ ) but not if they occurred in interactions at work ( $B = -.072, SE = .069$ ), which is in line with Hypothesis 3c.

**Table 5.** Predicting bedtime mood

	Variable	Unconditional model	Model 1	Model 2
	Intercept	4.095(0.039)	4.734(0.150)	4.737(0.151)
Level 2	Gender (male = 1)		0.037(0.077)	0.041(0.077)
	Neuroticism		<b>-0.123(0.050)*</b>	-0.122(0.050)*
	Extraversion		0.026(0.047)	0.027(0.047)
	Time pressure		0.066(0.036)	0.066(0.036)
	Decision latitude		<b>-0.118(0.045)*</b>	-0.120(0.045)*
	LMX		0.014(0.054)	0.013(0.054)
	Social stressors		<b>-0.276(0.058)*</b>	-0.277(0.058)*
	Social support from partner		0.023(0.026)	0.024(0.026)
Level 1	Prior mood		<b>0.139(0.058)*</b>	0.136(0.058)*
	Negative emotions in interactions at work		<b>-0.203(0.101)*</b>	-0.199(0.101)*
	Positive emotions in interactions at work		-0.072(0.069)	-0.075(0.070)
	Negative emotions in interactions after work		<b>-0.329(0.101)*</b>	-0.333(0.101)*
	Positive emotions in interactions after work		<b>0.171(0.050)*</b>	0.185(0.061)*
	Negative emotions in interactions at work * positive emotions in interactions after work			-0.037(0.093)
Variance	Level 1	0.257(0.019)	0.234(0.022)	0.234(0.022)
	Level 2	0.101(0.022)	0.000(0.000)	0.000(0.000)
	-2*log(lh)	809.571	307.703	307.544

Note. Dependent variable is bedtime mood. \*  $p < .05$ , based on the Wald-Test

Hypothesis 3d predicted that positive emotions after work would buffer against the negative effects of negative emotions in interactions at work. The interaction term was, however, not significant (see table 5), contradicting hypothesis 3d. We furthermore tested a downward spiral model by introducing an interaction term of negative emotions felt in interactions at work and after work, as well as an upward spiral model introducing an interaction term of positive emotions felt at work and after work. None of these interaction terms was significant ( $B = .233$ ,  $SE = .167$ ,  $ns$ , for negative emotions;  $B = .015$ ,  $SE = .067$ ,  $ns$ , for positive emotions). We also tested other combinations of positive and negative emotions (e.g. compensation effects at work (negative emotions x positive emotions at work) and a compensation effect after work (negative emotions x positive emotions after work)). None of these interactions was statistically significant.

Regarding the control variables, chronic job control again had a negative influence on (positive) bedtime mood, reflecting the suppressor effect already found for the prediction of emotions at work. Neuroticism predicted lower bedtime mood, as one would expect. Furthermore, social stressors also predicted lower mood at bedtime.

Relating these results to our model in Figure 1, our hypotheses are not well supported for the prediction of emotions in social interactions at work by chronic conditions at work; only Hypotheses 1c and d, which refer to the prediction of emotional experiences by chronic social conditions, receive some support, but for positive emotions only. The model is fully supported with regard to predicting emotions experienced in social interactions after work by emotions experienced in social interactions at work. Specifically, mood congruent spillover was confirmed (Hypotheses 2a and b), and the compensation effect that was predicted under the condition of high partner support was confirmed as well (Hypothesis 2c). The model is also supported for the prediction of bedtime mood by emotions experienced in prior interactions, including the pervasive effect of negative emotions (Hypotheses 3a and b), and the effect of positive emotions experienced in social interactions after work (Hypothesis 3c). In addition, bedtime mood was predicted by chronic conditions at work.

## Discussion

We investigated (1) if conditions at work in general influence emotions felt in interactions at work, (2) how these emotions influence emotions in interactions after work, and (3) how emotions in social interactions at work and after work influence bedtime mood (Figure 1). The main results show mood congruent spillover from emotions felt in interactions at work to interactions after work the same day, supporting spillover theories (Story & Repetti, 2006). We also found support for compensation theories of spillover in that people experiencing more negative emotions at work were more likely to compensate with more positive emotions after work. As predicted, however, this effect occurred only if partner social support was high. Finally, negative, but not positive, emotions spilled over from work to bedtime mood, whereas negative as well as positive emotions experienced after work both influenced bedtime mood. We discuss these findings below.

### *General Working and Social Conditions Influence Emotions felt*

As a contribution to AET, we investigated the influence of working conditions and social conditions on emotions felt in everyday interactions at work. We expected job characteristics (demands and control) and social conditions (social stressors and LMX) to influence emotions experienced in social interactions at work. With regard to job characteristics, our hypotheses did not find much support. Time pressure showed no effect at all, and control only showed one effect that was in accordance with our hypotheses, and that effect disappeared once the social conditions were controlled. As discussed in the introduction, job characteristics have been found to influence emotions in other studies. The question therefore arises why our results do not conform to this pattern. We feel that the main reason lies in the fact that we did not assess affective events directly, but rather the emotional quality of social interactions.

Many social interactions take place independent of job conditions. Moreover, situational characteristics may be much more important for emotions experienced than chronic conditions, such as time pressure. Note that these results do not preclude that current, momentary time pressure would exert an influence (Kahneman, Krueger, Schkade, Schwarz, & Stone, 2004). For chronic job control, matters are similar yet somewhat more complicated. Control does seem to

contain some variance that is related to emotions in interactions, but this variance is shared with social conditions. Therefore, the effect of control on negative emotions disappears when social conditions are in the model; in addition, social conditions act as suppressor variables with regard to positive emotions: When social conditions are controlled, the remaining variance in chronic job control reflects that part of control that is detrimental rather than positive. The relationship between control and social conditions certainly deserves more attention in future studies.

Support for our hypotheses was greater for chronic social conditions. This makes sense, as interaction styles more directly reflect social conditions in general. LMX predicts positive emotions only, since the scale emphasizes the positive aspects of the relationship with the superior (Liden et al., 1993), and high LMX may be regarded as an indicator of a better standing in the work group. We have no immediate explanation, however, for the fact that the effect of social stressors was found for positive emotions only. Note, however, that this effect was only marginally significant; however, without LMX in the model, it did become significant, indicating that social stressors do contain relevant variance. It is conceivable that in a work climate characterized by social tensions (i.e. high social stressors), employees may not experience more negative emotions in social interactions because they successfully avoid interactions with disliked co-workers (Henderson & Argyle, 1986). Nevertheless, even when interacting with colleagues they like, they may experience fewer positive emotions than in a relaxed social environment. Our analyses contribute to AET especially by showing the importance of social conditions for the experience of emotions in work-related interactions. Furthermore, our results indicate different effects of social conditions on positive vs. negative emotions; the exact nature of these effects seems to be a promising area for future investigations.

Note that chronic conditions at work were assessed before the assessment of everyday emotions. The emotions experienced during the observation period could, therefore, not have caused the answers to the survey questionnaire. Furthermore, we controlled for potential influences of the personality variables neuroticism and extraversion (Longua, DeHart, Tennen, & Armeli, 2009, accepted), and we also controlled for mood the previous evening, thus excluding short-term temporal effects of previous mood.

### *Influences on Emotions Felt in Interactions After Work*

In the second part of the model, we assessed to what extent emotions felt in interactions at work would spill over to emotions in interactions after work. In accordance with our predictions, we found mood-congruent spillover: Participants who felt more negative emotions in interactions at work experienced more negative emotions in interactions after work, and more positive emotions at work triggered more positive emotions after work. These results support mood-congruency approaches (Mayer et al., 1992). In addition, the results on positive emotions complement earlier findings about the effects of daily strain at work on subsequent interactions, which focused on negative aspects only (Repetti, 1989, 1992, 1994; Story & Repetti, 2006). It is interesting to note that decision latitude influences negative emotions felt after work even after controlling for emotions felt in interactions at work ( $B = -.076$ ;  $SE = .034$ ).

### *Social Support from Partner Allows Mood Regulation after Work*

A particularly important finding of this study is that negative emotions in interactions at work seem to trigger positive emotions in interactions after work when partner support is high. Based on compensation theories of spillover (Edwards & Rothbard, 2000) and the mood regulation model (R. J. Larsen, 2000), we had expected such an effect. Earlier findings indicated that negative emotions at work led to more withdrawal from social contacts (Repetti, 1992), and that people had more difficulties to engage in mood regulating recovery activities after a hard day at work (Sonnetag & Jelden, 2005, April). Our results complement these findings by showing that such effects may be reversed when special circumstances, that is, high social support from the partner, are present (Edwards & Rothbard, 2000). We assume that the caring and understanding communicated by supportive spouses may change the appraisal of negative events, support effective coping with them, or divert people's attention to more positive aspects of life.

### *Predicting Bedtime Mood by General Conditions at work as well as Emotions in daily Social Interactions*

A main focus of this study was to assess how positive and negative emotions felt at work influence bedtime mood. For negative emotions, we found direct effects of negative emotions

felt in interactions at work as well after work on bedtime mood. The effects of negative emotions at work are direct as well as indirect, via emotions after work (Wells et al., 1999).

For positive emotions felt, things are different. Positive emotions experienced at work do influence positive emotions after work, but they do not directly influence bedtime mood. This may partly be due to the fact that the positive emotions experienced at work were less pronounced than positive emotions after work. It is also known that positive emotions fade more quickly (Brosschot & Thayer, 2003) than negative emotions. From this perspective, it makes sense that the effects of positive emotions are found for a short period only. The finding that negative emotions have an impact on bedtime mood regardless of timeframe (work vs. after work) and context (work vs. private), whereas positive emotions have such an impact only when experienced after work also underscore the well-known negativity bias, which indicates a more pervasive and longer-lasting effect of negative, as compared to positive, events (Baumeister et al., 2001).

Since we did not assess all positive affective experiences at work, but only emotions in social interactions, our results do not exclude that positive emotions at work do influence evening mood. Previous research has shown that many, if not most, negative experiences are related to interactions. By contrast, many positive experiences at work seem to relate to task accomplishment rather than to social interactions (Basch & Fisher, 2000; Mignonac & Herrbach, 2004). Had we measured a wider range of positive emotions at work, such as success with a task, effects on bedtime mood might have been found, as in a study by Miner et al. (2005) who found positive work events to be related to after-work mood.

A noteworthy aspect of our results concerns interactions between emotions at work and after work. Several combinations of emotions would have been plausible theoretically – positive at work x positive after work (upward spiral); negative at work x negative after work (downward spiral); negative at work x positive after work (compensation, analogous to the undoing effect; Fredrickson et al., 2000), and positive at work x negative after work (negative compensation). None of these interactions was statistically significant. Such effects have been found in a few studies (S. Gross et al., 2009; e.g. Wells et al., 1999, for downward spirals), but were not confirmed by other authors (David et al., 1997; Manne et al., 1997; Rook, 2001). Our results do not necessarily indicate that such effects did not occur at all. Rather, it is quite possible that

spirals and / or compensation effects may have occurred, but the emotional experiences involved were not part of social interactions, but for example emotions related to other affective events. We therefore cannot draw firm conclusions from these results.

*Personality and General Work-related Aspects Influence Bedtime Mood, but not necessarily Emotions in Interactions*

An interesting finding of this study, although not part of our hypotheses, was that personality had rather little influence on emotions felt in interactions but did influence evening mood: We found no influence of neuroticism on emotions felt at work or after work, and extraversion only influenced positive emotions felt at work. However, trait neuroticism influenced bedtime mood. We believe that these effects are tied to our way of measuring emotions not in terms of affective events or experiences directly, but as part of ongoing social interactions. Most variance of emotional experiences in interactions at work and after work is on the interaction level, suggesting that their emotional quality depends on many factors other than the focal person's neuroticism. Specifically, many other events at work and after work elicit emotions. By contrast, well-being at bedtime directly reflects the focal person's affective state. Under these conditions, neuroticism is more likely to have a direct effect (see similar results by Fritz & Sonnentag, 2005).

In a similar vein, the influence of chronic social stressors on emotions in interactions at work was weak and only marginally significant, and it was confined to positive emotions. Nevertheless, higher chronic work-related social stressors did diminish bedtime mood. We have argued above that social conditions should influence social interactions more directly, as they, at least partly, reflect a general style of interacting. Why then should there be an impact on bedtime mood beyond the indirect influence on social interactions at work? Chronic social conditions are indicative of a more general social climate regardless of specific interactions. For example, one of the items of the social stressors scale refers to frequent conflict with colleagues. Such a propensity for conflict will be present even if one does not interact with the colleagues in question on a given day. It therefore is plausible that social conditions have an impact beyond specific social interactions. However, this argument does not explain why it is LMX (a positive measure) that has the strongest impact on emotions during social interactions, whereas it is social stressors (a negative measure) that influences bedtime mood. This result may be connected to the

negativity bias in conjunction with the special impact of social-evaluative threats. Social-evaluative threats seem to elicit reactions that are especially strong and long-lasting (Dickerson & Kemeny, 2004). It therefore seems likely that of the two measures of social conditions, which share quite some variance, the positive one (LMX) takes precedence in the short run. In the long run, however, negative aspects take precedence (Newsom et al., 2003), and negative social aspects (whether connected to same-day social interactions or not) come to mind and influence mood. However, these explanations, although based on existing research, are speculative and require further investigation.

It also is noteworthy that the suppressor effect with regard to chronic job control that was observed in the prediction of emotions at work also emerges in the prediction of bedtime mood. Specifically, control was a negative predictor of good mood. The unique variance in control that is left after social conditions are controlled seems to reflect the downside of control. In a positive sense, control entails the *opportunity* to make decisions. It may, however, also contain an aspect of a *necessity* to make decisions, which entails a risk of making wrong decisions, and may be rather stressful (Frese, 1989c; Meier et al., 2008). Worry about this responsibility may well result in rumination (Brosschot & Thayer, 2003), and thus influence bedtime mood. Note that all these results are obtained while controlling for bedtime mood the preceding evening, so all these results cannot easily be explained by a mood spillover from one day to the next.

### *Limitations and Strengths*

Limitations of the study are the relatively small sample and the fact that we obtained the sample via a snowball recruitment. Generalizing to other samples is, therefore, not guaranteed. A second limitation is that the self-observation period lasted only one working week. Given that we controlled for bedtime mood the previous day, all analyses are based on a maximum of 478 working days. A more extended observation period would have been an advantage, but is difficult to obtain due to potential motivation problems of participants.

Another limitation is that we only included emotions that were felt during social interactions, thus missing other emotional experiences during the day. Although interactions are important occasions for experiencing emotions, previous research has shown that particularly positive emotional experiences at work are often related to tasks and not to interactions (Basch &

Fisher, 2000; Mignonac & Herrbach, 2004). This may have led to an underestimation of the effects of positive experiences at work on bedtime mood. Furthermore, this way of assessing emotions may have masked possible spirals or compensation effects, as these effects may have involved emotional experiences outside of social interactions. Further research should also assess emotions in a wider context. All data are self-report data, so there may be common method bias (Kahneman et al., 2004; Podsakoff, MacKenzie, Lee, & Podsakoff, 2003; Spector, 2006). However, we controlled for negative affectivity, which is one of the main concerns of common method bias, and we controlled for prior bedtime mood.

A strength of the study is the temporal sequence of assessment. The questionnaire assessing general work-related aspects was filled in and returned by the participants before the self-observation period started. Participants were also advised to fill in the interactions records as soon as possible after each interaction, and to respond to the mood questions only before bedtime. Thus, the data about work-related interactions were gathered before the data about after-work interactions, and the data about bedtime mood were gathered last. Although we cannot be sure that this sequence was followed by all participants all the time, our personal contact ensured that deviations from this procedure were not very serious. This temporal sequence of assessment makes it unlikely that reverse causality is a serious issue in this study.

A further strength of the study is that we included positive as well as negative emotions at the same time, and that we assessed work-related and after-work emotions using the same methodology. Earlier studies have used different operationalizations for work-related and after-work aspects, which may have biased the results. Our methodology taps into similar experiences at work and after work.

Finally, in this study, we did not ask participants to recall emotional experiences and then report the context of these emotional experiences. Such a methodology would have increased the probability that people would have recalled emotionally important events (Fisher, 2002; Kahneman et al., 2004). By asking to report events, and then report the emotions felt during these events, our methodology permits studying the effects of 'everyday' emotions, even if they are mild.

## **Conclusions and Outlook**

Although our study was limited to emotional experiences during social interactions, it has the special characteristic that it goes full cycle, from chronic conditions at work to emotions at work, after work, and bedtime mood. The study shows, indeed, that social interactions at work are important carriers of emotional experiences that influence social interactions after work and – directly as well as indirectly – well-being at bedtime. At the same time, it shows the importance of general conditions at work, most notably social conditions. We believe that, through this study, we have moved closer to a balanced view of (a) positive and negative experiences, (b) work and nonwork-experiences and (c) their embeddedness in general conditions at work. At the same time, by concentrating on within-person variations, we could avoid the confound with interindividual differences that characterizes many studies. Nevertheless, our study is but a first step. It has many limitations, such as the exclusive focus on social interactions, and it certainly requires replication with different samples, different methodologies, and the inclusion of other variables. We do feel, however, that our study demonstrates that such studies are promising and worthwhile for understanding emotional experiences in working life and private life.



# Chapter 5

## **Is it emotion regulation effort or just negative emotion? Disentangling the negative effects related to emotion labour**

This chapter is devoted to the investigation of the impact of surface acting and the influence of the emotions felt 1) on well-being immediately after the interaction and 2) on interaction quality. This manuscript is ready to be submitted. It is the result of a collaboration with Franziska Tschan from the University of Neuchâtel and Norbert Semmer from the University of Bern.

### Abstract

This study investigates the impact of surface acting based on emotion regulation theories (Grandey, 2000) and the influence of the emotions felt on well-being after the interaction (studies 1 and 2) and on interaction quality (study 2). Study participants (N=75 and 67) provided information about emotion felt and surface acting of work-related interactions over a week using an event-sampling methodology. Results show that the negative effects of surface acting (SA) on well-being while suppressing negative emotions felt (SA\_neg) are not longer significant when controlling for the influence of emotion felt, whereas SA while suppressing positive emotions felt (SA\_pos) becomes negatively related to well-being. Study 2 replicates these findings and in addition shows that SA\_neg enhances perceived interaction quality whereas SA\_pos diminishes interaction quality. The results support assumptions suggested by the social interaction model of emotion work (Côté, 2005).

## Introduction

In interactions at work, employees cannot always show the emotions they feel, because general and organization- specific emotional display rules exist (Hochschild, 1983). Previous studies have consistently found that employees who suppress the display of a felt emotion (J. J. Gross, 1999), a process also called “surface acting” (Hochschild, 1983), show impaired well-being (Brotheridge & Grandey, 2002; Brotheridge & Lee, 2003; Grandey, 2003; Grandey, Fisk, & Steiner, 2005; Totterdell & Holman, 2003; Zapf, Seifert et al., 2001), and previous research has also suggested that surface acting lowers interaction quality (Grandey, 2000; Grandey, Fisk, Mattila, Jansen, & Sideman, 2005; Totterdell & Holman, 2003).

With this paper, we contribute to the research on the effects of suppression of emotions or surface acting (SA) on well-being and interaction quality in two respects: First, we contend that in most previous research investigating surface acting, the operationalization of SA did not allow to disentangle the effects of the underlying emotion felt from the effects of regulatory effort through SA. Given that previous research on emotion work has found that SA has an important influence on well-being and interaction quality, and previous research on emotions at work has stated that emotions felt influence well-being and interaction quality, these two potential effects should be tested simultaneously. We thus conducted a study that includes a measure for SA as well as a measure for the emotion felt in interactions. This allows to disentangle the effects of emotions felt and SA on the dependent variables.

Secondly, we use an event-sampling methodology and assess emotion work in work-related interactions. Most previous research has investigated emotion work requirements, the intensity of emotion regulation at work as a general working condition, and has also assessed effects in general terms. Event-sampling, using a variant of the Rochester Interaction Records methodology (Reis & Wheeler, 1991) allows to assess SA on the level of single interactions and outcomes on the interaction level. In using this methodology, we contribute to the understanding of short term effects of emotion regulation on well-being and on interaction quality.

## *Emotion Work and the Costs of Suppressing Felt Emotions*

Hochschild (1979, 1983) has coined the concept of emotional labour (also called emotion work by other researchers) to point out that many organizations require their employees to express specific emotions in interactions at work, even if they do not genuinely feel those emotions (Diefendorff & Richard, 2003; Diefendorff, Richard, & Croyle, 2006; Gosserand & Diefendorff, 2005; Rafaeli & Sutton, 1989). A well known example of organizational display rules is the requirement for flight attendants (Hochschild, 1983) or amusement park hosts (Van Maanen, 1991) to smile. Display rules are not restricted to interactions with customers, but include interactions with colleagues or superiors (Henderson & Argyle, 1986; Tschann et al., 2005; Van Maanen, 1991; Van Maanen & Kunda, 1989); and a general, societal display rule in western culture is to be friendly and hide irritation and negative feelings in interactions (J. J. Gross & John, 1994; Leary, 1996).

If employees do not spontaneously feel the emotion specified by the display rule, they are required to manage and regulate their emotions to show the required emotion (Ashforth & Humphrey, 1993; Morris & Feldman, 1996; Zapf, 2002). Hochschild (1983) described two main emotion regulation strategies employees may use. First, individuals can try to influence and change their own feelings (for example, a teacher can remind him or herself of the learning difficulties of a child in order to feel patient instead of angry). Hochschild called this strategy deep acting, because it is the emotion felt that is influenced. The other emotion regulation strategy is surface acting (SA), where the emotion required by the display rule is shown, but not felt. An example of surface acting is a sales person who keeps smiling even after a customer has angered her with an unpleasant remark. Surface acting requires the person to suppress the display of the felt emotion, and 'play' or 'fake' another emotion or a neutral state. Note that in surface acting, the person feels another emotion than he or she is displaying, and thus, the person experiences emotional dissonance (Morris & Feldman, 1996). In terms of the well-known model of emotion regulation strategies of Gross and colleagues (J. J. Gross et al., 2006), deep acting corresponds to a reappraisal strategy, and surface acting to suppression as a response-focused emotion regulation (Diefendorff, Richard, & Yang, 2008; Grandey, 2000; Mikolajczak, Tran, Brotheridge, & Gross, 2009). In this paper, we concentrate on suppression of felt emotions, or surface acting.

Research examining the effects of emotion work has consistently shown that surface acting has a number of negative consequences for the employee. For example, employees

who engage in more SA show lower job satisfaction (Grandey, Fisk, & Steiner, 2005), lower general well-being (Giardini & Frese, 2006; Pugliesi, 1999), and have an enhanced risk of burnout, particularly of emotional exhaustion, and other aspects of strain (Brotheridge & Grandey, 2002; Brotheridge & Lee, 2003; Grandey, 2003; Grandey, Fisk, & Steiner, 2005; Totterdell & Holman, 2003; Zapf, Seifert et al., 2001). SA has also been found to be related to higher job related anxiety and depression (Holman, Chissick, & Totterdell, 2002; Van Eerde, 2005), and even to more work-family conflict (Seery, Corrigall, & Harpel, 2008). Thus, although SA is done to comply with organizational display rules, it seems to come at considerable costs for the employee.

Why is surface acting so straining? It is considered that suppressing the display of an emotion felt and “faking” the display of another emotion or a neutral state is often a conscious, deliberate, and goal directed process (Diefendorff & Grosserand, 2003; Zapf et al., 1999). It requires an active inhibitory process (J. J. Gross & John, 1997) and thus consumes regulatory resources (Baumeister et al., 1998; Baumeister & Vohs, 2007). It is this regulatory effort that is thought to be the source of strain caused by surface acting (Brotheridge & Lee, 2002; Grandey, Fisk, Mattila et al., 2005; Holman et al., 2002; Vohs, 2005; Zapf, 2002).

Empirical support for this contention is provided by experimental studies that investigated suppression of emotions felt (J. J. Gross et al., 2006), which corresponds to SA. Gross and Levenson asked people to suppress all emotional expressions while watching a disgusting film in a non-interactive experimental study. As compared to a control group, these participants showed indications of higher sympathetic activity (J. J. Gross & Levenson, 1993). Similar findings are reported in a study where women watched an amusing, neutral or sad film under a condition of either suppressing (surface acting) their emotional expression or no instruction. Again, increased sympathetic activity under the suppression condition was found, and this for both the suppression of positive as well as the suppression of negative emotions (J. J. Gross & John, 1997). Furthermore, in a simulation study participants were confronted with a hostile customer. In this situation the participants who had to follow more display rules did more surface acting and were more exhausted than those that had do follow less display rules (Goldberg & Grandey, 2007). Thus, previous research indicates that it is the regulatory effort involved in surface acting that has indeed negative effects on the person.

### *Well-being May Be Influenced by Emotions Felt as well as by Surface Acting*

However, well-being is not only influenced by the regulatory effort, but also – and maybe even more so – by the underlying emotion felt. It is well known that people who in general experience more negative affect have lower general well-being (Diener & Lucas, 2000; Lyubomirsky et al., 2005). Furthermore, as predicted by affective-events theory (Weiss & Cropanzano, 1996), relationships between the emotion felt and general well-being have also been found for major life events and minor everyday events at work (Mignonac & Herrbach, 2004; Miner et al., 2005; Suh, Diener, & Fujita, 1996), as well as for emotions felt in interactions at work (Ilies et al., 2005). It is thus important to consider the influence of the emotion felt when assessing well-being.

Experimental research has shown that when engaging in surface acting, the experience of the suppressed emotion is not changed for negative emotions (J. J. Gross & Levenson, 1997; J. J. Gross & Levenson, 1993), but may be slightly reduced for positive emotions (J. J. Gross & Levenson, 1997). As the underlying emotion is still felt even when a person engages in surface acting, two factors are likely to influence well-being – the emotion felt and the regulatory effort. It follows that if the effect of regulatory effort on well-being is examined, the effects of the emotion felt should be controlled for. This is evidently done in experimental studies (E. A. Butler & Gross, 2004; Goldberg & Grandey, 2007; J. J. Gross & Levenson, 1997; Richards & Gross, 1999), because researchers induced a specific emotion and asked the participants to either regulate or not to regulate this felt emotion, thus holding constant the emotion felt and manipulating only emotion regulation.

However, in most studies investigating surface acting in the work context, the methodology used does not allow to separately assess the influence of the emotion felt and emotion regulation. In previous research, the most often used operationalization for surface acting asks participants to indicate to what extent they engaged in surface acting, or to what extent they engaged in regulatory effort. For example, the well known measure of surface acting developed by Brotheridge and Grandey asks participants whether they “resist expressing my true feelings”, “pretending to have emotions that I don’t really have” and “hide my true feelings about a situation” (Brotheridge & Grandey, 2002, p. 35). Kruml and Geddes (2000, p. 20) operationalize surface acting as “cover up my true feelings”, and “faking emotions”. Similar operationalizations are reported by Diefendorff et al. (2005), Holman and

colleagues (2002) and Zapf and colleagues (1999). In none of these studies, the frequency of felt emotions was assessed and controlled for.

This omission to include the emotion felt as potential influence on well-being would not be a problem if the underlying emotions felt at work were equally likely to be positive than negative. However, most display rules in organizations require the employee to hide negative emotions (Beal et al., 2006; Diefendorff et al., 2006). Indeed a recent study found that a great majority of employees perceived themselves to be succumbed to positive display rules (89%) and to the requirement to suppress negative emotions (72%) (Diefendorff et al., 2006). One can thus assume that if more surface acting is reported by employees, also more negative emotions were felt.

Given that previous research has found emotions felt to influence well-being, and given that most operationalizations of surface acting do not allow to control for the emotion felt, it may well be possible that previous research on emotion work has overestimated the effect of regulatory effort of suppressing felt emotions as compared to the effect of the emotion felt. Only very few studies have addressed this problem. In a survey study with nurses, Zerbe (2000) found that a mismatch between general display expectations and general feelings at work did not predict negative outcomes when feelings were controlled for. This study indicates that emotions felt explain a greater part of variance in well-being than emotion regulation. However, this study contrasted emotions felt with display rules, not with behaviour; it did not directly test whether the nurses actually did engage in surface acting or another emotion regulation strategy. Likewise, Brotheridge and Grandey (2002) also used a more indirect control variables for negative emotions felt, negative affectivity. They found that trait negative affectivity did reduce the association between surface acting and exhaustion, but surface acting still had a significant effect on exhaustion after controlling for negative affectivity. To our knowledge, there are only two studies that did control for emotions felt in specific situations, and they yielded contradicting results. In a conference presentation, Totterdell and Holman (2001) reported that effects of surface acting on feeling drained were no longer significant when controlling for the emotion felt, indicating that felt emotions may indeed play an even more important role to explain well-being than regulatory effort. By contrast, Goldberg and Grandey (2007) showed in their experiment that controlling for irritation (thus negative emotions felt) reduced the relationship between surface acting and exhaustion, but could not account for it. However, this study involved only three telephone

interactions in a 20-minute experimental session, and the interactions did not necessarily mirror long-standing experiences of the participants, who were students. The authors note these limitations and state that their results may be generalizable to new employees only.

Thus, there is only very limited research that disentangles the potential effects of surface acting and emotions felt on momentary well-being, and there is no published field study that focuses on this issue.

### *The current study*

#### *Separating Surface Acting and Emotions Felt*

We investigated social interactions at work. Based on the considerations above we asked participants to report for each interaction what emotion they felt, and which emotion they displayed (for a more detailed description, see the methods section). Asking about emotions felt and emotions displayed separately enables us to operationalize surface acting as instances where the emotion displayed differed from the emotion felt. This corresponds to the operationalization of surface acting in previous studies reported above. Since emotions felt were assessed, we can compare the effects of surface acting thus operationalized with and without controlling for negative emotions felt. Our method further allows us to distinguish surface acting that suppresses a positive or a negative emotion felt.

#### *Hypotheses of Study 1*

1. Surface acting operationalized like in most earlier research, as “displaying another emotion than the emotion felt”, will yield effects that replicate the results of previous studies. Thus, using this ‘classical’ operationalization, we expect that surface acting will have negative effects on well-being, both for negative and positive emotions suppressed (Hypothesis 1a and 1b).
2. Emotions felt in the interaction have a direct effect on well-being (Hypothesis 2). Specifically, positive emotions will be positively, and negative emotions will be negatively associated with well-being after the interaction.
3. If both predictors (emotion felt and surface acting) are entered into the equation, the negative effect of surface acting will be reduced or disappear, while the effect of the emotions felt on well-being will remain (Hypothesis 3).

# Method Study 1

## *Sample and Procedure*

*Sample.* Participants of this study were professionals who had completed at least three years of professional training from a variety of different professions, including clerks, health professionals, electricians, cooks and professional sales people. The participants were recruited as part of a larger study, longitudinal study One hundred participants randomly selected from the general sample were approached and asked to participate in an event-sampling self-observation study. Of the ninety participants who agreed to take part, 75 (83.3%) provided complete data. Participant age ranged from 22 to 37 years ( $M = 25.6$ ;  $SD = 3.3$ ), and 48% were female. The majority (78.7%) of the participants held a full time job. Average job tenure on the current job was 3.7 years ( $SD = 2.58$ ). Participants received a small gift for participating in the study.

*Procedure.* Participants provided survey questionnaire and event-sampling data. Six month prior to the event-sampling data collection, participants had responded to a survey questionnaire containing demographic questions, personality measures and work-related scales not reported here, as part of the larger study. To be introduced into the event-sampling methodology, each participant individually met with a research assistant, where he or she received a detailed instruction on the event-sampling method. For the seven following days, self-observation event-sampling data were collected. Participants were handed seven pre-stamped envelopes to send back their booklets each day.

## *Questionnaire Measures*

*Neuroticism* and extraversion were measured with a short measure of the big-five factors of personality (McCrae & Costa, 1987), developed by Schallberger & Venetz (1999) based on Ostendorf (1990). Participants rated six bipolar adjectives for each of the dimensions. Cronbach's alpha for neuroticism was .74; for extraversion .77.

## *Measures on the interaction level*

*Daily social interactions at work and in private life* were measured using a variant of the Rochester Interaction Records (RIR; Reis & Wheeler, 1991), a self-report instrument that yields detailed information about daily interactions (Reis & Wheeler, 1991). Participants were

asked to fill in an interaction record for each of their interactions that lasted at least 10 minutes and each shorter interaction they judged as important over seven consecutive days. They were encouraged to report on their interactions immediately after the interaction or as soon as they could. During the meeting with the participant, researchers explained that an interaction was defined as any encounter with one or more other persons in which the interaction partners attended to one another and mutually adjusted their behaviour (Reis & Wheeler, 1991); examples of what is considered an interaction (meeting; serving a customer; phone call) and what is not (waiting for a bus with other people; being in the same room) were provided. For each interaction, participants noted the duration, the number of other persons involved, and whether the interaction happened at work or outside of work. All participants filled out the interaction records for a whole working week. We only analyzed interactions at work for this study.

*Emotions felt and surface acting* were assessed with two questions for each interaction: (1) “*In this interaction, which emotion did you feel*” (2) “*In this interaction, which emotion did you show?*” For both questions, participants could tick either “a positive emotion”, “a negative emotion” or “a neutral or no emotion”. From these two questions, two dummy variables for surface acting were calculated: Surface acting while suppressing a negative emotion felt (SA\_neg) was calculated if a negative emotion was indicated as being felt, but either a neutral or positive emotion was displayed (1 = suppressing negative emotion felt). Surface acting when suppressing a positive emotion felt (SA\_pos) was calculated if a positive emotion was felt, but either a neutral or negative emotion was displayed (1 = suppressing positive emotion felt).

*Well-being after the interaction.* Well-being after the interaction was assessed with one question “*how well did you feel after this interaction*” (1 = *very bad*, 5 = *very well*).

## **Analyses**

*Multi-level modelling.* We collected data on the person level and on the interaction level. Thus, data have a two-level hierarchical structure with interactions nested within individuals. We therefore performed multi-level regression analyses to test the hypotheses, using the MLwiN version 2.11 software package (Rasbash et al., 2005). Multilevel modelling is a data analysis method for hierarchical data structures. This regression procedure has the major advantage of allowing the simultaneous estimation of within- and between-persons

effects and their interaction (Byrk & Raudenbush, 1992; Hox, 2002). Moreover, it takes into account the non-independence of the observations; an unbalanced number of observations per person, and it allows missing data. It is therefore well-suited for data based on the RIR (Nezlek, 2001, 2003b).

To test our hypotheses, we began by assessing a null or unconditional model for each dependent variable (i.e. including only the intercept and no predictor variables). Computing an intercept-only model was calculated in order to partition the variance in the dependent variable into its between- and within-person components. This model provides an estimate of intra-class correlation (ICC), that is, the proportion of variance in the outcome variable that is between people (Raudenbush & Bryk, 2002). The models including predictor variables were then compared to the null model, and the increase in fit can be assessed. As suggested by several authors (Hox, 2002; Snijders & Boskers, 1999), continuous predictors where zero was not a meaningful number were grand mean centered prior to analyses.

*Control variables.* On the person level, we controlled for age and gender of the participant since past research has repeatedly shown that women and men experience their interactions in different ways (Reis, 1986; Reis, Senchak, & Solomon, 1985; Wheeler & Nezlek, 1977), and there may also be gender differences in emotion regulation (Kruml & Geddes, 2000; Totterdell & Holman, 2003). We also controlled for neuroticism because previous research has shown that this personality trait predisposes people toward experiencing certain emotions and moods (Brotheridge & Grandey, 2002; Diefendorff & Richard, 2003; Longua et al., 2009, accepted; Watson et al., 1988), and to emotional expressivity (J. J. Gross & John, 1994). We controlled for extraversion because it has been found to be related to more positive emotional experiences and to the effects of surface acting (Diefendorff et al., 2005; Judge, Woolf, & Hurst, 2009). On the interaction level, we controlled for the duration of the interaction, as Morris and Feldman (1997) found that longer interactions may be less routinized, and may thus require more emotion regulation resources.

## Results Study 1

To provide some context, we first report some descriptive data. Participants reported between one and 53 work-related interactions ( $M = 16.23$ ,  $SD = 13.0$ ) over a week. Participants experienced positive emotions in 63.5%, and negative emotions in 12.4% of these interactions. They suppressed their felt emotion in 61.6% of the interactions in which they felt

a negative emotion, but only in 1.3% of the interactions in which they felt a positive emotion. Thus, 89.9% of all surface acting was related to negative emotions felt.

**Table 1:** Means, standard deviations and intercorrelations of level 2 (person) variables

	M	SD	1	2	3
1. Age	25.6	3.3			
2. % female	48%		0.001		
3. Neuroticism (1-6)	2.67	0.65	0.137	-0.077	
4. Extraversion (1-6)	3.88	0.88	-0.167	-0.226	<b>-0.291*</b>

Note: Based on 75 participants. \* p<.05.

**Table 2:** Means, standard deviations and intercorrelations of level 1 (interactions) variables

	Mean (SD)	1	2	3	4	5
1. SA_neg: Suppressing negative emotion felt	7.6%	-				
2. Negative emotion felt	12.4%	<b>.765**</b>	-			
3. SA_pos: Suppressing positive emotion felt	1.0%	-0.027	-0.035	-		
4. Positive emotion felt	63.5%	<b>-.380**</b>	<b>-.497**</b>	<b>.070*</b>	-	
5. Duration of interaction	33.7 (52.4) min	-0.039	-0.032	-0.006	-0.028	
6. Wellbeing after interaction	4.1(.08)	<b>-.412**</b>	<b>-.539**</b>	-0.02	<b>.450**</b>	0.03

Note: Based on 1282 interactions at work reported by 75 participants. \*p <.05; \*\* p<.01. SA = surface acting; Negative and positive emotions felt are dummy variables (0 = not felt; 1 = felt), Surface acting negative and surface acting positive emotions felt are dummy variables (0 = no surface acting; 1 = surface acting). Duration of interactions is in minutes, well-being range is 1 to 5; numbers in parentheses are standard deviations.

### *Effects of suppressing negative and positive emotions felt on well-being*

Hypothesis 1 stated that if we operationalize surface acting as suppressing the felt emotion and do not control for emotion felt, findings from other research are replicated, in that surface acting lowers well-being after the interaction. Hypothesis 2 stated that emotions felt would explain variance on well-being, and hypothesis 3 assumed that controlling for emotions felt will greatly reduce the effects of surface acting. To test these hypotheses, we compared different multi-level regression models. We included age, gender, neuroticism and extraversion as control variables on the person level, and duration of the interaction as control variable on the interaction level. Results are displayed in table 2.

Model 1 shows that surface acting significantly decreases well-being; this is true both for suppressing negative emotions and for suppressing positive emotions. This fully supports hypothesis 1. Model 2 shows that if emotions felt are entered as a predictor, negative emotions felt significantly decrease well-being, and positive emotions felt significantly increase well-being after the interaction. This fully supports hypothesis 2. In this model, the coefficient for surface acting in terms of suppressing negative emotions felt is no longer significant; however, surface acting in terms of suppressing positive emotions felt significantly decreases well-being. This supports hypothesis 3 for the suppression of negative, but not of positive emotions felt. Note that participants higher in neuroticism experience lower well-being after interactions, indicating an influence of trait negative affectivity on well-being after interactions at work.

**Table 3:** Effects of surface acting and emotions felt on well-being after the interaction

Variable	Unconditional model		Model 1		Model 2		
	B	Se	B	Se	B	Se	
Intercept	<b>4.075</b>	<b>0.055</b>	<b>4.162</b>	<b>.075</b>	<b>3.933</b>	<b>0.078</b>	
Level 2							
Age			-0.009	0.015	-0.018	0.013	
Gender (0 = female, 1 = male)			-0.030	0.106	0.003	0.096	
Neuroticism			<b>-0.181*</b>	<b>0.085</b>	<b>-0.170*</b>	<b>0.076</b>	
Extraversion			.113	0.066	0.097	0.059	
Level 1							
Duration of interaction			0.000	0.001	0.000	0.001	
Surface acting suppressing negative emotions			<b>-1.301*</b>	<b>.085</b>	0.036	0.114	
Surface acting suppressing positive emotions			<b>-0.462*</b>	<b>0.235</b>	<b>-0.522*</b>	<b>0.207</b>	
Negative emotion felt					<b>-1.123*</b>	<b>0.101</b>	
Positive emotion felt					<b>0.451*</b>	<b>0.053</b>	
Random effects							
Var level 2	0.166	0.036	0.130	0.030	0.107	0.024	
Var level 1	0.655	0.027	0.519	0.022	0.405	0.017	
Model fit	3202.440		2604.233		2320.560		

Note: Based on 1282 work-related interactions of 75 participants. B = unstandardized coefficients, SE = standard error. The dependent variable is well-being after the interaction, rated on a scale from 1 to 5, higher numbers indicating better well-being. VAR = Variance; \*p<.05

## Discussion Study 1

Our study was based on the observation that most research investigating effects of surface acting at work has not sufficiently controlled for the influence of the emotions felt on well-being, and thus may have overestimated the influence of suppressing emotions felt on well-being. We therefore separately tested the effects of emotions felt and surface acting on well-being after an interaction at work. The results show that the negative effect of surface acting emerges as expected when surface acting is entered as sole predictor. The effect of surface acting disappears when emotions felt are controlled, but only when it is negative emotions that are suppressed. The effect of surface acting remains when positive emotions are suppressed, but experiencing positive emotions also is a significant predictor. These results support our hypotheses with regard to suppressing negative emotions.

Our findings add to the body of knowledge in two respects. First, they indicate that previous research may have overestimated the negative effects of surface acting by not controlling for emotions felt. Secondly, taking emotions felt into account revealed that the effects of surface acting may be different for suppressing positive vs. negative emotions. We will discuss this below.

### *Disentangling the Effects of Regulatory Effort and Emotion Felt on Well-being*

Surface acting by suppressing negative emotions. In our study, almost 90% of surface acting included suppressing negative emotions, and participants engaged in surface acting in the majority of interactions where they felt a negative emotion (61.1%). Thus, surface acting co-occurs predominantly with the experience of negative emotions. This finding is in accordance with previous research showing that display rules at work typically require employees to display positive and suppress negative emotions (Beal et al., 2006; Diefendorff et al., 2006); this applies to interactions with clients, but also with colleagues and supervisors (Henderson & Argyle, 1986; Leary, 1996). Indeed, Lewig and Dollard (2003) found that over 73% employees in her sample reported to be succumbed to positive emotional display requirements and at least several times a day; whereas only 2% reported negative emotional display requirements. Similarly, Diefendorff and colleagues (Diefendorff et al., 2006) report that 89% of their sample reported display rules to show positive emotions. It is therefore fair to say that research on surface acting at work that does not specify the emotions that are

suppressed is mostly research on suppressing negative emotions felt. This confound of emotions felt and emotion regulation renders interpretation of the findings ambiguous, as one cannot decide whether effects found are due to experiencing an emotion or to suppressing it.

Our study enabled us to disentangle the effects of feeling vs. suppressing an emotion. We operationalized surface acting in a way that matches the measures used in previous research in terms of not showing the emotion felt (displaying another emotion or remaining neutral). Using this variable as sole predictor of well-being (our model 1), previous findings are replicated. Adding emotions felt to the model reveals the effect that is central to our research. Not only has feeling negative emotions a strong negative impact on well-being, but the effect of suppressing negative emotions (i.e. surface acting) is no longer significant; it actually reduces to almost zero. Suppressing negative emotions therefore seems to impair well-being mainly because the emotions are negative, not because they are suppressed. Combining the findings (a) that surface acting mainly involves suppressing negative emotions, and (b) that it is the negative emotions that drive the effect, reinforces our concern that previous studies may have overestimated the effects of the regulatory effort of surface acting on employee well-being; a large part of this effect may simply be the effects of the underlying emotion felt.

We were not the first to be concerned with the question of feeling vs. regulating. In their conference presentation, Totterdell and Holman (2001) mentioned a similar result, but do not report data; Zerbe's results also point in a similar direction (Zerbe, 2000). In addition, several researchers have included negative affectivity as control variables in research investigating surface acting, based on similar concerns (Brotheridge & Grandey, 2002; Goldberg & Grandey, 2007). However, to the best of our knowledge, this is the first study that provides an extended test of this concern. This study is based on event-sampling, whereas most other studies are based on general surveys, or experiments. Future research is needed to show whether these findings can be replicated on a more general level. However, our results clearly indicate that future studies should control for the extent to which employees feel negative emotions when assessing surface acting.

Surface acting by suppressing positive emotions. Participants in our study engaged in surface acting in less than 2 percent of interactions where they felt positive emotions. In contrast to the effect for suppressing negative emotions, which disappeared when negative emotions felt were controlled, we found a negative effect of suppressing positive emotions on

after-interaction well-being even after controlling for the effect of the emotion felt. Positive emotions felt enhanced well-being after the interaction, whereas suppressing its display diminishes well-being, clearly showing the negative effect of surface acting. This result is in accordance with the experimental study of Gross and Levenson (1997) showing increases in sympathetic activity also after suppressing the display of positive emotions. Although some authors have shown that in certain professions positive emotions are suppressed (Rafaeli & Sutton, 1991; Sutton, 1991) there is, to the best of our knowledge, no applied research showing effect of suppressing positive emotions on well-being.

The effect of suppressing positive emotions may be due to two processes. First, they may be due to the regulation effort itself, as suggested by many authors (Brotheridge & Lee, 2002; Grandey, Fisk, Mattila et al., 2005; Holman et al., 2002; Vohs, 2005; Zapf, 2002). In addition, surface acting may weaken the positive emotion itself, as shown by Gross et Levenson (1997). Such an effect may be explained by facial feedback (Strack, Martin, & Stepper, 1988) and through negative responses from interaction partners (Côté, 2005). Note that this weakening effect was found only for positive, but not for negative emotions. As we did not measure the intensity of emotions felt over time during the interaction, we cannot test if emotions became weaker when they were suppressed.

In sum, our study confirmed the hypotheses with regard to suppressing negative emotions. For suppressing positive emotions, it did not fully support our hypotheses but results seem theoretically plausible. This situation calls for a replication. Our results concerning the suppression of negative emotions imply a possible confounding of feeling versus regulating emotions in a considerable amount of previous research; such a conclusion would be strengthened considerably when the findings can be replicated. For positive emotions, our results show a positive effect of feeling and a negative effect of suppressing positive emotions. This result, while plausible, was not predicted. Furthermore, it is based on a very small number of situations, as positive emotions are seldom suppressed. We therefore conducted a second study to see if results would replicate. Furthermore, we tested an additional assumption that concerned diverging effects for well-being after the interaction vs. for the quality of the interaction.

## Study 2

There are two objectives of the second study (1) First, we wanted to replicate the results of the first study using the same methodology as in study 1, with a sample of professionals that were more likely to engage in surface acting while feeling positive emotions. We thus included teachers and nurses as participants. In both professions, employees occasionally need to engage in corrective behaviour of their students or patients, or to behave in a neutral way, independent of the emotions they feel (Bolton, 2000; Henderson & Argyle, 1984). We thus expect a higher percentage of surface acting while feeling positive emotions which may increase the validity of the results with regard to emotion felt and surface acting while feeling positive emotions. Our hypotheses were identical to those in study 1 for negative emotions but different for positive emotions (see below).

(2) Secondly, we wanted to investigate whether surface acting may have beneficial effects on the quality of the interaction. In the first study, in accordance with most previous research on emotion work, we concentrated on the effects of surface acting for employee well-being. However surface acting may also have beneficiary effects, particularly on the quality of the interaction (Côté, 2005). This general hypothesis is developed below; testing it constitutes the second goal of study 2.

### *Surface Acting May Benefit Interaction Quality*

Emotional display rules in organizations are established because organizations consider that the display of a specific emotion helps to achieve organizational goals. Indeed, many studies found that the display of positive emotions enhances customer satisfaction with service transaction in diverse contexts, such as banks (Pugh, 2001), shoe stores (Tsai, 2001), and supermarkets (Rafaeli & Sutton, 1990). Unfriendly waiters get fewer tips (Crusco & Wetzel, 1984), and paying compliments to customers enhances tips in restaurants or hair salons (Seiter, 2007; Seiter & Dutton, 2007).

That the display of positive emotions enhances the quality of social interactions is also plausible for other than customer-related interactions. Emotions are contagious in social situations (Hatfield, Cacioppo, & Rapson, 1994; Sy, 2005), and a general norm of reciprocity exists (Gouldner, 1960), which predicts that emotions expressed in an interaction are likely to be matched by interaction partners. Thus, the display of positive emotions enhances the

probability of a positive response, whereas the display of negative emotions is likely to trigger negative responses (Andersson, 1999; E. A. Butler & Gross, 2004; Pearson, 2005). Based on these arguments, surface acting by suppressing negative emotions felt should lead to higher interaction quality.

On the other hand, there is a long general debate on whether people should hide or express their true feelings in social situations (for an excellent overview, see E. A. Butler & Gross, 2004). Researchers have argued that surface acting may diminish interaction quality for several reasons: First, it seems that suppressing one's emotions consumes attention due to the regulatory effort. For example, experimental studies showed impaired memory for social information (Richards & Gross, 1999, 2005), and impaired memory for aspects of the interaction itself if participants were asked to suppress their feelings (E. A. Butler et al., 2003). This may well lower the quality of social interactions (John, 2004). Secondly, it has been argued that surface acting leads to inauthentic displays of emotions. This inauthenticity may be detected by the interaction partners and lowers interaction quality (Grandey, 2000). Indeed, two studies reported by Grandey and colleagues (Grandey, Fisk, Mattila et al., 2005) showed that inauthentic display of positive emotions not only negatively influenced the perception of friendliness, but in addition had a direct negative influence on customer satisfaction under certain circumstances. Similar findings are also reported in a study where service performance was assessed by the service provider him- or herself (Totterdell & Holman, 2003). Based on this research, one can argue that surface acting hampers interaction quality.

In the studies reported above, surface acting was always compared to either genuine positive feelings or the display of positive emotions after reappraisal (deep acting). The studies thus compare authentic and inauthentic display of the same (positive) emotion. However, besides deep and surface acting, an employee may refrain from regulating his or her emotions felt during an interaction, even if a display rule exists, and show his or her true feelings. In this case, the employee engages in emotional deviance (Rafaeli & Sutton, 1987; Tschan et al., 2005). As display rules most often require the expression of positive emotions (Diefendorff et al., 2006; J. J. Gross & John, 1994; Leary, 1996), emotional deviance most often implies to show or vent a negative emotion. This can have negative effects on the interaction, particularly if it is due to a lack of self-control (E. A. Butler & Gross, 2004). Indeed, previous research found that higher general abilities to regulate one's emotions is

related to many indicators of higher interaction quality (Lopes, Salovey, Côté, & Beers, 2005).

Based on the above considerations, we expect that surface acting by suppressing negative emotions enhances interactional quality, if we control for the negative emotion felt in the interaction. We expect a gain in interaction quality because we compare deviance (venting of felt negative emotions) with the suppression of negative emotions felt. The gain in quality in the interactions should not be found if a positive emotion felt is not displayed. Surface acting by suppressing a positive emotion should lower interaction quality as compared to feeling and displaying a positive emotion.

### *Hypotheses Study 2.*

1. With regard to employee well-being, we state the following hypotheses: If the ‘classical’ operationalization of surface acting is used as sole predictor (“displaying another emotion than the one felt”), we expect that surface acting will have negative effects on well-being, both for negative and positive emotions suppressed (Hypothesis 1a and 1b, identical to hypotheses 1a and 1b in Study 1).
2. Emotions felt in the interaction have a direct effect on well-being (identical to Hypothesis 2 in Study 1). Specifically, positive emotions will be positively, and negative emotions will be negatively associated with well-being after the interaction.
3. If both predictors (emotion felt and surface acting) are entered into the equation, the negative effect of surface acting will be reduced or disappear for the suppression of negative emotions (Hypothesis 3a, corresponding to Hypothesis 3 in Study 1); for positive emotions, however, the negative effects of suppression will remain (Hypothesis 3b, different from Hypothesis 3 in Study 1).
4. With regard to interaction quality, we hypothesize that if emotions felt are controlled, the quality of the interaction is judged to be higher if the employee engages in surface acting by suppressing a negative emotion (Hypothesis 4a); but judged to be lower if the employee engages in surface acting by suppressing a positive emotion (Hypothesis 4b).

## Method Study 2

### *Sample, Procedure and Measures*

*Sample.* For study 2, research assistants recruited teachers and nurses. Sixty seven (91.7%) of the 73 participants that initially agreed to participate provided full data. Thus, data of 30 nurses and 37 teachers were included into the study. Participant age ranged from 20 to 58 years ( $M = 33.1$ ;  $SD = 10.5$ ), 79% were female. The majority (59.7%) of the participants held a full time job. One participant held a 30% full time employment equivalent (FTE), and the remaining worked at least a 50% FTE. Average job tenure in the current job was 6.4 years ( $SD = 7.73$ ). Participants received a small gift for participating in the study.

*The procedure* was identical to study 1, and we refer to the method section of study 1 for details. The only difference between the procedure in study 1 and 2 was that participants of study 2 responded to the survey questionnaire immediately before the self-observation period.

*Measures:* With one exception, questionnaire and self-report measures were identical to study 1, we refer thus to the method section of study 1. Cronbach's alpha for neuroticism in this study was .73, and for extraversion .77. Again, interactions were sampled over seven consecutive days, and we included only work-related interactions for this study. Measures for emotions felt and displayed were identical to study 1, as was the measure for well-being after the interaction. In study 2, perceived quality of the interaction was assessed with one question "how was the quality of this interaction?" (1 = very low, 5 = very high).

## Results Study 2

Participants reported between one and 76 ( $M = 17.37$ ;  $SD = 14.5$ ) work-related interactions over a working week. They experienced positive emotions in 56.4% of their interactions, and negative emotions in 14.2% of their interactions at work. They engaged in surface acting in 55.7% of the interactions in which they felt a negative emotion, and in 4.6% of the interactions in which they felt positive emotions. Thus, 75.6% of all surface acting was related to negative emotions felt.

**Table 4:** Means, standard deviations and intercorrelations of Level 2 (Person) Variables

	Aequas	<i>M</i>	<i>SD</i>	age	sex	neur
age		33.12	10.5			
% female		79%		-0.055		
Neuroticism (1-6)		2.74	0.65	<b>-.252*</b>	<b>-.262*</b>	
Extraversion (1-6)		4.26	0.78	.030	-.079	-.101

Note: based on 67 participants. \*  $p < .05$

**Table 5:** Means, standard deviations and intercorrelations of level 1 (interactions) variables

		1	2	3	4	5	6
1.	SA_neg: Suppressing negative emotion felt	7.9%	-				
2.	Negative emotion felt	14.2%	<b>.721**</b>	-			
3.	SA_pos: Suppressing positive emotion felt	2.6%	-0.048	-.066	-		
4.	Positive emotion felt	56.4%	<b>-.334**</b>	<b>-.464**</b>	<b>.143**</b>	-	
5.	Duration of interaction	35.6 (37.29)	-0.033	-0.042	0	0.031	-
6.	Well-being after interacting	3.87 (.96)	<b>-.407**</b>	<b>-.564**</b>	0.043	<b>.525**</b>	-0.009
7.	Quality of the interaction	3.66 (.98)	<b>-.326**</b>	<b>-.489**</b>	-0.019	<b>.485**</b>	0.053
							<b>.701**</b>

Note: Based on 1285 interactions at work reported by 67 participants. \* $p < .05$ ; \*\* $p < .01$ . Surface acting and emotions felt are dummy variables (0,1), duration of interactions is in minutes, well-being and quality ranges are 1 to 5. Numbers in parentheses are standard deviations.

### *Effects of Surface Acting and Emotions Felt on Well-being*

Hypothesis 1 stated that surface acting lowers well-being after the interaction, and hypothesis 2 stated that emotions felt in the interaction have a direct effect on well-being (identical to Hypothesis 2 in Study 1). We tested these hypotheses by comparing different multi-level models, including age, gender, neuroticism and extraversion as control variables on the person level, and duration of the interaction as control variable on the interaction level. Results are displayed in table 6. Model 1 shows that suppressing negative emotions decreases well-being whereas suppressing positive emotions has no effect on well-being. This support hypothesis 1a but not 1b. Model 2 shows that if emotions felt are entered as a predictor, negative emotions felt decrease well-being, and positive emotions felt increase well-being in the interaction. This supports hypothesis 2. In addition, the term for surface acting while suppressing negative emotions (SA\_neg) is no longer significant, which supports hypothesis 3a. Furthermore, surface acting while suppressing positive emotions (SA\_pos) becomes

negatively related to well-being, supporting hypothesis 3b. Note that in this study, none of the control variables significantly influences after-interaction well-being.

**Table 6:** Effects of surface acting and emotions felt on well-being after the interaction

Variable	Unconditional model		Model 1		Model 2	
	B	Se	B	Se	B	Se
Intercept	3.858	0.050	4.002	0.056	3.680	0.062
Level 2						
Age			0.005	0.004	-0.001	0.004
Gender (0 = female, 1 = male)			-0.041	0.112	-0.053	0.105
Neuroticism			-0.081	0.076	-0.005	0.070
Extraversion			-0.063	0.059	-0.096	0.055
Level 1						
Duration of interaction			0.001	0.001	-0.000	0.001
SA_neg			<b>-1.398*</b>	<b>0.089</b>	0.014	0.106
SA_pos			0.128	0.149	<b>-0.262*</b>	<b>0.126</b>
Negative emotion felt					<b>-1.157*</b>	<b>0.088</b>
Positive emotion felt					<b>0.693*</b>	<b>0.050</b>
Random effects						
Var level 2	0.108	0.028	0.080	0.022	0.078	0.019
Var level 1	0.806	0.033	0.674	0.027	0.466	0.019
Model fit	3409.935		3169.363		2717.398	

Note: Based on 1285 work-related interactions of 67 participants. B = unstandardized coefficients, SE = standard error. The dependent variable is well-being after the interaction, rated on a scale from 1 to 5, higher numbers indicating better well-being. VAR = Variance; \*p<.05

### *Effects of Surface Acting on Interaction Quality*

Hypothesis 4a stated that - if controlled for negative emotions felt - engaging in surface acting and suppressing a negative emotion will enhance interaction quality, while suppressing the display of a positive emotion will diminish interaction quality (Hypothesis 4b). This was again tested with multilevel regression analysis, with quality of the interaction as dependent variable. Results are displayed in table 7. In accordance with hypothesis 4a and 4b, the results show that surface acting while suppressing a negative emotion indeed contributes positively and significantly to interaction quality, whereas surface acting while suppressing a positive emotion significantly lowers interaction quality. The analysis further shows an influence of positive and negative emotions felt on interaction quality. None of the control variables (gender, neuroticism, extraversion and duration of the interaction) was significantly related to interaction quality.

**Table 7:** Effects of surface acting and emotions felt on the perceived quality of the interaction

Variable	Unconditional model		Model 1	
	B	Se	B	Se
Intercept	<b>3.640</b>	<b>0.058</b>	<b>3.395</b>	<b>0.068</b>
Level 2				
Age			<b>0.009*</b>	<b>0.005</b>
Gender (0 = female, 1 = male)			-0.082	0.117
Neuroticism			0.015	0.078
Extraversion			-0.060	0.061
Level 1				
Duration of interaction			0.001	0.001
SA_neg			<b>0.259*</b>	<b>0.113</b>
SA_pos			<b>-0.549*</b>	<b>0.135</b>
Negative emotion felt			<b>-1.082*</b>	<b>0.095</b>
Positive emotion felt			<b>0.699*</b>	<b>0.053</b>
Random effects				
Var level 2	0.162	0.038	0.098	0.024
Var level 1	0.816	0.033	0.537	0.022
Model fit *2loglikelihood	3446.256		2903.472	

Note: Based on 1285 work-related interactions of 67 participants. B = unstandardized coefficients, SE = standard error. The dependent variable is perceived quality of the interaction, rated on a scale from 1 to 5, higher numbers indicating better well-being. VAR = Variance; \*p<.05

## General Discussion

### *Effects on After-Interaction Well-being*

Study 2 replicates the main results of study 1. If we control for the emotions felt in interactions, suppressing negative emotions felt is no longer significantly related to well-being after the interaction; by contrast, suppressing positive emotions emerges as being related to lower well-being. In both studies, the effect for surface acting disappears for negative, but emerges for positive emotions suppressed when the felt emotion is controlled.

Note that in Study 2, the negative effect of suppressing positive emotions appeared only when positive emotions felt are controlled for, indicating a suppressor effect. This makes sense because suppressing positive emotions contains two components, which should have opposite effects. Feeling a positive emotion should enhance well-being, suppressing through surface acting should diminish it. These two opposing effect may cancel each other out. As a

result, surface acting has no effect initially, but when the variance associated with feeling a positive emotion is removed, the effect of regulating the emotion emerges.

Thus, feeling negative emotions overrides any effects of suppressing them. By contrast, feeling positive emotions cancels out negative effects of suppressing them; consequently, the negative effects of suppressing positive emotions emerges when feeling them is controlled. The effect of feeling positive emotions does not seem to be strong enough to override the negative effects of surface acting, which would produce a positive association between suppressing positive emotions and well-being as long as feeling the emotion is not controlled. This finding is in line with negativity theory, which suggests that negative emotions felt diminish well-being more than positive emotions felt enhance it (Baumeister et al., 2001). Furthermore, positive emotions fade out more quickly than negative ones (Brosschot, Gerin, & Thayer, 2006). Altogether, therefore, the different effects of surface acting when feeling positive versus negative emotions does seem theoretically plausible.

Although in the second study we deliberately sampled professions that are more likely to suppress positive emotions at work (nurses and teachers), suppressing positive emotions felt is still very rare (around 5% as compared to 2% in the first study). Nevertheless, since the results concerning suppression of positive emotions are practically identical in both studies, we feel that these results cannot easily be explained by chance effects due to a small number of interactions where surface acting involves the suppression of positive emotions.

Together, the results of both studies underscore our concern that previous research may have overestimated the negative effect of surface acting on well-being, because in most of these studies, the effects of the felt emotions have not been controlled for.

Our results also show the importance of negative, but also of positive emotions felt for well-being after an interaction, in accordance with affective events theory (Weiss & Cropanzano, 1996). Our results are also in accordance with other research investigating emotions felt and well-being at work as well as after work (Basch & Fisher, 2000; Grandey et al., 2002; Judge & Ilies, 2004; Messerli, Tschan, Semmer, & Totterdell, 2009), or studies relating affective events at work to more general attitudes (Fuller et al., 2003; Weiss & Cropanzano, 1996).

Furthermore, the results of both studies show that surface acting may have different effects depending on the emotion involved. Other scholars have already pointed out that the

assumption that the effect of emotion regulation is the same for all emotions needs more investigation (Côté, 2005), and our results can support this claim. In addition, a recent study has shown that display rules are very different for discrete emotions, and also differ by interaction targets (Diefendorff & Greguras, 2009). Thus, the investigation of surface acting related to discrete emotions clearly needs more attention.

### *Surface Acting Is Related to the Quality of the Interaction*

The second set of hypothesis for study 2 tested whether surface acting can be related to the quality of an interaction. Our results show that suppressing negative emotions is related to higher perceived quality of the interaction, while suppressing positive emotions is related to lower interaction quality.

The result that surface acting while suppressing negative emotions enhances interaction quality corresponds to the basic idea behind display rules: Their objective is to assure specific emotional interactional quality, even if the employee does not genuinely feel this emotion, and even if the situation has a high risk to elicit negative emotions, for example while dealing with difficult customers (Dormann & Zapf, 2004; Goldberg & Grandey, 2007). Although some authors have suggested that surface acting is a “cynical attempt” to adhere to display rules (Diefendorff et al., 2008), others have recommended engaging in surface acting under certain circumstances, for example, if there is not enough time for deep acting (Larson & Yao, 2005). Furthermore, research on the strategic use of emotions in interactions shows that strategic emotional display indeed influences the interaction in the intended direction (Kopelman, Rosette, & Thompson, 2006; Thompson, Medvec, & Seiden, 2001). This suggests that surface acting often is not only accepted, but may be useful to maintain interaction quality.

However, previous research has mostly found that surface acting impairs interaction quality (Erickson & Wharton, 1997; Grandey, Fisk, Mattila et al., 2005). The main explanation for this negative relationship are issues of inauthenticity. Previous research showed that surface acting creates inauthentic feelings while doing it (Brotheridge & Lee, 2002) and observers judge people that engage in surface acting as less authentic (Grandey, Fisk, Mattila et al., 2005). Furthermore, laboratory studies have found that perceived inauthenticity of interaction partners indeed impairs interactions (E. A. Butler et al., 2003).

Note that the research cited above has compared authentic displays (e.g. due to deep acting) with inauthentic displays. In this study, however, we compare surface acting when negative emotions are felt with the expression of negative emotion in interactions. As general display rules require not displaying negative emotions, we are comparing surface acting with “emotional deviance”. Emotional deviance is assumed when the emotion expressed differs from the display rule (Hochschild, 1979; Thoits, 1990). Although there might well be a loss of interaction quality based on inauthentic emotional display, our data suggest a net gain in quality through surface acting as compared to venting one’s negative emotions. Surface acting may not be the best strategy for high quality interactions, but it seems to be better than deviance. In addition, to the extent that surface acting is employed strategically to attain one’s interactional goals, its detrimental effects may be attenuated. This has indeed been shown in a study investigating emotion work with patients (Martinez-Inigo, Totterdell, Alcover, & Holman, 2007).

While the arguments stated above may be valid for the most common case of surface acting (suppressing negative emotions felt), our results also show lower interaction quality when people engage in suppressing positive emotions felt. This may be best explained by the social interaction model of emotion work that suggests that the reactions of the interaction partner have to be taken into account (Côté, 2005; Côté, Miners, & Moon, 2006). Thus, if a positive emotion is not shown, or even replaced by displaying a stern attitude, this may trigger more negative reactions from the interaction partner and thus impair interaction quality.

Note that, for assessing interaction quality, we again controlled for the underlying emotion felt. Similar to the results for well-being, the analyses show that negative emotions are related to lower, and positive emotions are related to higher interaction quality. If we run an analysis without controlling for the emotions felt, we find a large negative effect of the contaminated measure of surface acting while suppressing negative emotions on interaction quality, and no significant effect of the contaminated measure of surface acting while suppressing positive emotions. These results mirror those for well-being. Thus, disentangling the influences of emotions felt and surface acting offers new insight into the specific effects of emotion regulation not only on well-being but also on interactional quality.

### *Similar Results in Two Different Samples*

In both studies, we used the same event-sampling methodology, asking participants to report every interaction lasting ten minutes or more or being shorter, but important. In study 2, we added an item asking about interaction quality. Given that the samples differed in age as well as in professions, it is interesting to note that the studies yield very similar results not only with regard to the hypotheses tested but also with regard to descriptive aspects of interactions. There is a similar number of interactions reported in both studies, around 17 work-related interactions for one working week; and mean duration of the interactions was similar (34 vs. 36 minutes). The observations in this study also correspond to those of other studies using a similar methodology for the number of interactions reported (Peeters et al., 1995) as well as for the mean duration (Mann & Cowburn, 2005).

In both studies, in the majority of interactions positive emotions were felt, and surface acting was most often done when feeling negative emotions. As we expected, nurses and teachers showed somewhat more surface acting suppressing a positive emotion (4.6%) as participants in study 1 (1.3%). The very similar results with regard of the hypotheses tested in both studies indicate that our findings may be generalizable to different professions.

Of course, the similarity of results is important for the associations found as well. We already mentioned that positive emotions are suppressed rather infrequently. Results based on a single study would, therefore, hardly justify strong conclusions. Replicating these results in an independent sample, however, cannot easily be attributed to chance effects. With regard to negative emotions suppressed, one may argue that the finding of feeling a negative emotion being more important than suppressing it is strongly influenced by chance, because feeling a negative emotion is strongly correlated with suppressing it. Such correlations among predictors are known to enlarge standard errors and may lead to unstable regression coefficients TARGET (J. Cohen, Cohen, West, & Aiken, 2003). Again, such an argument may be valid for a single study; the fact that this effect replicated in Study 2 makes this interpretation rather unlikely. Furthermore, note that already the bivariate correlation between well-being after the interaction and feeling negative emotions is larger than the correlation with suppressing negative emotions. Although our results do call for further replication, they are very unlikely to represent a chance finding due to multicollinearity.

## *Assessing Surface Acting with Event-Sampling Methodology*

Most knowledge about emotion work stems from studies measuring emotion work strategies on a general level, using general assessments investigating emotion work and well-being on a general level. However, emotion work occurs in interactions, and thus, event-sampling methods are very appropriate for the study of emotion work (Diefendorff et al., 2005; Holman et al., 2002). One of the main advantages is that this methodology collects data about each interaction, making it possible to compare the specific effects of different strategies of emotion regulation. In addition, the participants were asked to fill in the interaction records immediately after the interaction, which diminishes biases of summarization and memory (Nezlek, 1990).

### *Limitations and Strengths*

Several limitations of these studies have to be addressed. First, in both studies, a limited range of professions were sampled, and in both studies, similar to other studies including experience-sampling, the sample size was relatively small (N=73 and 67), and the observational period was relatively short (one week). Statistical power of the analyses is therefore limited. Secondly, in accordance with the recommendations concerning the Rochester Interaction Record methodology (Reis & Wheeler, 1991) we only included interactions lasting ten minutes or longer or being judged as important. For some professions in our sample that have many, but typically short interactions (for example sales people), we may not have captured some of their everyday interactions, and this potentially limits the generalizability of the results. Third, as often found in research including emotions, all data are based on self-report, which bears the danger that a mono-method bias may have influenced the relationship between the study variables. We tried to address this bias by collecting the data at different points in time. For example, personality was measured six months prior to experience sampling in Study 1, and at least a day prior to experience sampling in study 2. In both studies, participants reported their interactions in different booklets per day. Furthermore, since negative affectivity has been cited as one of the most important general biases for self-report data (Podsakoff et al., 2003), neuroticism was included in all analyses. Fourth, given that both, well-being and interaction quality were measured immediately after the interaction and after the participants had reported their emotion and emotion regulation, causality cannot be reliably determined. Furthermore, as the event-sampling methodology puts a heavy burden on the participants who had to fill in their interaction records several

times a day, we could only include a limited number of questions. In particular, we assessed well-being after the interaction and quality of the interaction with single items and may thus have used measures with limited reliability.

This study also has strengths. One of the strengths of the multilevel design is that we were able to exert a ‘double’ control for negative and positive emotions felt: On the person level we controlled for neuroticism and extraversion, and on the interaction level for emotions felt during the interaction. Another strength is our operationalization for surface acting that allows to disentangle the effects of emotions felt and of surface acting. A third strength is that we replicated the results of study 1 in another, independent sample.

### *Implications*

Our results have implications both for practical concerns and for theory building and research. The main results show that it is indeed important to disentangle the effects of the underlying emotion felt and the effect of surface acting when assessing the consequences of emotion work. Our results suggest that previous research may have overestimated the negative effects of surface acting on well-being, at least for the most common case of surface acting, that is, the suppression of negative emotions. If our results can be replicated this may partially shift the discussion from the effects of regulatory effort as source of strain back to effects of working conditions that lead to interactions eliciting negative emotions, such as interactions with difficult customers (Dormann & Zapf, 2004), conflicts at work (De Dreu, 2008), or the relationship with the superior (Glaser, 2006). Furthermore, since suppressing negative emotions seems to improve interaction quality, its positive effects should not be overlooked. As a consequence, organizations should not simply prescribe display rules but offer more extended training in social competences, where employees get a better understanding of the negative and positive effects of emotion work, and where they are trained to use emotion regulation skilfully, thus enhancing both the goals of the organization and their own personal goals.

With regard to research, our studies strongly suggest that future research should go beyond potentially confounded measures of surface acting; it should include measures of felt emotions as control variables when estimating the effect of surface acting. Future research should also investigate the effects of emotion regulation on well-being as well as on the quality of interactions and the extent to which interaction goals are more easily fulfilled

through surface acting. Finally, we feel that research should become more fine-grained with regard to assessing specific emotions, to assessing *degrees* of emotions felt and displayed, and to different forms of emotion regulation (Diefendorff & Greguras, 2009).



# Chapter 6

## General discussion and conclusion

On the basis of a micro-analytic research method, a variant of the Rochester Interaction Record (Nezlek et al., 1983; Wheeler & Nezlek, 1977), the goal of the present dissertation was to make a fine-grained analysis 1) of the relationship between positive and negative emotions experienced in everyday work-related and private social interactions and bedtime mood (i.e. end-of-day well-being), and 2) of the relationship between surface acting and emotions felt in social interactions at work and situational well-being and interaction quality. The two empirical studies that make up this dissertation have in common the investigation of the relationship between emotions experienced in social interactions and well-being.

In the first study, we investigated (1) if conditions at work in general influence emotions felt in interactions at work, (2) how these emotions influence emotions in interactions after work, and (3) how emotions in social interactions at work and after work influence bedtime mood. With regard to job characteristics, our hypotheses did not find much support. Time pressure showed no effect at all, and control only showed one effect that was in accordance with our hypotheses, and that effect disappeared once the social conditions were controlled. Pertaining to the relationship between emotions felt at work and after work, the results show mood congruent spillover from emotions felt in interactions at work to interactions after work the same day, supporting spillover theories (Story & Repetti, 2006). We also found support for compensation theories of spillover in that people experiencing more negative emotions at work were more likely to compensate with more positive emotions after work. As predicted, however, this effect occurred only if partner social support was high. Finally, negative, but not positive, emotions spilled over from work to bedtime mood, whereas negative as well as positive emotions experienced after work both influenced bedtime mood. I discuss these findings below.

In the second study, we investigated the impact of surface acting based on emotion regulation theories (Grandey, 2000) and the influence of the emotions felt on well-being after the interaction (studies 1 and 2) and on interaction quality (study 2). Results of study 1 show that the negative effects of surface acting on well-being while suppressing negative emotions

felt are no longer significant when controlling for the influence of emotion felt, whereas surface acting while suppressing positive emotions felt becomes negatively related to well-being. Study 2 replicates these findings and in addition shows that surface acting while suppressing negative emotions enhances perceived interaction quality whereas surface acting while suppressing positive emotions diminishes interaction quality. The results support assumptions suggested by the social interaction model of emotion work (Côté, 2005). These findings are discussed below.

In the final chapter that follows, I first provide an overview of what has been addressed in the present dissertation. After, I review the main findings that stem from the two empirical studies presented. I then discuss the limitations and strengths of both studies and finally the implications and suggestions for future research. I attempt to discuss all these elements integrating as much as possible Studies 1 and 2. When not feasible, I discuss Studies 1 and 2 separately.

## **1 Theoretical discussion**

In the first two chapters of this dissertation, I provided the theoretical background necessary to a complete understanding of the two studies we conducted. First, I provided a definition of affect, mood and emotions. I defined emotions as intense, rapidly-changing reactions precipitated by specific events (Lazarus, 1991b) and underlined that emotions are best conceptualized as component processes (e.g. Scherer, 1984).

I then dealt with the structure of negative and positive emotions by providing a brief summary of the discrete approach (e.g. Ekman, 1992; Izard, 1977) and the dimensional approach (e.g. J. A. Russell, 1980; Watson et al., 1999) to emotion theory. This theoretical discussion led us to a methodological part where I introduced the Geneva Emotion Wheel and discussed its methodological strengths. The Geneva Emotion Wheel is a particularly user-friendly instrument, well-suited to assess the feeling component of emotion as well as its intensity.

Third, I reviewed the functions of negative and positive emotions. I emphasized that the functions of negative emotions are best represented in the action tendencies they spark and that the functions of positive emotions are best represented in the broadened thought-action repertoires they engender. I put a special emphasis on Fredrickson's broaden-and-build theory

(Fredrickson, 2004a; Fredrickson & Branigan, 2005). Altogether, these three parts constituted a general theoretical background devoted to a more complete understanding of the issues under investigation in our two empirical studies (Chapters 4 and 5).

The fourth section of Chapter 1 pertains to the effects of emotions experienced in social interactions. There, I reported from literature dealing with the effects of positive and negative social interactions on well-being. The main rationales for reporting from literature on the effects of positive and negative social interactions were twofold: 1) I argued that the literature on the effects of positive and negative social interactions on well-being is informative of the effects of positive and negative emotions experienced in social interactions, respectively, on well-being and 2) I did that given the paucity of studies that have looked at the effects of positive and negative emotions experienced in social interactions on well-being. This section on the relationships between social interactions and well-being constituted the theoretical background required for Study 1 (paper 1), presented in Chapter 4.

In Chapter 2, I subsequently provided some theoretical background on emotion regulation, emotion work and their effects. Both the emotion regulation and the emotion work literatures point to the negative effects of suppressing one's emotions on well-being (Brotheridge & Lee, 2002; Grandey, 2003; J. J. Gross, 1998a; J. J. Gross & John, 2003; J. J. Gross & Levenson, 1997; J. J. Gross & Levenson, 1993; Hochschild, 1983; Pugliesi, 1999; Zapf et al., 1999). From the literature on emotion work, we also noticed that most of the studies investigating surface acting have been conducted on a general level. In this dissertation, we have investigated surface acting (i.e. the suppression of positive and negative emotions) at an interaction level and with an event-sampling methodology. Our second study (Paper 2) has been presented in Chapter 5.

In Chapter 3, I provided the methodological background for our two empirical studies (studies 1 and 2). This chapter mainly focused on the methodology used in the present dissertation, its strengths and disadvantages.

Chapter 4 is made up of our first Paper "Bedtime mood as a function of emotions experienced in social interactions at work and in private life" (Study 1). As we saw, this Paper adds to the current literature in several ways. First, contrary to previous research, it considers all elements of the chain from (a) general work characteristics to (b) emotions experienced in

social interactions at work, from these to (c) emotions experienced in social interactions after work, and from there to (d) evening mood.

Second, in Study 1 we assessed positive and negative emotions experienced during social interactions with the same methodology. We could therefore analyze the impact of positive and negative emotions experienced in work-related interactions on emotional experiences in interactions after work as well as the (combined) influence of both on bedtime well-being separately. Past research has, for the most part, failed to consider positive and negative experiences in a balanced way, that is, (a) together, and (b) with a comparable methodology (Newsom et al., 2003). Studies investigating the effect of affective experiences at work typically have concentrated on negative affect (Ashkanasy & Ashton-James, 2007; Lyubomirsky et al., 2005); the influence of positive affect at work on well-being is still understudied (see S. Gross et al., 2009, for an exception; Heaphy & Dutton, 2008; Roberts, 2006). On the other hand, studies investigating the effects of social exchanges in private life have predominantly focused on the positive aspect of supportive social ties, and have somewhat neglected the effect of negative private interactions (Newsom et al., 2003; Schuster et al., 2004; Walen & Lachman, 2000). Furthermore, many studies have used non-comparable measures for the positive and negative aspects of social exchanges (e.g. because they were of different dimensionality; Newsom et al., 2003), which may have biased the results (Finch et al., 1999).

Third, we investigated the influence of everyday experiences on well-being. Most studies investigating emotions have asked participants to either ‘summarize’ their emotional experiences over a given period of time or to recall emotionally-marked events (e.g. stressors and uplifts, or emotional episodes). However, results that are based on reflecting emotionally salient events may underestimate the importance of regular everyday experiences (Fisher, 2002). Previous research has shown that even mild affect states can influence behaviours and mood (Forgas, 2006; Isen & Baron, 1991). In asking participants to first report social interactions, and then the emotions felt in these interactions, we avoided using emotional experiences as a selection criterion. Thus, a third contribution of Study 1 is that it included mild emotional experiences in everyday social interactions, rather than using emotional experiences as the cue for reporting events.

Our second Paper “It may mostly be the emotional experience. Disentangling the effects of experiencing versus suppressing emotions on well-being and interaction quality in

interactions at work” (Study 2) constitutes Chapter 5. With our second paper, we contribute to the research on the effects of suppression of emotions or surface acting (SA) on well-being and interaction quality in two respects. First, we contended that in most previous research investigating surface acting, the operationalization of SA did not allow to disentangle the effects of the underlying emotion felt from the effects of regulatory effort through SA. Given that previous research on emotion work has found that SA has an important influence on well-being and interaction quality, and previous research on emotions at work has stated that emotions felt influence well-being and interaction quality, these two potential effects should be tested simultaneously. We thus conducted a study that includes a measure for SA as well as a measure for the emotion felt in interactions. This allowed to disentangle the effects of emotions felt and SA on the dependent variables.

Secondly, we used an event-sampling methodology and assessed emotion work in work-related interactions. Most previous research has investigated emotion work requirements, the intensity of emotion regulation at work as a general working condition, and has also assessed effects in general terms. Event-sampling, using a variant of the Rochester Interaction Records methodology (Reis & Wheeler, 1991) allows to assess SA and outcomes on the level of single interactions. In using this methodology, we contributed to the understanding of short term effects of emotion regulation on well-being and on interaction quality.

## *1.1 Main findings of Study 1 (Paper 1)*

### *1.1.1 General working conditions and social conditions influence emotions felt*

As a contribution to AET, we investigated the influence of working conditions and social conditions on emotions felt in everyday interactions at work. We expected job characteristics (demands and control) and social conditions (social stressors and LMX) to influence emotions experienced in social interactions at work. With regard to job characteristics, our hypotheses did not find much support. Time pressure showed no effect at all, and control only showed one effect that was in accordance with our hypotheses, and that effect disappeared once the social conditions were controlled. As discussed in the introduction, job characteristics have been found to influence emotions in other studies. The question therefore arises why our results do not conform to this pattern. We feel that the main reason lies in the fact that we did not assess affective events directly, but rather the emotional quality of social interactions.

Many social interactions take place independent of job conditions. Moreover, situational characteristics may be much more important for emotions experienced than chronic conditions, such as time pressure. Note that these results do not preclude that current, momentary time pressure would exert an influence (Kahneman et al., 2004). For chronic job control, matters are similar yet somewhat more complicated. Control does seem to contain some variance that is related to emotions in interactions, but this variance is shared with social conditions. Therefore, the effect of control on negative emotions disappears when social conditions are in the model; in addition, social conditions act as suppressor variables with regard to positive emotions: When social conditions are controlled, the remaining variance in chronic job control reflects that part of control that is detrimental rather than positive. The relationship between control and social conditions certainly deserves more attention in future studies.

Support for our hypotheses was greater for chronic social conditions. This makes sense, as interaction styles more directly reflect social conditions in general. LMX predicts positive emotions only, since the scale emphasizes the positive aspects of the relationship with the superior (Liden et al., 1993), and high LMX may be regarded as an indicator of a better standing in the work group. We have no immediate explanation, however, for the fact that the effect of social stressors was found for positive emotions only. Note, however, that this effect was only marginally significant; however, without LMX in the model, it did become significant, indicating that social stressors do contain relevant variance. It is conceivable that in a work climate characterized by social tensions (i.e. high social stressors), employees may not experience more negative emotions in social interactions because they successfully avoid interactions with disliked co-workers (Henderson & Argyle, 1986). Nevertheless, even when interacting with colleagues they like, they may experience fewer positive emotions than in a relaxed social environment. Our analyses contribute to AET especially by showing the importance of social conditions for the experience of emotions in work-related interactions. Furthermore, our results indicate different effects of social conditions on positive vs. negative emotions; the exact nature of these effects seems to be a promising area for future investigations.

Note that chronic conditions at work were assessed before the assessment of everyday emotions. The emotions experienced during the observation period could, therefore, not have caused the answers to the survey questionnaire. Furthermore, we controlled for potential

influences of the personality variables neuroticism and extraversion (Longua et al., 2009, accepted), and we also controlled for mood the previous evening, thus excluding short-term temporal effects of previous mood.

### *1.1.2 Influences on emotions felt in interactions after work*

In the second part of the model, we assessed to what extent emotions felt in interactions at work would spill over to emotions in interactions after work. In accordance with our predictions, we found mood-congruent spillover: Participants who felt more negative emotions in interactions at work experienced more negative emotions in interactions after work, and more positive emotions at work triggered more positive emotions after work. These results support mood-congruency approaches (Mayer et al., 1992). In addition, the results on positive emotions complement earlier findings about the effects of daily strain at work on subsequent interactions, which focused on negative aspects only (Repetti, 1989, 1992, 1994; Story & Repetti, 2006). It is interesting to note that decision latitude negatively influences negative emotions felt after work even after controlling for emotions felt in interactions at work.

### *1.1.3 Social support from partner allows mood regulation after work*

A particularly important finding of this study is that negative emotions in interactions at work seem to trigger positive emotions in interactions after work when partner support is high. Based on compensation theories of spillover (Edwards & Rothbard, 2000) and the mood regulation model (R. J. Larsen, 2000), we had expected such an effect. Earlier findings indicated that negative emotions at work led to more withdrawal from social contacts (Repetti, 1992), and that people had more difficulties to engage in mood regulating recovery activities after a hard day at work (Sonnentag & Jelden, 2005, April). Our results complement these findings by showing that such effects may be reversed when special circumstances, that is, high social support from the partner, are present (Edwards & Rothbard, 2000). We assume that the caring and understanding communicated by supportive spouses may change the appraisal of negative events, support effective coping with them, or divert people's attention to more positive aspects of life.

#### *1.1.4 Predicting bedtime mood by general conditions at work as well as emotions in daily social interactions*

A main focus of Study 1 was to assess how positive and negative emotions felt at work influence bedtime mood. For negative emotions, we found direct effects of negative emotions felt in interactions at work as well as after work on bedtime mood. The effects of negative emotions work are direct as well as indirect, via emotions after work (Wells et al., 1999).

For positive emotions felt, things are different. Positive emotions experienced at work do influence positive emotions after work, but they do not directly influence bedtime mood. This may partly be due to the fact that the positive emotions experienced at work were less pronounced than positive emotions after work. It is also known that positive emotions fade more quickly (Brosschot & Thayer, 2003) than negative emotions. From this perspective, it makes sense that the effects of positive emotions are found for a short period only. The finding that negative emotions have an impact on bedtime mood regardless of timeframe (work vs. after work) and context (work vs. private), whereas positive emotions have such an impact only when felt after work also underscore the well-known negativity bias, which indicates a more pervasive and longer-lasting effect of negative, as compared to positive events (Baumeister et al., 2001).

Since we did not assess all positive affective experiences at work, but only emotions in social interactions, our results do not exclude that positive emotions at work do influence evening mood. Previous research has shown that many, if not most, negative experiences are related to interactions. By contrast, many positive experiences at work seem to relate to task accomplishment rather than to social interactions (Basch & Fisher, 2000; Mignonac & Herrbach, 2004). Had we measured a wider range of positive emotions at work, such as success with a task, effects on bedtime mood might have been found, as in a study by Miner et al. (2005) who found positive work events to be related to after-work mood.

A noteworthy aspect of our results concerns interactions between emotions at work and after work. Several combinations of emotions would have been plausible theoretically – positive at work x positive after work (upward spiral); negative at work x negative after work (downward spiral); negative at work x positive after work (compensation, analogous to the undoing effect; Fredrickson et al., 2000), and positive at work x negative after work (negative compensation). None of these interactions was statistically significant. Such effects have been found in a few studies (S. Gross et al., 2009, for compensation effects; e.g. Wells et al., 1999,

for downward spirals), but were not confirmed by other authors (David et al., 1997; Manne et al., 1997; Rook, 2001). Our results do not necessarily indicate that such effects did not occur at all. Rather, it is quite possible that spirals and / or compensation effects may have occurred, but the emotional experiences involved were not part of social interactions, for example emotions related to other affective events. We therefore cannot draw firm conclusions from these results.

*1.1.5 Personality and general work-related aspects influence bedtime mood, but not necessarily emotions in interactions*

An interesting finding of Study 1, although not part of our hypotheses, was that personality had rather little influence on emotions felt in interactions but did influence evening mood: We found no influence of neuroticism on emotions felt at work or after work, and extraversion only influenced positive emotions felt at work. However, trait neuroticism influenced bedtime mood. We believe that these effects are tied to our way of measuring emotions not in terms of affective events or experiences directly, but as part of ongoing social interactions. Most variance of emotional experiences in interactions at work and after work is on the interaction level, suggesting that their emotional quality depends on many factors other than the focal person's neuroticism. Specifically, many other events at work and after work elicit emotions. By contrast, well-being at bedtime directly reflects the focal person's affective state. Under these conditions, neuroticism is more likely to have a direct effect (see similar results by Fritz & Sonnentag, 2005).

In a similar vein, the influence of chronic social stressors on emotions in interactions at work was weak and only marginally significant, and it was confined to positive emotions. Nevertheless, higher chronic work-related social stressors did diminish bedtime mood. We have argued above that social conditions should influence social interactions more directly, as they, at least partly, reflect a general style of interacting. Why then should there be an impact on bedtime mood beyond the indirect influence on social interactions at work? Chronic social conditions are indicative of a more general social climate regardless of specific interactions. For example, one of the items of the social stressors scale refers to frequent conflict with colleagues. Such a propensity for conflict will be present even if one does not interact with the colleagues in question on a given day. It therefore is plausible that social conditions have an impact beyond specific social interactions. However, this argument does not explain why it is LMX (a positive measure) that has the stronger impact on emotions during social interactions, whereas it is social stressors (a negative measure) that influences bedtime mood.

This result may be connected to the negativity bias in conjunction with the special impact of social-evaluative threats. Social-evaluative threats seem to elicit reactions that are especially strong and long-lasting (Dickerson & Kemeny, 2004). It therefore seems likely that of the two measures of social conditions, which share quite some variance, the positive one (LMX) takes precedence in the short run. In the long run, however, negative aspects take precedence (Newsom et al., 2003), and negative social aspects (whether connected to same-day social interactions or not) come to mind and influence mood. However, these explanations, although based on existing research, are speculative and require further investigation.

It also is noteworthy that the suppressor effect with regard to chronic job control that was observed in the prediction of emotions at work also emerges in the prediction of bedtime mood. Specifically, control was a negative predictor of good mood. The unique variance in control that is left after social conditions are controlled seems to reflect the downside of control. In a positive sense, control entails the opportunity to make decisions. It may, however, also contain an aspect of a necessity to make decisions, which entails a risk of making wrong decisions, and may be rather stressful (Frese, 1989c; Meier et al., 2008). Worry about this responsibility may well result in rumination (Brosschot & Thayer, 2003), and thus influence bedtime mood. Note that all these results are obtained while controlling for prior day bedtime mood, so all these results cannot easily be explained by a mood spillover from one day to the next.

## *1.2 Main findings of Study 2 (paper 2)*

### *1.2.1 Effects on after-interaction well-being*

Together, the results of both studies indicate that if we control for the emotions felt in interactions, suppressing negative emotions felt is no longer significantly related to well-being after the interaction; by contrast, suppressing positive emotions emerges as being related to lower well-being. In both studies, the effect for surface acting disappears for negative, but emerges for positive emotions suppressed if the felt emotion is controlled. Although in Study 2 we deliberately sampled professions that are more likely to suppress positive emotions at work (nurses and teachers), suppressing positive emotions felt is still very rare (around 5% as compared to 2% in the first study). Nevertheless, since the results concerning suppression of positive emotions are practically identical in both studies, we feel that these results cannot easily be explained by chance effects due to a small number of interactions where surface acting involves the suppression of positive emotions.

The abovementioned results underscore our concern that previous research may have overestimated the negative effect of surface acting on well-being, because in most of these studies, the effects of the felt emotions have not been controlled for.

Our results also show the importance of negative, but also of positive emotions felt for well-being after an interaction, in accordance with affective events theory (Weiss & Cropanzano, 1996). Our results are also in accordance with other research investigating emotions felt and well-being at work as well as after work (Basch & Fisher, 2000; Grandey et al., 2002; Judge & Ilies, 2004; Messerli et al., 2009) or studies relating affective events at work to more general attitudes (Fuller et al., 2003; Weiss & Cropanzano, 1996).

Furthermore, the results of both studies show that surface acting may have different effects depending on the emotion involved. Other scholars have already pointed out that the assumption that the effect of emotion regulation is the same for all emotions needs more investigation (Côté, 2005), and our results can support this claim. In addition, a recent study has shown that display rules are very different for discrete emotions, and also differ by interaction targets (Diefendorff & Greguras, 2009). Thus, the investigation of surface acting related to discrete emotions clearly needs more attention.

### *1.2.2 Surface acting is related to the quality of the interaction*

The second set of hypotheses for study 2 tested whether surface acting can be related to the quality of an interaction. Our results show that suppressing negative emotions is related to higher perceived quality of the interaction, while suppressing positive emotions is related to lower interaction quality.

The result that surface acting while suppressing negative emotions enhances interaction quality corresponds to the basic idea behind display rules: Their objective is to assure specific emotional interactional quality, even if the employee does not genuinely feel this emotion, and even if the situation has a high risk to elicit negative emotions, for example while dealing with difficult customers (Dormann & Zapf, 2004; Goldberg & Grandey, 2007). Although some authors have suggested that surface acting is a “cynical attempt” to adhere to display rules (Diefendorff et al., 2008), others have recommended engaging in surface acting under certain circumstances, for example, if there is not enough time for deep acting (Larson & Yao, 2005). Furthermore, research on the strategic use of emotions in interactions shows that strategic emotional display indeed influences the interaction in the intended direction

(Kopelman et al., 2006; Thompson et al., 2001). This suggests that surface acting often is not only accepted, but may be useful to maintain interaction quality.

However, previous research has mostly found that surface acting impairs interaction quality (Erickson & Wharton, 1997; Grandey, Fisk, Mattila et al., 2005). The main explanation for this negative relationship are issues of inauthenticity. Previous research showed that surface acting creates inauthentic feelings while doing it (Brotheridge & Lee, 2002) and observers judge people that engage in surface acting as less authentic (Grandey, Fisk, Mattila et al., 2005). Furthermore, laboratory studies have found that perceived inauthenticity of interaction partners indeed impairs interactions (E. A. Butler et al., 2003).

Note that the research cited above has compared authentic displays (e.g. due to deep acting) with inauthentic displays. In this study, however, we compared surface acting when negative emotions are felt to the expression of negative emotion in interactions. As general display rules require not displaying negative emotions, we are comparing surface acting with “emotional deviance”. Emotional deviance is assumed when the emotion expressed differs from the display rule (Hochschild, 1979; Thoits, 1990). Although there might well be a loss of interaction quality based on inauthentic emotional display, our data suggested a net gain in quality through surface acting as compared to venting one’s negative emotions. Surface acting may not be the best strategy for high quality interactions, but it seems to be better than deviance. In addition, to the extent that surface acting is employed strategically to attain one’s interactional goals, its detrimental effects may be attenuated. This has indeed be shown in a study investigating emotion work with patients (Martinez-Inigo et al., 2007).

While the arguments stated above may be valid for the most common case of surface acting (suppressing negative emotions felt), our results also show lower interaction quality when people engage in suppressing positive emotions felt. This may be best explained by the social interaction model of emotion work that suggest that the reactions of the interaction partner have to be taken into account (Côté, 2005; Côté et al., 2006). Thus, if a positive emotion is not shown, or even replaced by displaying a stern attitude, this may trigger more negative reactions from the interaction partner and thus impair interaction quality.

Note that, for assessing interaction quality, we again controlled for the underlying emotion felt. Similar to the results for well-being, the analyses showed that negative emotions are related to lower, and positive emotions are related to higher interaction quality. If we run

an analysis without controlling for the emotions felt, we find a large negative effect of the contaminated measure of surface acting while suppressing negative emotions on interaction quality, and no significant effect of the contaminated measure of surface acting while suppressing positive emotions. These results mirror those for well-being. Thus, disentangling the influences of emotions felt and surface acting offers new insight into the specific effects of emotion regulation not only on well-being but also on interactional quality.

### *1.2.3 Assessing surface acting with event-sampling methodology*

Most knowledge about emotion work stems from studies measuring emotion work strategies on a general level, using general assessments investigating emotion work and well-being on a general level. However, emotion work occurs in interactions, and thus, event-sampling methods are very appropriate for the study of emotion work (Diefendorff et al., 2005; Holman et al., 2002). One of the main advantages is that this methodology collects data about each interaction, making it possible to compare the specific effects of different strategies of emotion regulation. In addition, the participants were asked to fill in the interaction records immediately after the interaction, which diminishes biases of summarization and memory (Nezlek, 1990).

## *1.3 Implications*

### *1.3.1 Theoretical implications*

The primary contribution of the present dissertation is exploring the relationship between emotions felt in daily social interactions at work and in private life and bedtime mood. To our knowledge, Study 1 is the first to explore this relationship using a variant of the Rochester Interaction Record including a variant of the Geneva Emotion Wheel. Based on this innovative methodology, we were able to demonstrate that positive and negative emotions experienced in daily work-related and private interactions influence bedtime mood. Most of the studies that have investigated the relationship between social interactions and psychological well-being have either focused on interaction's content (e.g. conflict with a colleague) (e.g. Stone, 1987) or on the extent to which social interactions are supportive (e.g. Peeters et al., 1995). In our study, we neither looked at interactions' content nor at social support provided during social interactions. Rather, we predicted psychological well-being based on the subjective evaluation of interactions. Based on our findings that both positive and negative emotions felt during daily interactions influence evening mood, we argue that how people appraise their social interactions is as important as more objective features of

interactions (e.g. content, social support provided during the interaction). This implies that future studies should include subjective measures of how people perceive daily events besides more objective measures of these events.

The second contribution in this dissertation is investigating the effects of emotion regulation at the interaction level (Study 2). This investigation provides us with a contribution to emotion work literature. In work and organizational psychology, emotion regulation is most often studied as “emotion work” (or emotional labour), based on the general notion that employees have to regulate their emotions in order to comply with organizational display rules for customer-related transactions (Diefendorff & Richard, 2003; Diefendorff et al., 2006; Fischbach, 2003; Gosserand & Diefendorff, 2005; Hochschild, 1983; Rafaeli, 1989). Typically, it is assumed that emotion regulation is effortful and therefore constitutes a source of strain (Brotheridge & Lee, 2002, 2003; Totterdell & Holman, 2003). Our research mainly extends this rather narrow view of emotion regulation in two ways. In particular, in investigating emotion regulation at the interaction level, our second study provides evidence that 1) the regulatory effort devoted to the suppression of a negative emotion is not as deleterious as it has repeatedly been argued, and 2) emotion regulation may have positive effects, in terms of perceived quality of social interactions in particular.

Based on our findings that the negative effects of emotion regulation mostly stem from the negative emotions experienced (vs. from the regulatory effort itself), I first want to stress the importance of conceptualizing and measuring emotion regulation as constituted of two distinct parts: the feeling part and the regulatory part. So far, emotion regulation has mostly been measured directly (e.g. to what extent do you have to regulate your feelings?). As a consequence, past research has failed to distinguish and therefore document the effects of emotion regulation attributable to the feeling component from the effects attributable to the regulatory component. As indicated by our study, measuring emotion regulation directly as regulatory effort may lead to an overemphasis of the negative effects of emotion regulation. Indeed, our findings indicate that most of the negative effects of emotion regulation are not directly imputable to the regulatory effort itself (i.e. suppressing a negative emotion felt) but rather to the negative emotions felt that are being regulated. As a conclusion, I suggest that taking these methodological considerations into account would allow researchers to reconsider the effects of emotion regulation on a theoretical level.

As a second theoretical implication stemming from Study 2 highlighting positive effects of emotion regulation – in particular in terms of perceived quality of the interaction, I want to stress the importance of conceptualizing emotion regulation in interactions as instrumental (vs. emotion regulation *per se*) in the future. This aspect has not received much attention in the pertinent literature (see Tamir, Chiu, & Gross, 2007). This conceptualization requires putting emotion regulation in a *functional* context and investigating its effects with regard to goal attainment. From this perspective, emotion regulation may foster goal attainment, which may induce positive, rather than negative, feelings. This is important for theory-building, as it goes beyond the mere fact of having to regulate emotions, and it includes the context (through situation-specific goals) as part of a theoretical model.

### 1.3.2 *Implications for research*

The major implication of our studies with regard to research pertains to the use of an event-sampling methodology to investigate emotions felt and displayed within specific social interactions. Although interacting with other people involves many emotions, there is little research available on moment-to-moment feelings during social interactions. Thanks to the event-sampling methodology, we were able to investigate emotions and emotion regulation as they concretely occur in daily work-related and private interactions. Consequently, we were able to avoid, at least to a large extent, some of the well-established biases threatening study validity (i.e. selection, recall and aggregation).

In the first study, we used a variant of the Geneva Emotion Wheel (Scherer, 2005) to assess emotions felt in social interactions. To the best of our knowledge, we are the first to use the Geneva Emotion Wheel as part of the RIR methodology. Thanks to the Emotion Wheel, we were able to capture positive and negative emotions felt in social interactions close in time to their occurrence. Here, we strongly encourage the use of the Emotion Wheel in the future as a means to assess emotions experienced in everyday interactions.

In our second study, we used the methodology developed by Tschan, Rochat, and Zapf (2005) that allows assessing emotional regulation processes in specific interactions. Instead of reporting which specific emotion they had felt and displayed, participants were asked to indicate whether they had felt a positive, a negative, or no emotion, and whether they had displayed a positive, a negative or no emotion for each of their interactions lasting ten minutes or more or each shorter but emotionally significant interaction. This constitutes a very simple variant of the Emotion Wheel. Thanks to this methodology, we could show that the effects of

emotion regulation do not directly stem from the regulatory effort but rather from the negative feelings experienced during a social interaction. This result implies that, in the future, researchers should cautiously measure feelings and their regulation separately, in order not to draw erroneous conclusions. I already discussed this issue in the previous section on the theoretical implications and refer the reader to it.

In light of the abovementioned considerations, we are convinced that it is worthwhile to use the event-sampling methodology despite its costs. We argue for that based on the guidelines suggested by Reis and Wheeler (1991, pp. 291-292): “Because gathering data with the RIR is obviously more tedious and labour intensive than with global questionnaires, it must pass muster in three criteria: (1) It must in fact provide different information than global questionnaires do; (2) the data must be more accurate, in the sense of faithfully characterizing ongoing social activity; and (3) this information must repay the researcher by supporting unique findings and theoretical insights”.

It is beyond doubt that the diary data we obtained with our methodology provide specific information that we couldn't have gained through general questionnaires (i.e. moment-to-moment emotions and emotion regulation in specific interactions). In this sense, we completely meet the first criterion.

In light of the second criteria, I would merely argue that diary data have repeatedly been found to be more reliable than other techniques (e.g. Conrath, Higgins, & McClean, 1983). As argued in the methodological part of the umbrella (Chapter 3), diary methods are less prone to biases and distortions than other methods (e.g. self-report questionnaires) and therefore allow for greater validity (e.g. Reis & Gable, 2000; Reis & Wheeler, 1991; Tschann, Semmer et al., 2004). Capturing emotions very close to when they arise is much better than asking participants to recall which emotions they generally feel and which emotions they generally display in their interactions in terms of data accuracy<sup>37</sup> (Reis & Wheeler, 1991).

Finally, with regard to the third criteria, I again would argue that the use of an event-sampling methodology allows investigating emotions and emotion regulation as they concretely occur in daily work-related and private interactions, in real time. On one hand, we were able to capture emotions as they occur. On the other hand, we could document the immediate effects of emotions felt and emotion regulation on well-being right after the

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<sup>37</sup> Data accuracy has to be understood as “faithfully characterizing ongoing social activity” (Reis & Wheeler, 1991, pp. 291-292).

interaction and interaction quality. This is a notable contribution given that most studies that have investigated emotion regulation have not been conducted at the interaction level but at a general level. In using the event-sampling methodology, we were able to demonstrate that emotions felt and emotion regulation have short-term effects with regard to employees' well-being and interaction quality, and that these effects differ according to whether it is a negative or a positive emotion that is regulated.

As a conclusion, I would argue that the richness of data collected through an event-sampling methodology is worth its somewhat burdensome and time-consuming features. I believe that this contention is still more substantial when researchers seek to investigate ephemeral phenomena such as emotions.

### *1.3.3 Implications for practice*

The two empirical studies included in this dissertation not only have implications for theory and research, but also have applied implications. The practical implications that we formulate here mainly stem from the observation that experiencing negative emotions in social interactions at work is detrimental. These adverse effects have to be considered not only in the short term (i.e. well-being after a social interaction) but also in the longer term (i.e. well-being at the end of the day).

In Study 1, we evidenced that the experience of negative emotions in interactions at work predict the experience of negative emotions in interactions after work and that both the experience of negative emotions in social interactions at work and in private after work predict end-of-day well-being. On a practical level, it therefore seems crucial to further investigate the influence of working conditions on emotions felt in everyday social interactions at work. To some extent, Study 1 yields some elements in this direction. Indeed, in Study 1 we demonstrated that some aspects of control (i.e. a job characteristic) may be detrimental relative to the emotional experience of social interactions at work. Moreover, we showed that LMX and social stressors (i.e. social work conditions) do not predict the occurrence of negative emotions but rather the occurrence of positive emotions in social interactions at work.

In Study 2, we demonstrated that it is not the regulatory effort made to suppress a negative emotion felt that is detrimental to one's well-being during a social interaction but rather the negative emotion felt itself. If our results can be replicated, this may partially shift

the discussion from the effects of regulatory efforts as a source of strain back to effects of working conditions that lead to interactions eliciting negative emotions, such as interactions with difficult customers (Dormann & Zapf, 2004), conflicts at work (De Dreu, 2008), or the relationship with the superior (Glaso, 2006; Messerli et al., 2009).

In sum, whether we investigate the effects of the emotions felt in social interactions at work, or emotion regulation, we always come back to the relevance of considering the embeddedness of emotions in general conditions at work.

#### *1.4 Limitations*

A limitation of our first empirical study that I want to address refers to the fact that we obtained the sample via a snowball recruitment. Generalization to other samples is, therefore, not guaranteed. In our second empirical study, we mainly had service professions. Study 1 included clerks, health professionals, electricians, cooks and professional sales people. For Study 2, we had teachers and nurses. This limited range of professions could therefore potentially constitute a limitation to generalizability. However, as the pattern of results is quite similar for both studies, we are confident that our findings can be generalized to some extent to other professions and organizations.

Another limitation of our two empirical studies is that they relied entirely on self-report data, and therefore a common method bias cannot be completely ruled out (Podsakoff et al., 2003). However, we tried to attenuate this bias following different suggestions issued by Podsakoff et al. (2003) and Spector (2006). First, we gathered data with two different instruments (questionnaire and daily survey). Second, in Study 1 the measurement of our predictor (emotions felt in daily interactions) and outcome variables (bedtime mood) was temporally separated; while we measured emotions felt in interactions immediately after each interaction, we assessed mood each evening, at bedtime. Third, we assessed our study variables at different levels of specificity and detail. For instance, we measured bedtime mood with a set of rather global items, whereas we assessed emotions felt at the level of each specific interaction (at the workplace and outside of work) and later averaged these specific scores into an average score of emotions felt during each interaction (Study 1). However, although they are still self-reports, daily diary data are believed to provide more reliable and valid information about daily emotions than traditional measures because of the shorter time interval between the experiences of interest and their reporting (e.g. Tennen, Affleck, Armeli, & Carney, 2000). Finally, negative affectivity has been cited as one of the most important

general biases for self-report data and should be of major concern when investigating emotional aspects (Podsakoff et al., 2003). Following these recommendations, we included measures of neuroticism (trait) and of mood the day before (state) as control variables in the analyses. In our second study, we tried to address a potential mono-method bias by collecting the data at different points in time. For example, personality was measured six months prior to experience sampling in Study 1, and at least a day prior to experience sampling in Study 2. In both studies, participants reported their interactions in different booklets per day. Furthermore, we also included neuroticism as a control variable in all analyses.

A third limitation refers to the potential of diary studies for reactivity. As I discussed in the methodological part of the umbrella (Chapter 3), introspection and monitoring of one's daily life may increase awareness of the behaviour investigated, and result in reactivity (Affleck et al., 1999; Bolger et al., 2003). As a consequence, participants might have become aware of their habitual mode of interacting and tried to act on it. However, we argue against this assumption based on the main rationale that the sampling period was too short to be subjected to reactivity effects. Indeed, studies reporting an effect of diary keeping on behaviour and mood are substantially longer (e.g. Burt, 1994).

Another limitation of Study 1 is that we only included emotions that were felt during social interactions, thus missing other emotional experiences during the day. Although interactions are important occasions for experiencing emotions, previous research has shown that particularly positive emotional experiences at work are often related to tasks and not to interactions (Basch & Fisher, 2000; Mignonac & Herrbach, 2004). This may have led to an underestimation of the effects of positive experiences at work on bedtime mood. Furthermore, this way of assessing emotions may have masked possible spirals or compensation effects, as these effects may have involved emotional experiences outside social interactions. Further research should therefore assess emotions in a wider context.

An additional limitation related to Study 2 that I want to address here refers to the fact that we have considered interactions as homogeneous events with regard to emotions felt and shown. However, according to Rafaeli and Sutton (1989, p. 16), "[...] emotions expressed in a transaction may vary as the sequence of communication unfolds". More particularly, [...] feedback from a target person may determine whether the emotions expressed initially are abandoned, revised, or maintained" (Rafaeli & Sutton, 1989, p. 16). According to the facial feedback model, the internal experience of an emotion is set off or reinforced by the facial

display of that emotion (Côté, 2005). This implies that felt and expressed emotions probably fluctuate during an interaction. Thus, it is very likely that participants' reports on the emotion felt and shown in the interaction reflect the selection of one moment in the interaction. However, we argue that with regard to our research question, this limitation is not too alarming. The purpose of Study 2 was to demonstrate that most of the variance in situational well-being is explained by the negative emotion felt (versus by the regulatory effort). Based on our methodology, we could account not only for the emotion felt but we also gained information on whether this particular emotion was regulated. As a conclusion, we argue that in asking participants to report the emotion felt and the emotion shown for each interaction, we reached an acceptable trade-off between the collection of moment-to-moment accounts and the collection of self-report data on how employees interpret the emotions they actually feel and show.

With regard to statistical limitations, I would mention sample size. Sample size could also be referred to as a limitation, especially if we consider the number of interactions reported as well as the number of self-observation days. The participants reported an average of 2.99 interactions at work and 1.73 interactions after work per working day (Study 1) and of 17.37 and 16.23 work-related interactions over a week during the sampling period (studies 1 and 2 of the second empirical study, respectively). “Unfortunately, little advice is readily available for organizational researchers attempting to determine statistical power when using multilevel models or when determining sample sizes for each level that will maximize statistical power” (Scherbaum & Ferreter, 2009, p. 347). In order to ensure accuracy of estimates and standard errors, a common rule of thumb that is often suggested is the “30/30 rule” (Hox, 2002). According to this rule, a sample of at least 30 level-2 units (i.e. persons in our two studies) with at least 30 level-1 units or observations per individuals (i.e. days in Study 1 and interactions in Study 2) is necessary. Note that this rule is particularly appropriate if the researcher's interest is mostly in the fixed parameters. If cross-level interactions are of interest, the rule should rather be a “50/20 rule” (about fifty level-2 units with about 20 level-1 units per level-2 unit). If the researcher is mostly interested in the random part, the variance and covariance components, the number of level-2 units should still be larger, leading to a “100/10 rule” (Hox, 2002). Consequently, we see that as the number of level-2 units increases, the number of level-1 units per level-2 unit can be reduced (see Hofmann, 1997). Applied to our studies, these recommendations lead us to argue that given the number of participants (N=101 for Study 1; N=67 and 75 for Study 2), the number of observations per

person (between 7 days for Study 1 and approximately 17 interactions for Study 2) should not have altered too much the accuracy of the estimates and their standard errors. In regard to this limitation, we would suggest that future research might consider expanding the sampling period in order to gain a larger number of observations per participant<sup>38</sup>.

As a consequence of the previous suggestion that we could expand the sampling period in order to increase the number of observations per participants, we could ask whether a sampling period of one week is not too short to get reliable and representative data. Indeed, we selected our particular one-week sampling period for conducting our diary studies in an essentially arbitrary way, and this may raise questions about the representativeness of participants' customary social interactions. According to Rook, "[...] this problem is intrinsic to most diary studies, but it raises questions about the optimal timing and pacing of diary assessment" (Rook, 2001, p. 95). Nonetheless, Reis and Wheeler (1991) recommend a record-keeping duration that does not exceed one or two weeks, in order not to overtax participants. Reis and Wheeler's (1991) recommendation therefore corresponds to a trade-off between representativeness and quality of the data. Event-sampling methods are burdensome and time-consuming (for the participants and for the researcher) and this point also constitutes a limitation of event-sampling methods that is often discussed. Given these requirements (i.e. participating over a considerable period of time), it might be hard to maintain participants' compliance in filling out the diaries. In particular, it has been demonstrated that data quality decreases after two weeks of diaries completion (Stone et al., 1991). However, as we sought to collect everyday interactions (and not a specific type of social interactions), we designed studies requiring a short sampling period (i.e. one week). This decision is in accordance with Stone et al. (1991) contentions that the duration of the recording period should be determined in light of the hypotheses being tested. One can easily imagine that investigating relatively infrequent daily events might require a longer sampling period than investigating relatively frequent daily events such as social interactions. The statistical analyses planned by the researcher are also of major concern when designing a diary study. For instance, time series analyses usually required more observations than other analyses (Stone et al., 1991; West & Hepworth, 1991).

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<sup>38</sup> Given the intensity of the data collection efforts, with multiple observations per participant being required daily over a period of seven days, it would have been difficult to collect such data with a larger amount of participants.

According to Stone's et al. (1991, p. 592) contentions that "[...] shorter periods of recording are probably fine for creating reliable aggregated measures" (what we did in the first study) and given that we are interested in frequent daily events in our two studies (i.e. social interactions), we might argue that the duration of the sampling period we determined does not in fact constitute a limitation with regard to our studies.

### *1.5 Strengths*

Studies presented in the present dissertation have their strengths as well. In what follows, I first provide an overview of the main strengths of Study 1 and I then go through the strengths of Study 2.

First of all, data were collected at two different levels (person and event-sampled data), and in two contexts (at the workplace and off the job) in Study 1. This design constitutes a real strength in that it ruled out many of the pitfalls of cross-sectional research. The within-individual nature of the analyses allowed a precise interpretation of the results. Because all the possible effects of differences across individuals were controlled in the analyses of the event-sampled data, we were able to eliminate the explanation that the observed pattern of relationships between daily affect experienced at the workplace and in private and bedtime mood was due to individual differences. Therefore, we have shown that the way people feel before sleeping varies from day to day in synchrony with the feelings experienced when interacting earlier during the day. This result is even more striking in light of previous studies demonstrating that mood is relatively stable over time and across situations (e.g. Diener, 2000).

Another strength that is worth mentioning is the temporal sequence of assessment. The questionnaire assessing general work-related aspects was filled in and returned by the participants before the self-observation period started. Participants were also advised to fill in the interactions records as soon as possible after each interaction, and to respond to the mood questions only before bedtime. Thus, the data about work-related interactions were gathered before the data about after-work interactions, and the data about bedtime mood were gathered last. Although we cannot be sure that this sequence was followed by all participants all the time, our personal contact ensured that deviations from this procedure were not very serious. This temporal sequence of assessment makes it unlikely that reverse causality is a serious issue in this study.

In reference to the previous strength, I also want to underline the fact that the retrospection bias inherent in most studies of stress and mood was reduced in our studies since participants were asked to report emotions felt as soon as possible after the interaction has occurred. Although it is not warranted that participants filled in the questionnaire directly after each interaction, the amount of time elapsed between occurrence and report of emotions was minimized by using a diary design.

A further strength of Study 1 is that we included positive as well as negative emotions at the same time, and that we assessed work-related and after-work emotions using the same methodology. Earlier studies have used different operationalizations for work-related and after-work aspects, which may have biased the results. Our methodology taps into similar experiences at work and after work.

Finally, in Study 1, we did not ask participants to recall emotional experiences and then report the context of these emotional experiences. Such a methodology would have increased the probability that people would have recalled emotionally important events (Fisher, 2002; Kahneman et al., 2004). By asking to report events, and then report the emotions felt during these events, our methodology permits studying the effects of ‘everyday’ emotions, even if they are mild.

Now, pertaining to the strengths of Study 2, I want to stress that thanks to the multilevel design, we were able to exert a ‘double’ control for negative and positive emotions felt: On the person level we controlled for neuroticism and extraversion, and on the interaction level for emotions felt during the interaction. Another strength is our operationalization for surface acting that allows to disentangle the effects of emotions felt and of surface acting. A third strength is that we replicated the results of study 1 in another, independent sample (study 2).

### *1.6 Future perspectives*

In Study 1, we assessed to what extent emotions felt in interactions at work would spill over to emotions in interactions after work. In accordance with what we expected, we found mood-congruent spillover: Participants who felt more negative emotions in interactions at work experienced more negative emotions in interactions after work, and more positive emotions at work triggered more positive emotions after work. In the future, we may shift our attention from the study of affective spillover from work-related interactions to private interactions after work toward the investigation of the propagation of emotions *from one*

*social interaction to another*, be it at work or in private life. This investigation would be all the more interesting in light of the paucity of previous research on the variability of the duration of emotional experiences. Indeed, studies that have investigated the latter issue are very scarce (see Fitness & Fletcher, 1993; Gilboa & Revelle, 1994; Scherer, Walcott, & Summerfield, 1986; Sonnemans, 1991). This investigation would also be valuable in light of our finding evidencing that the more people experience negative emotions in their interactions at work, the more they experience negative emotions in their interactions after work. If we better understand under which circumstances negative emotions propagate from one interaction to another, we could design means to break these affective spillover effects.

As a second extension of our first study, we could include other daily emotional experiences than social interactions. Although interactions are important occasions for experiencing emotions, previous research has shown that particularly positive emotional experiences at work are often related to tasks and not to interactions (Basch & Fisher, 2000; Mignonac & Herrbach, 2004). Had we measured a wider range of positive emotions at work, such as task accomplishment, effects on bedtime mood might have been found, as in a study by Miner et al. (2005) who found positive work events to be related to after-work mood. Assessing emotions in a wider context may also evidence potential spirals or compensation effects of emotional experiences that lie outside of social interactions and that may have been masked by our way of assessing emotions in Study 1.

As an extension of the second study, I would suggest paying more attention at the strategic and instrumental use of emotion regulation in social interactions to achieve various goals. On the one hand, the application of emotion regulation in work and organizational psychology is rather narrow. Emotion regulation is most often studied as “emotion work” (or emotional labour), based on the general notion that employees have to regulate their emotions in order to comply with organizational display rules for customer-related transactions (Fischbach, 2003; Gosserand & Diefendorff, 2005; Hochschild, 1983; Rafaeli & Sutton, 1987). On the other hand, social psychologists have only paid scant attention to the functions that emotions serve in social interactions (i.e. social functions of emotions) (M. S. Clark, Pataki, & Carver, 1996). Future research could therefore extend our research on emotion regulation and its effects in different work-related situations by investigating emotion regulation as related to interactional goals (emotion regulation as instrumental versus emotion regulation per se). This aspect has not received much attention in the pertinent literature (Tamir

et al., 2007). This conceptualization requires putting emotion regulation in a *functional* context and investigating its effects with regard to goal attainment. From this perspective, emotion regulation may foster goal attainment, which may induce positive, rather than negative, feelings. This is important for theory-building, as it goes beyond the mere fact of having to regulate emotions, and it includes the context (through situation-specific goals) as part of a theoretical model.

## 1.7 Conclusion

The present dissertation focused on emotional experiences during social interactions and has the special characteristic that it goes full cycle, from chronic conditions at work to emotions at work, after work, and bedtime mood. This dissertation shows, indeed, that social interactions at work are important carriers of emotional experiences that influence social interactions after work and – directly as well as indirectly – well-being at bedtime. At the same time, it shows the importance of general conditions at work, most notably social conditions.

In this dissertation, we have also probed one specific link in the chain relating emotions experienced in social interactions and bedtime mood: negative emotions felt in work-related interactions. More precisely, we investigated the short-term effects of those negative emotions felt together with the effects of the regulatory effort devoted to their suppression. It turned out that once the negative emotions felt are controlled for, the effort devoted to their suppression is no longer significant.

So why are *experiencing and regulating positive and negative emotions in social interactions two major parameters in the equation of human well-being*? As I have demonstrated throughout this dissertation, emotional experiences are intimately related to the way we feel; whereas experiencing negative emotions is detrimental to one's well-being, be it right after a social interaction or at the end of the day, experiencing positive emotions has a positive influence on our well-being. Regarding regulation, we showed that suppressing positive emotions felt is related to decreased well-being. We also showed that once negative emotions felt in interactions are controlled for, suppressing negative emotions felt is no longer significantly related to well-being after the interaction. However, we showed that surface acting while suppressing negative emotions enhances interaction quality. Altogether, these findings allow the title of my dissertation to take on its full meaning.



# References

- Affleck, G., Zautra, A., Tennen, H., & Armeli, S. (1999). Multilevel daily process designs for consulting and clinical psychology: A preface for the perplexed. *Journal of Consulting and Clinical Psychology, 67*(5), 746-754.
- Almeida, D. M. (1997). *National study of daily experiences: The MIDUS in-depth diary study*. Chicago: MacArthur Foundation Research Network on Successful Midlife Development.
- Almeida, D. M., Wethington, E., & Kessler, R. C. (2002). The Daily Inventory of Stressful Events: An interview-based approach for measuring daily stressors. *Assessment, 9*(1), 41-55.
- Andersson, L., M. (1999). Tit for tat? The spiraling effect of incivility in the workplace. *Academy of Management Review, 24*(3), 452-471.
- Ashforth, B. E., & Humphrey, R. H. (1993). Emotional labor in service roles: The influence of identity. *Academy of Management Review, 18*, 88-115.
- Ashkanasy, N. M., & Ashton-James, C. E. (2007). Positive Emotions in Organizations: A multi-level Framework. In D. L. Nelson & C. L. Cooper (Eds.), *Positive Organizational Behavior* (pp. 57-73). London, UK: Sage.
- Averill, J. R. (2004). Everyday emotions: let me count the ways. *Social Science Information, 43*(4), 571-580.
- Baenzinger, T., Tran, V., & Scherer, K. (2005). The emotion wheel. A tool for the verbal report of emotional reactions. *Poster presented at the Conference of the International Society of Research on Emotions, Bari, Italy*.
- Barnett, R. C. (1994). Home-to-work spillover revisited: A study of full-time employed women in dual-earner couples. *Journal of Marriage and the Family, 56*, 674-656.
- Barnett, R. C., & Brennan, R. T. (1995). The relationship between job experiences and psychological distress: A structural equation approach. *Journal of Organizational Behavior, 16*, 259-276.
- Basch, J., & Fisher, C. D. (2000). Affective events-emotions matrix: a classification of work events and associated emotions. In N. M. Ashkanasy, C. E. J. Härtel & W. J. Zerbe (Eds.), *Emotions in the workplace: Research, theory, and practice* (pp. 36-48). Westport, CT: Quorum.
- Basso, M. R., Schefft, B. K., Ris, M. D., & Dember, W. N. (1996). Mood and global-local visual processing. *Journal of International Neuropsychology Society, 2*, 249-255.
- Baumeister, R. F., Bratslavsky, E., Finkenauer, C., & Vohs, K. D. (2001). Bad Is Stronger Than Good. *Review of General Psychology, 5*(4), 323-370.
- Baumeister, R. F., Bratslavsky, E., Muraven, M., & Tice, D. M. (1998). Ego depletion: Is the active self a limited resource. *Personality Processes and Individual Differences, 74*(5), 1252-1265.
- Baumeister, R. F., & Leary, M. R. (1995). The need to belong: Desire for interpersonal attachment as a fundamental human motivation. *Psychological Bulletin, 117*, 497-529.

- Baumeister, R. F., & Vohs, K. D. (2007). Self-Regulation, ego depletion, and motivation. *Social and Personality Psychology Compass*, 1, 1-14.
- Beal, D. J., Trougakos, J. P., Weiss, H. M., & Green, S. G. (2006). Episodic processes in emotional labor: Perceptions of affective delivery and regulations strategies. *Journal of Applied Psychology*, 91(5), 1053-1065.
- 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(5), 808-818.
- Bolger, N., DeLongis, A., Kessler, R. C., & Wethington, E. (1989). Contagion of stress across multiple roles. *Journal of Marriage and the Family*, 51, 175-183.
- Bolger, N., & Schilling, E. A. (1991). Personality and the problems of everyday life: The role of neuroticism in exposure and reactivity to daily stressors. *Journal of Personality*, 59(3), 355-386.
- Bolton, S. C. (2000). Who cares? Offering emotion work as a 'gift' in the nursing labor process. *Journal of Advanced Nursing*, 32, 580-586.
- Brett, J. F., Brief, A. P., Burke, M. J., George, J. M., & Webster, J. (1990). Negative affectivity and the reporting of stressful life events. *Health Psychology*, 9(1), 57-68.
- Brondolo, E., Rieppi, R., Erickson, S. A., Bagiella, E., Shapiro, A., McKinley, P., et al. (2003). Hostility, interpersonal interactions, and ambulatory blood pressure. *Psychosomatic Medicine*, 65, 1103-1011.
- Brosschot, J. F., Gerin, W., & Thayer, J. F. (2006). The perseverative cognition hypothesis: A review of worry, prolonged stress-related physiological activation, and health. *Journal of Psychosomatic Research*, 60, 113-124.
- Brosschot, J. F., & Thayer, J. F. (2003). Heart rate response is longer after negative emotions than after positive emotions. *International Journal of Psychophysiology*, 50(3), 181-187.
- Brotheridge, C. M., & Grandey, A. A. (2002). Emotional labor and burnout: Comparing two perspectives of “people work”. *Journal of Vocational Behavior*, 60, 17-39.
- Brotheridge, C. M., & Lee, R. T. (2002). Testing a conservation of resources model of the dynamics of emotional labor. *Journal of Occupational Health Psychology*, 7, 57-67.
- Brotheridge, C. M., & Lee, R. T. (2003). Development and validation of the emotional labour scale. *Journal of Occupational & Organizational Psychology*, 76, 365-379.
- Burt, C. D. (1994). Prospective and retrospective account-making in diary entries: a model of anxiety reduction and avoidance. *Anxiety, stress, and coping*, 6(4), 327-340.
- Butler, A. C., Hokanson, J. E., & Flynn, H. A. (1994). A comparison of self-esteem lability and low trait self-esteem as vulnerability factors for depression. *Journal of Personality and Social Psychology*, 66, 166-177.
- Butler, E. A., Egloff, B., Wilhelm, F. H., Smith, N. C., Erickson, E. A., & Gross, J. J. (2003). The social consequences of expressive suppression. *Emotion*, 3(1), 48-67.
- Butler, E. A., & Gross, J. J. (2004). Hiding feelings in social contexts: Out of sight is not out of mind. In P. Philippot & R. S. Feldman (Eds.), *The regulation of emotion* (pp. 101-126). Mahwah, New Jersey: Erlbaum.

- Butler, E. A., & Gross, J. J. (2009). Emotion and emotion regulation: Integrating individual and social levels of analysis. *Emotion Review*, 1(1), 86-87.
- Buunk, B. P., & Verhoeven, K. (1991). Companionship and support at work: A microanalysis of the stress-reducing features of social interaction. *Basic and Applied Social Psychology*, 12(3), 243-258.
- Byrk, A. S., & Raudenbush, S. W. (1992). *Hierarchical linear models: Applications and data analysis methods*. Newbury Park, CA: Sage Publications.
- Carstensen, L. L., Pasupathi, M., Mayr, U., & Nesselroade, J. R. (2000). Emotional experience in everyday life across the life span. *Journal of Personality and Social Psychology*, 79(4), 644-655.
- Carver, C. S., & Scheier, M. F. (1981). *Attention and self-regulation: A control-theory approach to human behavior*. New York: Springer-Verlag.
- Carver, C. S., & Scheier, M. F. (1990). Origins and functions of positive and negative affect: A control-process view. *Psychological review*, 97(1), 19-35.
- Clark, L. A., Watson, D., & Mineka, S. (1994). Temperament, personality, and the mood and anxiety disorders. *Journal of Abnormal Psychology*, 103, 103-116.
- Clark, M. S., Pataki, S. P., & Carver, V. H. (1996). Some thoughts and findings on self-presentation of emotions in relationships. In G. J. O. Fletcher & J. Fitness (Eds.), *Knowledge structures in close relationships: A social psychological approach* (pp. 247-274). Mahwah, NJ: Erlbaum.
- Clore, G. L., Ortony, A., & Foss, M. A. (1987). The psychological foundations of the affective lexicon. *Journal of Personality and Social Psychology*, 53, 751-766.
- Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2003). *Applied multiple regression/correlation analysis for the behavioral sciences* (3rd ed.). Mahwah, NJ: Lawrence Erlbaum.
- Cohen, S., & Hoberman, H. M. (1983). Positive events and social support as buffers of life change stress. *Journal of Applied Social Psychology*, 13, 99-125.
- Conrath, D. W., Higgins, C. A., & McClean, R. J. (1983). A comparison of the reliability of questionnaire versus diary data. *Social Networks*, 5, 315-322.
- Cooper, T., Detre, T., & Weiss, S. M. (1981). Coronary-prone behavior and coronary heart disease: A critical review. *Circulation*, 63, 1199-1215.
- Costa, P. T., & McCrae, R. R. (1980). Influence of extraversion and neuroticism on subjective well-being: Happy and unhappy people. *Journal of Personality and Social Psychology*, 38, 668-678.
- Costa, P. T., & McCrae, R. R. (1992). *Revised NEO Personality Inventory (NEOPIR): Professional Manual*: Psychological Assessment Resources, Inc.
- Costa, P. T., & McCrae, R. R. (1995). Domains and facets: Hierarchical personality assessment using the Revised NEO Personality Inventory. *Journal of Personality Assessment*, 64, 21-50.
- Côté, S. (2005). A social interaction model of the effects of emotion regulation on work strain. *Academy of Management Review*, 30(3), 509-530.
- Côté, S., Miners, C. T. H., & Moon, S. (2006). Emotional intelligence and wise emotion regulation in the workplace. *Research on Emotion in Organizations*, 2, 1-24.

- Crouter, A. C. (1984). Spillover from family to work: The neglected side of the work-family interface. *Human Relations*, 37, 425-441.
- Crusco, A. H., & Wetzel, C. G. (1984). The Midas touch: The effects of interpersonal touch on restaurant tipping. *Personality and Social Psychology Bulletin*, 10(4), 512-517.
- Csikszentmihalyi, M., Larson, R., & Prescott, S. (1977). The ecology of adolescent activity and experience. *Journal of Youth and Adolescence*, 6, 281-294.
- Cutrona, C. E. (1986). Behavioral manifestations of social support: A microanalytic investigation. *Journal of Personality and Social Psychology*, 51, 201-208.
- Daniels, K. (2000). Measures of five aspects of affective well-being at work. *Human Relations*, 53, 275-294.
- Danner, D. D., Snowdon, D. A., & Friesen, W. V. (2001). Positive emotions in early life and longevity: Findings from the Nun Study. *Journal of Personality and Social Psychology*, 80(5), 804-813.
- David, J. P., Green, P. J., Martin, R., & Suls, J. (1997). Differential roles of neuroticism, extraversion, and event desirability for mood in daily life: An integrative model of top-down and bottom-up influences. *Journal of Personality and Social Psychology*, 73(1), 149-159.
- Davis, A., Rhodes, J. E., & Hamilton-Leaks, J. (1997). When both parents may be a source of support and problems: An analysis of pregnant and parenting female African American Adolescents' relationships with their mothers and fathers. *Journal of Research on Adolescence*, 7(3), 331-348.
- De Dreu, C. K. W. (2008). The virtue and vice of workplace conflict: Food for (pessimistic) thought. *Journal of Organizational Behavior*, 29, 5-18.
- De Lange, A. H., Taris, T. W., Kompier, M. A. J., Houtman, I. L. D., & Bongers, P. M. (2003). The very best of the millenium: Longitudinal research and the demand-control(support) model. *Journal of Occupational Health Psychology*, 8, 282-305.
- Decastro, J. M., & Pearcey, S. M. (1995). Lunar rhythms of the meal and alcohol intake of humans. *Physiology and behavior*, 57, 439-444.
- DeLongis, A., Folkman, S., & Lazarus, R. S. (1988). The Impact of daily stress on health and mood: Psychological and social resources as mediators. *Journal of Personality and Social Psychology*, 54(3), 486-495.
- DeLongis, A., Hemphill, K. J., & Lehman, D. R. (1992). A structured diary methodology for the study of daily events. In G. Bryant (Ed.), *Methodological Issues in Applied Psychology* (pp. 83-109). New York: Plenum Press.
- DePaulo, B. M., Kashy, D. A., Kirkendol, S. E., Wyer, M. M., & Epstein, J. A. (1996). Lying in everyday life. *Journal of Personality and Social Psychology*, 70, 979-995.
- Derogatis, L. R. (1975). *The affects balance scale*. Baltimore: Clinical Psychometric Research.
- Dickerson, S. S., & Kemeny, M. E. (2004). Acute stressors and cortisol responses: A theoretical integration and synthesis of laboratory research. *Psychological Bulletin*, 130, 335-391.

- Diefendorff, J. M., Croyle, M. H., & Gosserand, R. H. (2005). The dimensionality and antecedents of emotional labor strategies. *Journal of Vocational Behavior*, 66, 339-357.
- Diefendorff, J. M., & Greguras, G. J. (2009). Contextualizing emotional display rules: Examining the roles of targets and discrete emotions in shaping display rule perceptions. *Journal of Management*, 35(4), 880-898.
- Diefendorff, J. M., & Grosserand, R. H. (2003). Understanding the emotional labor process: A control theory perspective. *Journal of Organizational Behavior*, 24, 945-959.
- Diefendorff, J. M., & Richard, E. M. (2003). Antecedents and consequences of emotional display rule perceptions. *Journal of Applied Psychology*, 88(2), 284-294.
- Diefendorff, J. M., Richard, E. M., & Croyle, M. H. (2006). Are emotional display rules formal job requirements? Examination of employee and supervisor perceptions. *Journal of Occupational and Organizational Psychology* 79, 273-298.
- Diefendorff, J. M., Richard, E. M., & Yang, J. (2008). Linking emotion regulation strategies to affective events and negative emotions at work. *Journal of Vocational Behavior*, 73, 498-508.
- Diener, E. (1994). Assessing subjective well-being: Progress and opportunities. *Social Indicators Research*, 31(2), 103-157.
- Diener, E. (2000). Subjective well-being: The science of happiness and a proposal for a national index. *American Psychologist*, 55(1), 34-43.
- Diener, E., & Emmons, R. A. (1985). The Independence of Positive and Negative Affect. *Journal of Personality and Social Psychology*, 47(5), 1105-1117.
- Diener, E., & Lucas, R. E. (2000). Subjective emotional well-being. In M. Lewis & J. M. Haviland (Eds.), *Handbook of emotions* (pp. 325-337). New York: Guilford.
- Diener, E., Smith, C. A., & Fujita, F. (1995). The personality structure of affect. *Journal of Personality and Social Psychology*, 69(1), 130-141.
- Diener, E., Suh, E., & Oishi, S. (1997). Recent findings on subjective well-being. *Indian Journal of clinical Psychology*, 24(1), 25-41
- Diener, E., Suh, E. N., Lucas, R. E., & Smith, H. L. (1999). Subjective well-being: Three decades of progress. *Psychological Bulletin*, 125, 276-302.
- Dormann, C., & Zapf, D. (2002). Social stressors at work, irritation, and depressive symptoms: Accounting for unmeasured third variables in a multi-wave study. *Journal of Occupational and Organizational psychology*, 75, 33-58.
- Dormann, C., & Zapf, D. (2004). Customer-related social stressors and burnout. *Journal of Occupational Health Psychology*, 9(1), 61-82.
- Duck, S. (2007). *Human relationships* (4th ed.): Sage Publications Ltd.
- Duck, S., Rutt, D. J., Jurst, M. H., & Strejc, H. (1991). Some evident truths about conversations in everyday relationships: All communications are not created equal. *Human Communication Research*, 18, 228-267.
- Eckenrode, J. (1984). Impact of chronic and acute stressors on daily reports of mood. *Journal of Personality and Social Psychology*, 46(4), 907-918.

- Edwards, J. R., & Rothbard, N. R. (2000). Mechanisms linking work and family: Clarifying the relationship between work and family constructs. *The Academy of Management Review*, 25(1), 178-199.
- Ekman, P. (1984). Expression and the nature of emotion. In P. Ekman & K. Scherer (Eds.), *Approaches to emotion* (pp. 319-343). Hillsdale, NJ: Erlbaum.
- Ekman, P. (1992). An argument for basic emotions. *Cognition and Emotion*, 6, 169-200.
- Elfering, A., Grebner, S., Semmer, N. K., Kaiser-Freiburghaus, D., Lauper-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.
- Emmons, R. A., & Diener, E. (1986). An interactional approach to the study of personality and emotion. *Journal of Personality*, 54(2), 371-384.
- Erickson, R. J., & Wharton, A. S. (1997). Inauthenticity and depression: Assessing the consequences of interactive service work. *Work and Occupations*, 24, 188-213.
- Feldman Barrett, L., & Russell, J. A. (1999). The structure of current affect: Controversies and emerging consensus. *Current Directions in Psychological Science*, 8(1), 10-14.
- Finch, J. F., Okun, M. A., Pool, G. J., & Ruehlman, L. S. (1999). A comparison of the influence of conflictual and supportive social interactions on psychological distress. *Journal of Personality*, 67, 581-621.
- Fischbach, A. (2003). *Determinants of Emotion Work*. Unpublished Unpublished doctoral dissertation, Georg-August-University of Göttingen, Göttingen.
- Fisher, C. D. (2002). Antecedents and consequences of real-time affective reactions at work. *Motivation and Emotion*, 26(1), 3-30.
- Fitness, J., & Fletcher, G. J. O. (1993). Love, hate, anger, and jealousy in close relationships: A prototype and cognitive appraisal analysis. *Journal of Personality and Social Psychology*, 65, 942-958.
- Folkman, S., & Moskowitz, J. T. (2000). Positive affect and the other side of coping. *American Psychologist*, 55(6), 647-654.
- Forgas, J. P. (2006). Affective influences on interpersonal behaviour: Toward understanding the role of affect in everyday interactions. In J. P. Forgas (Ed.), *Affect in Social Thinking and Behavior* (pp. 270-289). Philadelphia, PA: Psychology Press.
- Fredrickson, B. L. (1998). What good are positive emotions? *Review of General Psychology*, 2, 300-319.
- Fredrickson, B. L. (2000a). Cultivating positive emotions to optimize health and well-being. *Prevention and Treatment*, 3(1), 1-25.
- Fredrickson, B. L. (2000b). Cultivating research on positive emotions. *Prevention & Treatment*, 3(7), 1-4.
- Fredrickson, B. L. (2001). The role of positive emotions in positive psychology: The broaden-and-build theory of positive emotions. *American Psychologist*, 56(3), 218-226.
- Fredrickson, B. L. (2003a). Positive emotions and upward spirals in organizations. In K. S. Cameron, J. E. Dutton & R. E. Quinn (Eds.), *Positive Organizational Scholarship: Foundations of a New Discipline* (pp. 163-175). New York: Berrett-Koehler.

- Fredrickson, B. L. (2003b). The Value of positive emotions: The emerging science of positive psychology is coming to understand why it's good to feel good. *American Scientist*, *91*, 330-335.
- Fredrickson, B. L. (2004a). The broaden-and-build theory of positive emotions. *Phil. Trans. R. Soc. Lond. B*, *359*, 1367-1377.
- Fredrickson, B. L. (2004b). Gratitude, like other positive emotions, broadens and builds. In R. A. Emmons & M. E. McCullough (Eds.), *The Psychology of Gratitude* (pp. 145-166). New York: Oxford University Press.
- Fredrickson, B. L., & Branigan, C. (2005). Positive emotions broaden the scope of attention and thought-action repertoires. *Cognition and Emotion*, *19*(3), 313-332.
- Fredrickson, B. L., & Joiner, T. (2002). Positive emotions trigger upward spirals toward emotional well-being. *Psychological Science*, *13*, 172-175.
- Fredrickson, B. L., & Levenson, R. W. (1998). Positive Emotions speed recovery from the cardiovascular sequelae of negative emotions. *Cognition and Emotion*, *12*(2), 191-220.
- Fredrickson, B. L., & Losada, M. F. (2005). Positive affect and the complex dynamics of human flourishing. *American Psychologist*, *60*(7), 678-686.
- Fredrickson, B. L., Mancuso, R. A., Branigan, C., & Tugade, M. M. (2000). The undoing effect of positive emotions. *Motivation and Emotion*, *24*(4), 237-258.
- Fredrickson, B. L., Tugade, M. M., Waugh, C. E., & Larkin, R. (2003). 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*, *84*(2), 365-376.
- Frese, M. (1989a). Gütekriterien zur Operationalisierung von sozialer Unterstützung am Arbeitsplatz. *Zeitschrift für Arbeitswissenschaften*, *43*, 112-121.
- Frese, M. (1989b). Theoretical Models of Control and Health. In S. L. Sauter, J. J. H. Jr & C. L. Cooper (Eds.), *Job Control and Worker Health* (pp. 107-128). New York: John Wiley & Sons, Ltd.
- Frese, M. (1989c). Theoretical models of control and health. In S. Sauter, J. J. Hurrell & C. L. Cooper (Eds.), *Job control and worker health* (pp. 107-128). Chichester: Wiley.
- Frese, M., & Zapf, D. (1987). Eine Skala zur Erfassung von Sozialen Stressoren am Arbeitsplatz. *Zeitschrift für Arbeitswissenschaft*, *41*, 134-141.
- Friedman, H. S., & BoothKewley, S. (1987). Personality, Type A behavior, and coronary heart disease: The role of emotional expression. *Journal of Personality and Social Psychology*, *53*, 783-792.
- Frijda, N. H. (1986). *The emotions*. Cambridge, England: Cambridge University 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.
- Frijda, N. H. (1994). Varieties of affect: Emotions and episodes, moods, and sentiments. In R. J. Davidson (Ed.), *The Nature of Emotion - Fundamental Questions* (pp. 59-67). New York: Oxford University Press.
- Frijda, N. H. (2000). The Psychologist's Point of View. In M. L. and J. M. Haviland-Jones (Eds.), *Handbook of Emotions* (2nd ed., pp. 59-74). New York: Guilford.

- Fritz, C., & Sonnentag, S. (2005). Recovery, health, and job performance: Effects of weekend experiences. *Journal of Occupation and Health Psychology, 10*, 187-199.
- Fuller, J. A., Stanton, J. M., Fisher, G. G., Spitzmüller, C., Russell, S. S., & Smith, P. C. (2003). A Lengthy Look at the Daily Grind: Time Series Analysis of Events, Mood, Stress, and Satisfaction. *Journal of Applied Psychology, 88*(6), 1019–1033.
- Game, A. (2008). Negative emotions in supervisory relationships: The role of relational models. *Human Relations, 61*, 355-393.
- Gerstner, C. R., & Day, D. V. (1997). Meta-analytic review of leader-member exchange theory: Correlates and construct issues. *Journal of Applied Psychology, 82*, 827-844.
- Geurts, S., & Sonnentag, S. (2006). Recovery as an explanatory mechanism in the relation between acute stress reactions and chronic health impairment. *Scandinavian Journal of Work, Environment and Health, 32*(6), 482-492.
- Giardini, A., & Frese, M. (2006). Reducing the negative effects of emotion work in service occupations: Emotional competence as a psychological resource. *Journal of Occupational Health Psychology, 11*, 63-75.
- Gilboa, E., & Revelle, W. (1994). Personality and the structure of emotional responses. In S. V. Goozen, N. E. V. d. Poll & J. A. Sargent (Eds.), *Essays on current issues in the field of emotion theory* (pp. 134-159). Hillsdale, NJ: Erlbaum.
- Glaso, L., & Einarsen, S. (2006). Experienced affects in leader–subordinate relationships. *Scandinavian Journal of Management, 22*, 49–73.
- Gohm, C. L., & Clore, G. L. (2002). Four latent traits of emotional experience and their involvement in well-being, coping, and attributional style. *Cognition and Emotion, 16*(4), 495-518.
- Goldberg, L. S., & Grandey, A. A. (2007). Display Rules Versus Display Autonomy: Emotion Regulation, Emotional Exhaustion, and Task Performance in a Call Center Simulation. *Journal of Occupational Health Psychology, 12*(3), 301-318.
- Gosserand, R. H., & Diefendorff, J. M. (2005). Emotional display rules and emotional labor: The moderating role of commitment. *Journal of Applied Psychology, 90*(6), 1256–1264.
- Gouldner, A. (1960). The norm of reciprocity: A preliminary statement. *American Sociological Review, 25*, 161-178.
- Graen, G. B., & Uhl-Bien, M. (1995). Relationship-based approach to leadership: Development of leader-member exchange (LMX) theory of leadership over 25 years: Applying a multi-level multi-domain perspective. *Leadership Quarterly, 6*, 219-247.
- Grandey, A. A. (2000). Emotion regulation in the workplace: A new way to conceptualize emotional labor. *Journal of Occupational Health Psychology, 5*(1), 95-110.
- Grandey, A. A. (2003). When "the show must go on": Surface acting and deep acting as determinants of emotional exhaustion and peer-rated service delivery. *Academy of Management Journal, 46*, 86-96.
- Grandey, A. A., Fisk, G. M., Mattila, A. S., Jansen, K. J., & Sideman, L. A. (2005). Is “service with a smile” enough? Authenticity of positive displays during service encounters. *Organizational Behavior and Human Decision Processes, 96*, 38-55.

- Grandey, A. A., Fisk, G. M., & Steiner, D. D. (2005). Must "service with a smile" be stressful? The moderating role of personal control for U.S. and French employees. *Journal of Applied Psychology, 90*(5), 893-904.
- Grandey, A. A., Kern, J. H., & Frone, M. R. (2007). Verbal abuse from outsiders versus insiders: Comparing frequency, impact on emotional exhaustion, and the role of emotional labor. *Journal of Occupational Health Psychology, 12*(1), 63-79.
- 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.
- Grebner, S., Elfering, A., Semmer, N., Kaiser-Probst, C., & Schlapbach, M. L. (2004). Stressful situations at work and in private life among young workers: An event-sampling approach. *Social Indicators Research, 67*, 11-49.
- Greenhaus, J. H., & Beutell, N. J. (1985). Sources of conflict between work and family roles. *Academy of Management Review, 10*, 76-88.
- Gross, J. J. (1998a). Antecedent- and response-focused emotion regulation: Divergent consequences for experience, expression, and physiology. *Journal of Personality and Social Psychology, 74*(1), 224-237.
- Gross, J. J. (1998b). The emerging field of emotion regulation: An integrative review. *Review of General Psychology, 2*(3), 271-299.
- Gross, J. J. (1999). Emotion Regulation: Past, Present, Future. *Cognition and Emotion, 13*(5), 551-573.
- Gross, J. J. (2002). Emotion regulation: Affective, cognitive, and social consequences. *Psychophysiology, 39*, 281-291.
- Gross, J. J., & John, O. P. (1994). Facets of emotional expressivity: Three self-report factors and their correlates. *Personality and Individual Differences, 19*(4), 555-568.
- Gross, J. J., & John, O. P. (1997). Revealing feelings: Facets of emotional expressivity in self-reports, peer ratings, and behavior. *Journal of Personality and Social Psychology, 72*(2), 435-448.
- 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*(2), 348-362.
- Gross, J. J., & Levenson, R. V. (1997). Hiding feelings: The acute effects of inhibiting negative and positive emotion. *Journal of Abnormal Psychology, 106*(1), 95-103.
- Gross, J. J., & Levenson, R. W. (1993). Emotional suppression: Physiology, self-report, and expressive behavior. *Journal of Personality and Social Psychology, 64*(6).
- Gross, J. J., Richards, J. M., & John, O. P. (2006). Emotion regulation in everyday life. In D. K. Snyder, J. A. Simpson & J. N. Hughes (Eds.), *Emotion regulation in families: Pathways to dysfunction and health* (pp. 13-35). Washington DC: American Psychological Association.
- Gross, J. J., Sutton, S. K., & Ketelaar, T. (1998). Relations between affect and personality: Support for the affect-level and affective-reactivity views. *Personality and Social Psychology Bulletin, 24*(3), 279-288.

- Gross, S., Semmer, N. K., Meier, L. L., Kälin, W., Jacobshagen, N., & Tschan, F. (2009). A day-level perspective on fatigue: The impact of affective events and chronic social stressors. *Submitted for publication*.
- Gutek, B. A., Cherry, B., & Groth, M. (1999). Gender and service delivery. In G. N. Powell (Ed.), *Handbook of Gender in Organizations* (pp. 47-68). Thousand Oaks, CA: Sage Publications.
- Harlow, R. E., & Cantor, N. (1995). To whom do people turn when things go poorly: Task orientational and functional social contacts. *Journal of Personality and Social Psychology, 69*(2), 329-340.
- Hatfield, E., Cacioppo, J. T., & Rapson, R. R. (1994). *Emotional Contagion*. Cambridge, UK: Cambridge University Press.
- Hayes, S. C., & Cavior, N. (1980). Multiple tracking and the reactivity of self-monitoring. *Behavioral Assessment, 2*, 283-296.
- Hays, R. B. (1989). The day-to-day functioning of close versus casual friendship. *Journal of Social and Personal Relationships, 6*, 21-37.
- Heaphy, E., & Dutton, J. (2008). Positive social interactions and the human body at work: Linking organizations and physiology. *Academy of Management Review, 33*(1), 137-162.
- Heller, D., & Watson, D. (2005). The dynamic spillover of satisfaction between work and marriage: The role of time and mood. *Journal of Applied Psychology, 90*(6), 1273-1279.
- Henderson, M., & Argyle, M. (1984). Endorsed and applied rules of relationships reported by teachers. *Oxford Review of Education, 10*, 193-202.
- Henderson, M., & Argyle, M. (1986). The informal rules of working relationships. *Journal of Occupational Behaviour, 7*(4), 259-275.
- Hess, J. D., Kacen, J. J., & Kim, J. (2006). Mood-management dynamics: The interrelationship between moods and behaviours. *British Journal of Mathematical and Statistical Society, 59*, 347-378.
- Hobfoll, S. E. (1989). Conservation of resources: A new attempt at conceptualizing stress. *American Psychologist, 44*, 513-524.
- Hochschild, A. R. (1979). Emotion work, feeling rules, and social structure. *American Journal of Sociology, 85*(3), 551-575.
- Hochschild, A. R. (1983). *The managed heart: Commercialization of human feeling*. Berkeley: University of California Press.
- Hofmann, D. A. (1997). An overview of the logic and rationale of hierarchical linear models. *Journal of Management, 23*, 723-744.
- Holman, D., Chissick, C., & Totterdell, P. (2002). The effects of performance monitoring on emotional labor and well-being in call centers. *Motivation and Emotion, 26*, 57-81.
- Holt-Lunstad, J., Uchino, B. N., Smith, T. W., Olson-Cerny, C., & Nealey-Moore, J. B. (2003). Social relationships and ambulatory blood pressure: Structural and qualitative predictors of cardiovascular function during everyday social interactions. *Health Psychology, 22*(4), 388-397.
- House, J. S. (1981). *Work Stress and Social Support*. Reading, Mass: Addison-Wesley.

- Hox, J. J. (2002). *Multilevel analysis. Techniques and applications*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Hufford, M. R., Shields, A. L., Shiffman, S., Paty, J., & Balabanis, M. (2002). Reactivity to ecological momentary assessment: An example using undergraduate problem drinkers. *Psychology of Addictive Behaviors, 16*(3), 205-211.
- Hurlburt, D. F., & Apt, C. (1995). The coital alignment technique and directed masturbation: A comparative study on female orgasm. *Journal of sex and marital therapy, 21*, 21-29.
- Ilies, R., Johnson, M. D., & Judge, T. A. (2005). *Social interactions at work: Their influence on affective experiences and job satisfaction*. Unpublished manuscript.
- Isen, A. M. (1990). The influence of positive and negative affect on cognitive organization: Some implications for development. In N. Stein, B. Leventhal & T. Trabasso (Eds.), *Psychological and biological approaches to emotion* (pp. 75-94). Hillsdale, NJ: Erlbaum.
- Isen, A. M. (2000a). Positive affect and decision making. In M. Lewis & J. M. Haviland-Jones (Eds.), *Handbook of emotions* (2nd ed., pp. 417-435). New York: Guilford Press.
- Isen, A. M. (2000b). Some perspectives on positive affect and self-regulation. *Psychological Inquiry, 11*(3), 184-187.
- Isen, A. M., & Baron, R. A. (1991). Positive affect as a factor in organizational behavior. *Research in Organizational Behavior, 13*, 1-53.
- Isen, A. M., Daubman, K. A., & Nowicki, G. P. (1987). Positive affect facilitates creative problem solving. *Journal of Personality and Social Psychology, 52*, 1122-1131.
- Izard, C. E. (1977). *Human emotions*. New York: Plenum Press.
- Izard, C. E. (1991). *The psychology of emotions*. New York: Plenum Press.
- Izard, C. E., Libero, D. Z., Putnam, P., & Haynes, O. M. (1993). Stability of emotion experiences and their relations to traits of personality. *Journal of Personality and Social Psychology, 64*, 847-860.
- James, N. (1989). Emotional labour: Skill and work in the social regulation of feelings. *Sociological Review, 37*, 15-42.
- James, N. (1992). Care = organization + physical labour + emotional labour. *Sociology of Health & Illness, 14*, 488-509.
- Jensen-Campbell, L. A. (1996). Perceptions of interpersonal conflict during early adolescence. Unpublished doctoral dissertation. Texas A&M University.
- John, O. P., & Gross, J. J. (2004). Healthy and Unhealthy Emotion Regulation: Personality Processes, Individual Differences, and Life Span Development. *Journal of Personality, 72*(6).
- 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*(4), 661-673.
- Judge, T. A., Woolf, E. F., & Hurst, C. (2009). Is emotional labor more difficult for some than for others? A multilevel, experience-sampling study. *Personnel Psychology, 62*, 57-88.

- Kahn, R. L., & Byosiere, M. (1992). Handbook of Industrial & Organizational Psychology. In M. D. Dunnette & L. M. Hough (Eds.), *Stress in organizations* (2nd ed., Vol. 3, pp. 571-650). Palo Alto, CA: Consulting Psychologists Press.
- Kahneman, D., Krueger, A. B., Schkade, D. A., Schwarz, N., & Stone, A. A. (2004). A Survey Method for Characterizing Daily Life Experience: The Day Reconstruction Method (DRM). *Science*, *306*, 1776-1780.
- Kälin, W., Semmer, N. K., Elfering, A., Tschan, F., Dauwalder, J.-P., Heunert, S., et al. (2000). Work characteristics and well-being of Swiss apprentices entering the labor market. *Swiss Journal of Psychology*, *59*, 272-290.
- Kammann, R., & Flett, R. (1983). Affectometer 2: A scale to measure current levels of general happiness. *Australian Journal of Psychology*, *35*(2), 259-265.
- Karasek, R. A., & Theorell, T. (1990). *Healthy work: Stress, productivity, and the reconstruction of working life*. New York, NY: Basic Books.
- Kark, R., & Medler-Liraz, H. (2007). Leading with a smile: The influence of managers' leadership behavior on the emotional experience of employees and customers. In C. E. J. Härtel, N. M. Ashkanasy & W. J. Zerbe (Eds.), *Research on Emotions in Organizations* (Vol. 2: Functionality, Intentionality and Morality, pp. 177-198): Emerald.
- Kelly, R., & Voydanoff, P. (1985). Work/family role strain among employed parents. *Family Relations*, *34*, 367-374.
- Keltner, D., & Bonanno, G. A. (1997). A study of laughter and dissociation: The distinct correlates of laughter and smiling during bereavement. *Journal of Personality and Social Psychology and Aging*, *73*, 687-702.
- Kiefer, T., & Briner, R. B. (2003). Handle with care: Toxic and positive emotions at work. *People Management*, *9*(21), 48-50.
- Kiefer, T., & Briner, R. B. (2006). Emotions at work. In P. Jackson & M. Shams (Eds.), *Recent Developments in Work and Organizational Psychology: Implications for International Business* Oxford: Elsevier Science.
- Kirouac, G. (1995). *Les Emotions* (2nd ed.). Sainte-Foy, Québec: Presses de l'Université du Québec.
- Kleiboer, A. M., Kuijer, R. G., Hox, J. J., Jongen, P. J. H., Frequin, S. T., & Bensing, J. M. (2007). Daily negative interactions and mood among patients and partners dealing with multiple sclerosis (MS): The moderating effects of emotional support. *Social Science & Medicine*, *64*, 389-400.
- Kopelman, S., Rosette, A. S., & Thompson, L. (2006). The three faces of Eve: Strategic displays of positive, negative and neutral emotions in negotiations. *Organizational Behavior & Human Decision Processes*, *99*, 81-101.
- Kruml, S. M., & Geddes, D. (2000). Exploring the dimensions of emotional labor. *Management Communication Quarterly*, *14*(1), 8-49.
- Lambert, S. J. (1990). Processes Linking Work and Family: A Critical Review and Research Agenda. *Human Relations*, *43*, 239-257.
- Lang, P. (1994). The varieties of emotional experience: A meditation of James and Lange Theory. *Psychological Review*, *101*, 211-221.

- Larsen, J. T., & Diener, E. (1992). Promises and problems with the circumplex model of emotion. *Review of personality and social psychology*, 13, 25-59.
- Larsen, R. J. (2000). Toward a science of mood regulation. *Psychological inquiry*, 11(3), 129-141.
- Larson, E. B., & Yao, X. (2005). Clinical empathy as emotional labor in the patient-physician relationship. *Journal of the American Medical Association*, 293(9), 1100-1106.
- Lazarus, R. S. (1991a). *Emotion and Adaptation*. New York: Oxford University Press.
- Lazarus, R. S. (1991b). Progress on a cognitive-motivational-relational theory of emotion. *American Psychologist*, 46(8), 819-834.
- Leary, M. R. (1996). *Self-presentation: Impression management and interpersonal behavior*. Colorado: Westview Press.
- Leary, M. R., Nezlek, J. B., Downs, D., Radford-Davenport, J., Martin, J., & McMullen, A. (1994). Self-presentation in everyday interactions: Effects of target familiarity and gender composition. *Journal of Personality and Social Psychology*, 67, 664-673.
- Lepore, S. J. (1992). Social conflict, social support, and psychological distress: Evidence of cross-domain buffering effects. *Journal of Personality and Social Psychology*, 63(5), 857-867.
- Levy, B., Slade, M., Kunkel, S., & Kasl, S. (2002). Longitudinal benefit of positive self-perceptions of aging on functioning health. *Journal of Gerontology: Psychological Science*, 57, 409-417.
- Lewig, K. A., & Dollard, M. F. (2003). Emotional dissonance, emotional exhaustion and job satisfaction in call centre workers. *European Journal of Work and Organizational Psychology*, 12(4), 366-392.
- Liden, R. C., Wayne, S. J., & Stilwell, D. (1993). A longitudinal study on the early development of leader-member exchanges. *Journal of Applied Psychology*, 78, 662-674.
- Litt, M. D., Cooney, N. L., & Morse, P. (1998). Ecological momentary assessment (EMA) with treated alcoholics: methodological problems and potential solutions. *Health Psychology*, 17, 48-52.
- Liu, J. H., Karasawa, K., & Weiner, B. (1992). Inferences about the causes of positive and negative emotions. *Personality and Social Psychology Bulletin*, 18(5), 603-615.
- Longua, J., DeHart, T., Tennen, H., & Armeli, S. (2009, accepted). Personality moderates the interaction between positive and negative daily events predicting negative affect and stress. *Journal of research in personality*.
- Lopes, P. N., Salovey, P., Côté, S., & Beers, M. (2005). Emotion regulation abilities and the quality of social interaction. *Emotion*, 5(1), 113-118.
- Lucas, R. E., Diener, E., & Suh, E. M. (1996). Discriminant validity of well-being measures. *Journal of Personality and Social Psychology*, 71, 616-628.
- Lyubomirsky, S., King, L., & Diener, E. (2005). The benefits of frequent positive affect: Does happiness lead to success? *Psychological Bulletin*, 131, 803-855.
- Mann, S., & Cowburn, J. (2005). Emotional labour and stress within mental health nursing. *Journal of Psychiatric and Mental Health Nursing*, 12(154-162).

- Manne, S. I., Taylor, K. L., Dongherty, J., & Kemeny, N. (1997). Supportive and Negative Responses in the Partner Relationship: Their Association with Psychological Adjustment Among Individuals with Cancer. *Journal of Behavioral Medicine*, 20(2), 101-125.
- Marco, C. A., & Suls, J. (1993). Daily stress and the trajectory of mood: Spillover, response assimilation, contrast, and chronic negative affectivity. *Journal of Personality and Social Psychology*, 64(6), 1053-1063.
- Martin, S. E. (1999). Police force or police service? Gender and emotional labor. *Annals of the American Academy of Political and Social Science*, 561, 111-126.
- Martinez-Inigo, D., Totterdell, P., Alcover, C. M., & Holman, D. (2007). Emotional labour and emotional exhaustion: Interpersonal and intrapersonal mechanisms. *Work & Stress*, 21, 30-47.
- Maruta, T., Colligan, R. C., Malinchoc, M., & Offord, K. P. (2000). Optimists vs. pessimists: Survival rate among medical patients over a 30-year period. *Mayo Clinic Proceedings*, 75, 140-143.
- Mayer, J. D., Gaschke, Y. N., Braverman, D. L., & Evans, T. W. (1992). Mood-congruent judgment is a general effect. *Journal of Personality and Social Psychology*, 63(1), 119-132.
- McCrae, R. R., & Costa, P. T. (1987). Validation of the five-factor model of personality across instruments and observers. *Journal of Personality and Social Psychology*, 52, 90-91.
- McCrae, R. R., & John, O. P. (1992). An introduction to the Five-Factor Model and its applications. *Journal of Personality*. 60, 175-215.
- Meier, L. L., Semmer, N. K., Elfering, A., & Jacobshagen, N. (2008). The double meaning of control: Three-way interactions between internal resources, job control, and stressors at work. *Journal of Occupational Health Psychology*, 13, 244-258.
- Merrilees, C. E., Goeke-Morey, M., & Cummings, E. M. (2007). Do event-contingent diaries about marital conflict change marital interactions? *Behaviour Research and Therapy*, 46, 253-262.
- Messerli, L., Tschan, F., Semmer, N., & Totterdell, P. (2009). Bedtime mood as a function of emotions experienced in social interactions at work and in private life. *Submitted for publication*.
- Mignonac, K., & Herrbach, O. (2004). Linking work events, affective states, and attitudes: An empirical study of managers' emotions. *Journal of Business and Psychology*, 19(2).
- Mikolajczak, M., Tran, V., Brotheridge, C., & Gross, J. J. (2009). Using an emotion regulation framework to predict the outcomes of emotional labor. *Emotions in Groups, Organizations and Cultures; Research on Emotions in Organizations* 5, 245-573.
- 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.
- Mohr, C. D., Armeli, S., Mccauley Ohannessian, C. M., Tennen, H., Carney, A., Affleck, G. G., et al. (2003). Daily interpersonal experiences and distress: Are women more vulnerable? *Journal of Social and Clinical Psychology*, 22(4), 393-423.
- Morin, C., Rodrigue, S., & Ivers, H. (2003). Role of stress, arousal, and coping skills in primary insomnia. *Psychosomatic Medicine*, 65, 259-267.

- Morris, J. A., & Feldman, D. C. (1996). The dimensions, antecedents, and consequences of emotional labor. *Academy of Management Review*, 21(4), 986-1010.
- Morris, J. A., & Feldman, D. C. (1997). Managing emotions in the workplace. *Journal of Managerial Issues*, 9, 257-274.
- Moskowitz, J. T. (2003). Positive Affect Predicts Lower Risk of AIDS Mortality. *Psychosomatic Medicine* 65, 620-626.
- Neslon, R. O. (1977). Progress in behavioral modification. In M. Hersen, R. M. Eisler & P. Miller (Eds.), *Assessment and therapeutic functions of self-monitoring*. (pp. 263-308). New York: Academic Press.
- Newsom, J. T., Nishishiba, M., Morgan, D. L., & Rook, K. S. (2003). The relative importance of three domains of positive and negative social exchanges: A longitudinal model with comparable measures. *Psychology and Aging*, 18(4), 746-754.
- Nezlek, J. B. (1990). Self report diaries in the study of social interaction. *Contemporary Social Psychology*, 14, 205-210.
- Nezlek, J. B. (2001). Multilevel random coefficient analyses of event- and interval-contingent data in social and personality psychology research. *Personality and Social Psychology Bulletin*, 27(7), 771-785.
- Nezlek, J. B. (2003a). Using multilevel random coefficient modeling to analyze social interaction diary data. *Journal of Social and Personal Relationships*, 20(4), 437-469.
- Nezlek, J. B. (2003b). Using multilevel random coefficient modeling to analyze social interaction diary data. *Journal of Social and Personal Relationships*, 20(4), 437-469.
- Nezlek, J. B., & Plesko, R. M. (2003). Affect- and self-based models of relationships between daily events and daily well-being. *Personality and Social Psychology Bulletin*, 29(5), 584-596.
- Nezlek, J. B., Richardson, D. S., Green, L. R., & Schatten-Jones, E. C. (2002). Psychological well-being and day-to-day social interactions among older adults. *Personal Relationships*, 9, 57-71.
- Nezlek, J. B., Wheeler, L., & Reis, H. T. (1983). Studies of social participation. In H. T. Reis (Ed.), *Naturalistic approaches to studying social interaction. New directions for methodology of social and behavioral sciences* (Vol. 15, pp. 57-73). San Francisco: Jossey-Bass.
- Nolen-Hoeksema, S., Parker, L., & Larson, J. (1994). Ruminative coping with depressed mood following loss. *Journal of Personality and Social Psychology*, 67, 92-104.
- Nowlis, V. (1965). Research with the mood adjective checklist. In S. S. Tomkins & C. E. Izard (Eds.), *Affect, cognition and personality*. New York: Springer.
- Okun, M. A., & Keith, V. M. (1998). Effects of positive and negative social exchanges with various sources on depressive symptoms in younger and older adults. *J Gerontol B Psychol Sci Soc Sci*, 53(1), 4-20.
- 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. *Personality processes and individual differences*, 91(4), 730-749.
- Ortony, A., & Turner, T. J. (1990). What's Basic About Basic Emotions? *Psychological Review*, 97(3), 315-331.

- Ostendorf, F. (1990). *Sprache und Persönlichkeitsstruktur. Zur Validität des Fünf-Faktoren-Modells der Persönlichkeit*. Regensburg, Germany: Roderer.
- Ostir, G. V., Markides, K. S., Black, S. A., & Goodwin, J. S. (2000). Emotional well-being predicts subsequent functional independence and survival. *Journal of the American Geriatrics Society, 5*, 473-478.
- Panksepp, J. (1982). Toward a general psychobiological theory of emotions. *Behavioral and Brain Sciences, 5*, 407-467.
- Pearson, C. M., & Porath, C. L. (2005). On the nature, consequences and remedies of workplace incivility: No time for “nice”? Think again. *Academy of Management Executive, 2005, Vol. 19, No. 1, 19(1)*, 7-18.
- Peeters, M. C. W., Buunk, B. P., & Schaufeli, W. B. (1995). Social interactions, stressful events and negative affect at work: a micro-analytic approach. *European Journal of Social Psychology, 25*, 391-401.
- Perrez, M., Schoebi, D., & Wilhelm, P. (2000). How to assess social regulation of stress and emotions in daily family life? A computer-assisted family self-monitoring system (FASEM-C). *Clinical Psychology and Psychotherapy, 7*, 326-339.
- Peterson, C., Seligman, M. E. P., & Vaillant, G. (1988). Pessimistic explanatory style as a risk factor for physical illness: A thirty-five year longitudinal study. *Journal of Personality and Social Psychology, 55*, 23-27.
- Peterson, C., Seligman, M. E. P., Yurko, K. H., Martin, L. R., & Friedman, H. S. (1998). Catastrophizing and untimely death. *Psychological Science, 9*, 127-130.
- Pillow, D. R., Zautra, A. J., & Sandler, I. (1996). Major life events and minor stressors: Identifying mediational links in the stress process. *Journal of Personality and Social Psychology, 70(10)*, 381-394.
- Piotrkowski, C., & Crits-Christoph, P. (1981). Women's job and family adjustment. *Journal of Family Issues, 32*, 126-147.
- 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(5)*, 879-903.
- Posner, J., Russell, J. A., & Peterson, B. S. (2005). The circumplex model of affect: An integrative approach to affective neuroscience, cognitive development, and psychopathology. *Development and Psychopathology, 17*, 715-734.
- Preacher, K. J., Kurran, 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(4)*, 437-448.
- Pressman, S. D., & Cohen, S. (2005). Does positive affect influence health? *Psychological Bulletin, 131*, 925-971.
- Pugh, S. D. (2001). Service with a smile: emotional contagion in the service encounter. *Academy of Management Journal, 44(5)*, 1018-1027.
- Pugliesi, K. (1999). The consequences of emotional labor: Effects on work stress, job satisfaction, and well-being. *Motivation & Emotion, 23(2)*, 125-154.
- Radloff, L. S. (1977). The CES-D scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement, 1*, 385-401.

- Rafaeli, A. (1989). When cashiers meet customers: An analysis of the role of supermarket cashiers. *Academy of Management Journal*, 32(2), 245-273.
- Rafaeli, A., & Sutton, R. I. (1987). Expression of emotion as a part of the work role. *Academy of Management Review*, 12(1), 23-37.
- Rafaeli, A., & Sutton, R. I. (1989). The expression of emotion in organizational life. In L. L. Cummings & B. M. Staw (Eds.), *Research in organizational behavior* (Vol. 11, pp. 1-42). Greenwich: JAI Press.
- Rafaeli, A., & Sutton, R. I. (1990). Busy stores and demanding customers: How do they affect the display of positive emotion? *Academy of Management Journal*, 33(3), 623-637.
- Rafaeli, A., & Sutton, R. I. (1991). Emotional contrast strategies as means of social influence: lessons from criminal interrogators and bill collectors. *Academy of Management Journal*, 34(4), 749-775.
- Rasbash, J., Steele, F., Browne, W., & Posser, B. (2005). *A user's guide to MLwN version 2.0*. Bristol: Center for Multilevel Modelling.
- Raudenbush, S. W., & Bryk, A. S. (2002). *Hierarchical linear models: Applications and data analysis methods*. Thousand Oaks, CA: Sage Publications.
- Reis, H. T. (1986). Gender effects in social participation: Intimacy, loneliness, and the conduct of social interaction. In R. Gilmour & S. Duck (Eds.), *The emerging field of personal relationships* (pp. 91-105). Hillsdale, NJ: Erlbaum.
- Reis, H. T., & Gable, S. (2000). Event-sampling and other methods for studying everyday experience. In H. T. Reis & C. M. Judd (Eds.), *Handbook of research methods in social and personality psychology* (pp. 190-222). Cambridge: Cambridge University Press.
- Reis, H. T., Senchak, M., & Solomon, B. (1985). Sex differences in the intimacy of social interaction: Further examination of potential explanations. *Journal of Personality and Social Psychology*, 48(5), 1204-1217.
- Reis, H. T., & Wheeler, L. (1991). Studying social interaction with the Rochester interaction record. *Advances in Experimental Social Psychology*, 24, 269-318.
- Repetti, R. L. (1987). Individual and common components of the social environment at work and psychological well-being. *Journal of Personality and Social Psychology*, 52(4), 710-720.
- Repetti, R. L. (1989). Effects of daily workload on subsequent behavior during marital interaction: The roles of social withdrawal and spouse support. *Journal of Personality and Social Psychology*, 57(4), 651-659.
- Repetti, R. L. (1992). Social withdrawal as a short-term coping response to daily stressors. In H. S. Friedman (Ed.), *Hostility, coping, and health* (pp. 151-165). Washington, D.C.: American Psychological Association.
- Repetti, R. L. (1993). Short-term effects of occupational stressors on daily mood and health complaints. *Health Psychology* 12(2), 125-131.
- Repetti, R. L. (1994). Short-term and long-term processes linking job stressors to father-child interaction. *Social Development*, 3, 1-15.
- Repetti, R. L., & Wood, J. (1997). Effects of daily stress at work on mothers' interactions with preschoolers. *Journal of Family Psychology*, 11, 90-108.

- Richards, J. M., & Gross, J. J. (1999). Composure at any cost? The cognitive consequences of emotion suppression. *Personality and Social Psychology Bulletin*, 25, 1033-1044.
- Richards, J. M., & Gross, J. J. (2000). Emotion Regulation and Memory: The Cognitive Costs of Keeping One's Cool. *Journal of Personality and Social Psychology*, 79(3), 410-424.
- Richards, J. M., & Gross, J. J. (2005). Personality and emotional memory: How regulating emotion impairs memory for emotional events. *Journal of research in personality*, in press.
- Roberts, L. M. (2006). Shifting the lens on organizational life: The added value of positive scholarship. *Academy of Management Review*, 31(2), 292-305.
- Rook, K. S. (1984). The negative side of social interaction: Impact on psychological well-being. *Journal of Personality and Social Psychology*, 46(5), 1097-1108.
- Rook, K. S. (1987). Reciprocity of social exchange and social satisfaction among older women. *Journal of Personality and Social Psychology*, 52, 145-154.
- Rook, K. S. (2001). Emotional health and positive versus negative social exchanges: A daily diary analysis. *Applied Developmental Science*, 5(2), 86-97.
- Roseman, I. J. (1984). Cognitive determinants of emotion: A structural theory. In P. Shaver (Ed.), *Review of personality and social psychology: Vol. 5. Emotions, relationships, and health* (pp. 11-36). Beverly Hills, CA: Sage.
- Roseman, I. J., & Smith, C. A. (2001). Appraisal theory: Overview, assumptions, varieties, controversies. In K. R. Scherer, A. Schorr & T. Johnstone (Eds.), *Appraisal processes in emotion: Theory, methods, research* (pp. 3-19). Oxford, UK: Oxford University Press.
- Rosenberg, E. L., Ekman, P. E., & Blumenthal, J. A. (1998). Facial expression and the affective component of cynical hostility in male coronary heart disease patients. *Health Psychology*, 17, 376-380.
- Ross, M. (1989). Relation to implicit theories in the construction of personal histories. *Psychological Review*, 96, 341-357.
- Rothbard, N. P. (2001). Enriching or depleting: The dynamics of engagement in work and family roles. *Administrative Science Quarterly*, 46, 655-684.
- Ruehlman, L., & Karoly, P. (1991). With a little flak from my friends: Development and preliminary validation of the Test of Negative Social Exchange (TENSE). *Psychological Assessment*, 3, 97-104.
- Russell, D., Peplau, L. A., & Cutrona, C. E. (1980). The revised UCLA Loneliness Scale: Concurrent and discriminant validity. *Journal of Personality and Social Psychology*, 39, 472-480.
- Russell, J. A. (1980). A circumplex model of affect. *Journal of Personality and Social Psychology*, 39, 1161-1178.
- Russell, J. A. (1997). How shall an emotion be called? In R. Plutchik & H. Conte (Eds.), *Circumplex models of personality and emotions* (pp. 205-220). Washington, DC: American Psychological Association.
- Russell, J. A., & Carroll, J. M. (1999). On the bipolarity of positive and negative affect. *Psychological Bulletin*, 125(1), 3-30.

- Russell, J. A., & Feldman Barrett, L. (1999). Core affect, prototypical emotional episodes, and other things called emotion: Dissecting the elephant. *Journal of Personality and Social Psychology*, 76(5), 805-819.
- Ryle, G. (1949). *The concept of mind*. Harmondsworth, Middlesex, England: Penguin Books.
- Saavedra, R., & Kwun, S. K. (2000). Affective States in Job Characteristics Theory. *Journal of Organizational Behavior*, 21(2), 131-146.
- Schallberger, U., & Venetz, M. (1999). *Kurzversion des MRS-Inventars von Ostendorf (1990) zur Erfassung der fünf "grossen" Persönlichkeitsfaktoren* (No. 30). Zürich: Psychologisches Institut der Universität Zürich.
- Schallberger, U., & Venetz, M. (1999). *Kurzversionen des MRS-Inventars von Ostendorf (1990) zur Erfassung der fünf "grossen" Persönlichkeitsfaktoren [Brief versions of Ostendorf's MRS inventory for the assessment of the big five personality factors]*: Reports from the Department of Applied Psychology, University of Zürich, Switzerland.
- Scheier, M. F., & Carver, C. S. (1985). Optimism, coping, and health: Assessment and implications of generalized outcome expectancies. *Health Psychology*, 4(3), 219-247.
- Scherbaum, C. A., & Ferreter, J. M. (2009). Estimating statistical power and required sample sizes for organizational research using multilevel modeling. *Organizational research methods*, 12(2), 347-367.
- Scherer, K. (1984). On the nature and function of emotion: A component process approach. In K. R. Scherer & P. Ekman (Eds.), *Approaches to emotion*. Hillsdale, N. J.: Lawrence Erlbaum.
- Scherer, K. (1994). Toward a concept of "modal emotions". In R. J. Davidson (Ed.), *The nature of emotion. Fundamental questions* (pp. 25-31). New York: Oxford University Press.
- Scherer, K. (2000). Psychological models of emotions. In J. Borod (Ed.), *The neuropsychology of emotions* (pp. 137-162). New York: Oxford University Press.
- Scherer, K. (2004). Ways to study the nature and frequency of our daily emotions: Reply to the commentaries on 'Emotions in everyday life'. *Social Science Information*, 43(4), 667-689.
- Scherer, K. (2005). What are emotions? And how can they be measured? *Social Science Information*, 44(4), 695-729.
- Scherer, K., & Ceschi, G. (2000). Studying affective communication in the Airport: The case of lost baggage claims. *Personality and Social Psychology Bulletin*, 26(3), 327-339.
- Scherer, K., Walbott, H. G., & Summerfield, A. B. (1986). *Experiencing emotions: A cross-cultural study*. Cambridge, England: Cambridge University Press.
- Scherer, K., 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(4), 499-570.
- Schwartz, S., McDowell Anderson, W., Cole, S. R., Cornoni-Huntley, J., Hays, J. C., & Blazer, D. (1999). Insomnia and heart disease: A review of epidemiological studies. *Journal of Psychosomatic Research*, 47, 313-333.

- Scott, B. A., & Judge, T. A. (2006). Insomnia, emotions, and job satisfaction: A multilevel study. *Journal of Management*, 32, 622-645.
- Seery, B. L., Corrigan, E. Y., & Harpel, T. (2008). Job-related emotional labor and its relationship to work-family conflict and facilitation. *Journal of Family Economic Issues*, 29, 461-477.
- Seiter, J. S. (2007). Ingratiation and gratuity: The effect of complementing customers on tipping behavior in restaurants. *Journal of Applied Social Psychology*, 37, 478-485.
- Seiter, J. S., & Dutson, E. (2007). The effect of compliments on tipping behavior in hairstyling salons. *Journal of Applied Social Psychology*, 37, 1999-2007.
- Seligman, M. E. P., & Csikszentmihalyi, M. (2000). Positive psychology: An introduction. *American Psychologist*, 55(1), 5-14.
- Semmer, N. (1996). Individual differences, work stress and health. In M. J. Schabracq, J. A. M. Winnubst & C. L. Cooper (Eds.), *Handbook of work and health psychology* (pp. 51-86). Chichester, England: Wiley.
- Semmer, N., Zapf, D., & Dunckel, H. (1995). Assessing stress at work: A framework and an instrument. In O. Svane & C. Johansen (Eds.), *Work and health - Scientific basis of progress in the working environment* (pp. 105-113). Luxembourg: European Commission.
- Shahar, G., & Priel, B. (2002). Positive life events and adolescent emotional distress: In search of protective-interactive models. *Journal of Social and Clinical Psychology*, 21, 645-668.
- Shiffman, S., Fischer, L. A., Paty, J. A., Gnys, M., Kassel, J. D., Hickcox, M., et al. (1994). Drinking and smoking: A field study of their association. *Annals of behavioral medicine*, 64, 366-379.
- Simon, H. A. (1967). Motivational and emotional controls of cognition. *Psychological Review*, 74, 29-39.
- Smith, C. A., & Ellsworth, P. C. (1985). Patterns of cognitive appraisal in emotion. *Journal of Personality and Social Psychology*, 48(4), 813-838.
- Smith, T. W. (1992). Hostility and health: Current status of a psychosomatic hypothesis. *Health Psychology*, 11(3), 139-150.
- Snijders, T., & Boskers, R. Y. (1999). *Multilevel analysis. An introduction to basic and advanced multilevel modeling* London: Sage Publications.
- Song, Z., Foo, M. D., & Uy, M. A. (2008). Mood spillover and crossover among dual-earner couples: An cell phone event sampling study. *Journal of Applied Psychology*, 93(2), 443-452.
- Sonnemans, J. (1991). Structure and determinants of emotional intensity. University of Amsterdam.
- Sonnentag, S. (2001). Work, recovery activities, and individual well-being: A diary study. *Journal of Occupational Health Psychology*, 6(3), 196-210.
- Sonnentag, S., & Bayer, U.-V. (2005). Switching off mentally: Predictors and consequences of psychological detachment from work during off-job time. *Journal of Occupational Health Psychology*, 10(4), 393-414.

- Sonnentag, S., & Frese, M. (2003). Stress in organizations. In W. C. Borman, D. R. Ilgen & R. J. Klimoski (Eds.), *Handbook of psychology* (Vol. 12: Industrial and organizational psychology, pp. 453-491). New York: Wiley.
- Sonnentag, S., & Fritz, C. (2007). The recovery experience questionnaire: Development and validation of a measure assessing recuperation and unwinding at work. *Journal of Occupational Health Psychology, 12*, 204-221.
- Sonnentag, S., & Jelden, S. (2005, April). *The recovery paradox: Why we don't exercise after stressful days*. Paper presented at the 20th Annual conference of the Society for Industrial and Organizational psychology.
- Sonnentag, S., & Natter, E. (2004). Flight attendant's daily recovery from work: Is there no place like home? *International Journal of Stress Management, 11*(4), 366-391.
- Sonnentag, S., & Zijlstra, F. R. (2006). Job characteristics and off-job activities as predictors of need for recovery, well-being, and fatigue. *Journal of Applied Psychology, 91*(2), 330-350.
- Spector, P. E. (1998). A control theory of the job stress process. In C. L. Cooper (Ed.), *Theories of organizational stress* (pp. 153-169). Oxford, UK: Oxford University Press.
- Spector, P. E. (2006). Method Variance in Organizational Research Truth or Urban Legend? *Organizational Research Methods, 9*(2), 221-232.
- Spector, P. E., Zapf, D., Chen, P. Y., & Frese, M. (2000). Why negative affectivity should not be controlled in job stress research: Don't throw out the baby with the bath water. *Journal of Organizational Behavior, 21*, 79-95.
- Spence, J. D., Barnett, P. A., Manuck, S. B., & Jennings, J. R. (1997). Psychological stress and the progression of carotid atherosclerosis. *Stroke, 27*(155).
- Staines, G. L. (1980). Spillover versus compensation: A review of the literature on the relationship between work and nonwork. *Human Relations, 33*(2), 111-129.
- Staw, B. M., Sutton, R. I., & Pelled, L. H. (1994). Employee positive emotion and favorable outcomes at the workplace. *Organization Science, 5*(1), 51-71.
- Stone, A. A. (1987). Event content in a daily survey is differentially associated with concurrent mood. *Journal of Personality and Social Psychology, 52*(1), 56-58.
- Stone, A. A., Broderick, J. E., Schwartz, J. E., Shifman, S., Litcher-Kelly, L., & Calvanese, P. (2003). Intensive momentary reporting of pain with an electronic diary: Reactivity, compliance, and patient satisfaction. *Pain, 104*, 343-351.
- Stone, A. A., Kessler, R. C., & Haythornthwaite, J. A. (1991). Measuring daily events and experiences: Decisions for the researcher. *Journal of Personality, 59*, 575-607.
- Stone, A. A., & Neale, J. M. (1982). Development of a methodology for assessing daily experiences. In A. Baum & J. E. Singer (Eds.), *Advances in environmental psychology: Environment and health* (Vol. 4, pp. 49-83). Hillsdale, NJ: Erlbaum.
- Stone, A. A., & Neale, J. M. (1984). Effects of severe daily events on mood. *Journal of Personality and Social Psychology, 46*(1), 137-144.
- Stone, A. A., Neale, J. M., & Shiffman, S. (1993). Daily assessments of stress and coping and their association with mood. *Annals of behavioral medicine, 15*, 8-16.
- Stones, M. J., & Kozma, A. (1985). Structural relationships among happiness scales: A second order factorial study *Social Indicators Research, 17*, 19-28.

- Story, L. B., & Repetti, R. L. (2006). Daily occupational stressors and marital behavior. *Journal of Family Psychology, 20*(4), 690-700.
- Strack, F., Martin, L. L., & Stepper, S. (1988). Inhibiting and facilitating conditions of the human smile: A nonobtrusive test of the facial feedback hypothesis. *Journal of Personality and Social Psychology, 54*(5), 768-777.
- Suh, E., Diener, E., & Fujita, F. (1996). Events and subjective well-being: only recent events matter. *Journal of personality and social psychology, 70*(5), 1091-1102.
- Suls, J., & Martin, R. (2005). The daily life of the garden-variety neurotic: Reactivity, stressor, exposure, mood spillover, and maladaptive coping. *Journal of Personality, 73*(6), 1486-1510.
- Sutton, R. I. (1991). Maintaining norms about expressing emotions: The case of bill collectors. *Administrative Science Quarterly, 36*, 245-268.
- Sy, T., Côté, S., & Saavedra, R. (2005). The contagious leader: Impact of the leader's mood on the mood of group members, group affective tone, and group processes. *Journal of Applied Psychology 90*(2), 295-305.
- Tamir, M., Chiu, C.-Y., & Gross, J. J. (2007). Business or pleasure? Utilitarian versus hedonic considerations in emotion regulation. *Emotion, 7*(3), 546-554.
- Tennen, H., Affleck, G., Armeli, S., & Carney, M. A. (2000). A daily process approach to coping. Linking theory, research, and practice. *American Psychologist, 55*(6).
- Tennen, H., Suls, J., & Affleck, G. (1991). Personality and daily experience: The promise and the challenge. *Journal of Personality, 59*, 313-337.
- Theorell, T., & Karasek, R. A. (1996). Current issues relating to psychosocial job strain and cardiovascular disease research. *Journal of Occupation and Health Psychology, 1*, 9-26.
- Thoits, P. A. (1990). Emotional deviance: Research agendas. In T. D. Kemper (Ed.), *Research agendas in the sociology of emotions* (pp. 180-203). Albany: State University of New York Press.
- Thomas, D. L., & Diener, E. (1990). Memory accuracy in the recall of emotions. *Journal of Personality and Social Psychology, 59*(2), 291-297.
- Thompson, L., Medvec, V. H., & Seiden, V. (2001). Poker face, smiley face, and rant 'n' rave: Myths and realities about emotion in negotiation. In M. A. Hogg & R. S. Tindale (Eds.), *Blackwell Handbook of Social Psychology: Group Processes*. Malden, MA: : Blackwell Publishers.
- Totterdell, P., & Holman, D. (2001). Just trying to keep my customers satisfied: A diary study on emotional dissonance in a call centre. *Paper presented at the European Congress of Psychology Conference, July 3rd, 2001*.
- Totterdell, P., & Holman, D. (2003). Emotion regulation in customer service roles: Testing a model of emotional labor. *Journal of Occupational Health Psychology, 8*, 55-73.
- Totterdell, P., & Parkinson, B. (1999). Use and effectiveness of self-regulation strategies for improving mood in a group of trainee teachers. *Journal of Occupation and Health Psychology, 4*(3), 219-232.

- Totterdell, P., Spelten, E., Barton, J., Smith, L., & Folkard, S. (1995). On-shift and daily variations in self-report and performance measures in rotating-shift and permanent night nurses. *Work & Stress*, 9, 187-197.
- Tsai, W. (2001). Determinants and consequences of employee displayed positive emotions. *Journal of Management*, 27, 497-512.
- Tsai, W., & Huang, Y. (2002). Mechanisms linking employee affective delivery and customer behavioral intentions. *Journal of Applied Psychology*, 87, 1001-1008.
- Tschan, F., & Messerli, L. (2005). Felt and displayed emotions in work-related interactions: Which emotions should we measure ? Unpublished Working Paper NCCR Affective Sciences. University of Neuchâtel.
- Tschan, F., Rochat, S., & Zapf, D. (2004). Not only with regard to clients: Emotion work in client and co-worker interactions: An event-sampling approach.
- Tschan, F., Rochat, S., & Zapf, D. (2005). It's not only clients: Studying emotion work with clients and co-workers with an event-sampling approach. *Journal of Occupational & Organizational Psychology*, 78, 195-220.
- Tschan, F., Semmer, N. K., & Inversin, L. (2004). Work related and "private" social interactions at work. *Social Indicators Research*, 67, 145-182.
- Van Eerde, W., Holman, D., & Totterdell, P. (2005). Editorial. *Journal of Occupational and Organizational Psychology*, 78, 151-154.
- Van Maanen, J. (1991). The smile factory: Work at Disneyland. In P. J. Frost, L. F. Moore, M. R. Louis, C. C. Lundberg & J. Martin (Eds.), *Reframing organizational culture* (pp. 58-76). Newbury Park: Sage.
- Van Maanen, J., & Kunda, G. (1989). "Real feelings": Emotional expression and organizational culture. In L. L. Cummings & B. M. Staw (Eds.), *Research in organizational behavior* (Vol. 11, pp. 43-103). Greenwich: JAI Press.
- Viswesvaran, C., Sanchez, J., & Fisher, J. (1999). The role of social support in the process of work stress: A meta-analysis. *Journal of Vocational Behavior*, 54, 314-334.
- Vohs, K. D., Baumeister, R. F., & Ciarocco, N. J. (2005). Self-Regulation and Self-Presentation: Regulatory Resource Depletion Impairs Impression Management and Effortful Self-Presentation Depletes Regulatory Resources. *Journal of Personality and Social Psychology*, 88(4), 632-657.
- Warr, P. (1999). Well-being and the workplace. In D. Kahneman, E. Diener & al. (Eds.), *Well-being: The foundations of hedonic psychology* (pp. 392-412). New York, U.S: Russell Sage Foundation.
- Warr, P. (2007). *Work, happiness, and unhappiness*. Mahwah, NJ: Lawrence Erlbaum.
- Watson, D. (1988). Intraindividual and interindividual analyses of positive and negative affect: Their relation to health complaints, perceived stress, and daily activities. *Journal of Personality and Social Psychology*, 54(6), 1020-1030.
- Watson, D. (2000). *Mood and temperament*. New York: Guilford.
- Watson, D., & Clark, L. A. (1984). Negative affectivity: the disposition to experience aversive emotional states. *Psychological Bulletin*, 96(3), 465-490.
- Watson, D., & Clark, L. A. (1997). Measurement and mismeasurement of mood: Recurrent and emergent issues. *Journal of Personality Assessment*, 68(2), 267-296.

- 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(6), 1063-1070.
- Watson, D., & Tellegen, A. (1985). Toward a consensual structure of mood. *Psychological Bulletin*, 98(2), 219-235.
- Watson, D., Wiese, D., Vaidya, J., & Tellegen, A. (1999). The two general activation systems of affect: Structural findings, evolutionary considerations, and psychobiological evidence. *Journal of Personality and Social Psychology*, 76(5), 820-838.
- Wegge, J., van Dick, R., Fisher, G. K., West, M. A., & Dawson, J. F. (2006). A test of basic assumptions of affective events theory (AET) in call centre work. *British Journal of Management*, 17, 237-254.
- Weiss, H. M., & Cropanzano, R. (1996). Affective events theory: A theoretical discussion of the structure, consequences of affective experiences at work. *Research in Organizational Behavior*, 18, 1-74.
- Wells, J. D., Hobfoll, S. E., & Lavin, J. (1999). When it rains, it pours. The greater impact of resource loss compared to gain on psychological distress. *Personality and Social Psychology Bulletin*, 25(9), 1172-1182.
- West, S. G., & Hepworth, J. T. (1991). Statistical issues in the study of temporal data: Daily experiences. *Journal of Personality*, 59(3), 609-662.
- Wheeler, L., & Miyake, K. (1992). Social comparison in everyday life. *Journal of Personality and Social Psychology*, 62, 760-773.
- Wheeler, L., & Nezlek, J. B. (1977). Sex differences in social participation. *Journal of Personality and Social Psychology*, 35(10), 742-754.
- Wheeler, L., & Reis, H. T. (1991). Self-recording of everyday life events: Origins, types, and uses. *Journal of personality*, 59(3), 339-354.
- Wheeler, L., Reis, H. T., & Nezlek, J. B. (1983). Loneliness, social interaction, and sex roles. *Journal of Personality and Social Psychology*, 45(4), 943-953.
- Williams, K. J., & Alliger, G. M. (1994). Role stressors, mood spillover, and perceptions of work-family conflict in employed parents. *Academy of Management Journal*, 37(4), 837-868.
- Williams, K. J., Suls, J., Alliger, G. M., Learner, S. M., & Wan, C. K. (1991). Multiple role juggling and daily mood states in working mothers: An experience sampling study. *Journal of Applied Psychology*, 76(5), 664-674.
- Zapf, D. (2002). Emotion work and psychological well-being: A review of the literature and some conceptual considerations. *Human Resource Management Review*, 12, 237-268.
- Zapf, D., Dormann, C., & Frese, M. (1996). Longitudinal studies in organizational stress research: A review of the literature with reference to methodological issues. *Journal of Occupational Health Psychology*, 1, 145-169.
- Zapf, D., Knorz, C., & Kulla, M. (1996). On the relationship between mobbing factors, and job content, social work environment, and health outcomes. *European Journal of Work and Organizational Psychology*, 5(2), 215-237.

- Zapf, D., Mertini, H., Seifert, C., Vogt, C., Isic, A., Fischbach, A., et al. (2001). *FEWS - Frankfurt Emotion Work Scales. English Version: 1.0*. Frankfurt am Main: Johann Wolfgang Goethe-Universität, Institut für Psychologie.
- Zapf, D., Seifert, C., Schmutte, B., Mertini, H., & Holz, M. (2001). Emotion work and job stressors and their effects on burnout. *Psychology & Health, 16*, 527-545.
- Zapf, D., Vogt, C., Seifert, C., Mertini, H., & Isic, A. (1999). Emotion work as a source of stress: The concept and development of an instrument. *European Journal of Work and Organizational Psychology, 8*(3), 371-400.
- Zerbe, W. J. (2000). Emotional dissonance and employee well-being. In N. M. Ashkanasy, C. E. J. Härtel & W. J. Zerbe (Eds.), *Emotions in the workplace: Research, theory, and practice* (pp. 189-214). Westport, CT: Quorum.
- Zevon, M. A., & Tellegen, A. (1982). The structure of mood change: An idiographic / nomothetic analysis. *Journal of Personality and Social Psychology, 43*(1), 111-122.
- Zhu, J., & Thagard, P. (2002). Emotion and action. *Philosophical psychology, 15*(1), 19-36.