

ARE YOUR WORK ATTITUDES AFFECTED BY THOSE OF YOUR COWORKERS?

EXAMINING THE CROSSOVER OF ENGAGEMENT IN THE WORKPLACE

A Thesis

Presented to

The Faculty of the Department

of Psychology

University of Houston

In Partial Fulfillment

Of the Requirements for the Degree of

Master of Arts

By

Prema Ratnasingam

May, 2012

ARE YOUR WORK ATTITUDES AFFECTED BY THOSE OF YOUR COWORKERS?
EXAMINING THE CROSSOVER OF ENGAGEMENT IN THE WORKPLACE

Prema Ratnasingam. Student

APPROVED:

Christiane Spitzmueller, Ph.D.
Committee Chair

Lisa Penney, Ph.D.

Lynne Steinberg, Ph.D.

John W. Roberts, Ph.D.
Dean, College of Liberal Arts and Social Sciences
Department of English

ARE YOUR WORK ATTITUDES AFFECTED BY THOSE OF YOUR COWORKERS?
EXAMINING THE CROSSOVER OF ENGAGEMENT IN THE WORKPLACE

An Abstract of a Thesis

Presented to

The Faculty of the Department

of Psychology

University of Houston

In Partial Fulfillment

Of the Requirements for the Degree of

Master of Arts

By

Prema Ratnasingam

May, 2012

ABSTRACT

In this study, I examined the role of potential moderators and mediators of the crossover or ‘contagion’ of engagement between employees. I hypothesized that coworker support and positive coworker communication would mediate the transfer of engagement between coworkers and focal individuals. In addition, I hypothesized that individual differences (susceptibility to emotional contagion, self-construal, and agreeableness) and coworker characteristics (emotional expressiveness and organizational hierarchical status) would moderate the transfer of engagement between coworkers and focal individuals. Using a web-based survey methodology, I collected self-reported data from 1142 employees belonging to a total of 153 work teams in a multinational, engineering and construction firm. Using hierarchical linear modeling, I tested the above hypotheses while controlling for shared job resources. Evidence for engagement crossover was demonstrated by the significant relationship between individuals’ and their coworkers’ engagement scores. In addition, positive coworker communication about work-related matters was found to partially mediate the crossover of engagement between individuals and their coworkers. Third, individuals, who construed themselves as interdependent with others, had engagement scores that were more convergent with those of their coworkers. Finally, the non-significant relationship between focal individuals’ and their supervisors’ engagement scores indicated the absence of engagement crossover between employees who had different organizational (hierarchical) statuses. Theoretical and practical implications of the study’s findings are discussed.

TABLE OF CONTENTS

Gaps in the Crossover Literature and the Current Study's Goals to Fill those Gaps.....	3
The Crossover Process	5
Direct Crossover	6
The Spuriousness of Common Job Characteristics.....	7
Indirect Crossover via Mediating Processes	8
Support as a Mediator.	9
Positive Coworker Communication as a Mediator.	11
The Moderating Effects of Individual Differences in the Focal Individual.....	12
Susceptibility to Emotional Contagion	12
Agreeableness	14
Self Construal.....	15
The Moderating Effects of Coworker Characteristics	16
Emotional Expressiveness	17
Organizational Hierarchical Status of Colleagues	18
Method	19
Participants and Procedure.....	19
Measures	20
Statistical Analyses	25
Results.....	26
Engagement Crossover between Coworkers	26
The Mediating Role of Coworker Support and Positive Coworker Communication.....	27
The Moderating Role of Susceptibility to Emotional Contagion, Agreeableness, and Self Construal.....	28

The Moderating Role of Coworker Emotional Expressiveness and Colleague Organizational Hierarchical Status	29
Supplementary Analyses.....	29
Discussion	30
Positive Coworker Communication.....	32
Individuals' Self Construal	34
Colleagues' Organizational Hierarchical Status	35
Null Findings	36
Limitations, Strengths, and Future Research	38
Practical Implications.....	40
Concluding Remarks.....	41
References	42
Tables	52
Figure 1	56
Appendix.....	57

TABLE OF TABLES, FIGURES, AND APPENDIXES

Table 1	52
Table 2	53
Table 3	54
Table 4	55
Figure 1	56
Appendix.....	57

Work Attitudes Affected By Those Of Your Coworkers? Examining The Crossover Of Engagement In The Workplace

Current workplace trends involving flatter organizational structures and team-based production have substantially increased interdependency and interpersonal interaction among workers (Westman, 2001). Moreover, the evolution of job content from individually-oriented tasks to more complex and collaborative tasks (Harrison, Johns, & Martocchio, 2000) has intensified coworkers' salience and their potential influence on working individuals. The increasing awareness that individuals spend a substantial portion of their day with their coworkers has led researchers to pay more attention to the "crossover", "contagion" or "transference" of work attitudes, emotions, and behaviors between co-workers (e.g., Bakker & Xanthopoulou, 2009; Felps et al., 2009).

Although "crossover" has often been defined in terms of the inter-individual transmission of *strain* between closely related persons in a particular domain, the study of crossover should not be limited to the transference of negative emotions, given that it also theoretically applies to positive psychological states, such as, work engagement (Westman, 2001). Whereas, there has been tremendous empirical support for the crossover of negative psychological states, such as, burnout (Bakker & Schaufeli, 2000; Westman & Etzion, 1995), depression (Vinokur et al., 1996; Westman & Vinokur, 1998), and anxiety (e.g., Westman et al., 2004), evidence for 'positive' crossover remains somewhat limited (for a review, see Bakker, Albrecht, & Leiter, 2011). The current study adds to the 'positive' crossover literature by examining the crossover of work engagement between coworkers.

Work engagement, as defined by Schaufeli and his colleagues (2002), is a "positive, fulfilling, work-related psychological state" that is characterized by vigor, dedication, and

absorption” (p. 5). The behavioral-energetic component, vigor, refers to high levels of energy and mental resilience while working, the willingness to invest effort in one’s work, the ability to not be easily fatigued, and the persistence in the face of difficulties. The affective-emotional component, dedication, is characterized by a sense of involvement in one’s work, accompanied by feelings of enthusiasm and significance, and a sense of pride and inspiration. Lastly, the cognitive component, absorption, refers to a state in which individuals are fully concentrated on and engrossed in their work, whereby they lose self-consciousness and find that time passes quickly. Unlike the ebb and flow nature of most ‘psychological states’, engagement, is typically conceptualized as a relatively stable state that is highly influenced by one’s job and personal resources (Bakker, Albrecht, & Leiter, 2011; Schaufeli & Bakker, 2004).

The crossover of engagement between coworkers can systematically create a climate of engagement at the team-, departmental-, and organizational-levels of analysis, which in turn, may contribute to important organizational outcomes (Bakker, Albrecht, & Leiter, 2011). For instance, high levels of engagement have been found to be associated with increased job performance (Bakker & Bal, 2010; Harter, Schmidt, & Hayes, 2002) and financial returns (Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2009), and low turnover intentions (Schaufeli & Bakker, 2004). With 90% of U.S employees spending at least part of their work day in teams (Gordon, 1992), it seems vital, from a management standpoint, to identify and understand the factors contributing to the inter-individual transference of engagement between coworkers, as well as, the mechanisms underlying this process. The current study aims to do just that by examining the nature of engagement crossover between coworkers in teams via the investigation of potential mediators and moderators of the crossover process.

Gaps In The Crossover Literature And The Current Study's Goals To Fill These Gaps

For decades, a substantial proportion of the crossover literature focused on the transference of attitudes, emotions, and behaviors between spouses, while largely ignoring this phenomenon between coworkers (e.g., Jones & Fletcher, 1993; Westman & Etzion, 1995; Westman & Vinokur, 1998). It was not until recently that researchers have started to investigate the transference of attitudes, emotions, and behaviors in the organizational context (e.g., Bakker, Emmerik, & Euwema, 2006; Bakker & Schaufeli, 2000; Bakker & Xanthopoulou, 2009; Felps et al., 2009). For instance, Felps and his colleagues reported 'behavioral' crossover between individuals at work, such that, employees' job search and turnover behaviors were strongly influenced by their coworkers' job search and turnover behaviors. Furthermore, Bakker & Schaufeli (2000) found coworkers' burnout levels to be highly correlated, even when controlling for common stressors. Therefore, in the present study, I extend the empirical findings of recent crossover studies conducted in the work domain by exploring the link between focal individuals' and their coworkers' engagement levels.

Despite recent advancements in the study of crossover in the organizational domain, a large portion of research has merely examined the transference of strain, while neglecting the crossover of positive attitudes, emotions, and behaviors (e.g., Bakker & Schaufeli, 2000; Bakker, LeBlanc, & Schaufeli, 2000; Bakker, Schaufeli, & Sixma, 2001; Groenestijn, Buunk, & Schaufeli, 1992; Westman & Etzion, 1999). Nevertheless, some recent studies have provided evidence for positive crossover in experimentally-created and actual work teams. In a branch of research relevant to crossover, experimental studies examining affective linkages between individuals working in laboratory teams have found evidence for mood crossover among team members (Ilies, Wagner, & Morgeson, 2007; Totterdell, Kellet, Teuchmann, & Briner, 1998;

Totterdell, 2000). For example, Totterdell (2000) and Ilies and his colleagues (2007) presented evidence for the contagion of positive affect between individuals and their team members by demonstrating a strong relationship between individuals' affective scores and their team members' collective affective score. Similarly, researchers have also found work engagement to crossover between colleagues belonging to the same work group (Bakker, Emmerik, & Euwema, 2006; Bakker & Xanthopoulou, 2009). Nonetheless, the above studies did not fully explore the possible moderators and mediators that may have affected the crossover process. Therefore, the current study aims to fill this void by investigating the moderating effects of individual differences and coworker characteristics, as well as, the mediating effects of coworker support provision and coworker communication, on the process of engagement crossover.

Owing to the exponential increase in work engagement research over the past five years (Bakker, Albrecht, & Leiter, 2011), the current engagement literature successfully identifies the job resources (e.g., performance feedback, job autonomy, perceived advancement opportunities, supervisor support etc.) and personal resources (self-efficacy, optimism, self-esteem etc.) responsible for predicting individual engagement. Conversely, much less is known about how an individuals' 'social' environment at work may influence his or her engagement (Bakker et al., 2011). Particularly, although there has been tremendous research on the job- and personality-related antecedents of work engagement, researchers have yet to adequately investigate how coworkers' engagement (and related behaviors and attitudes) may influence individual engagement. In fact, in their recent focal article, titled, "Key Questions Regarding Work Engagement," Bakker, Albrecht, and Leiter argue that, "we need to more fully understand the crossover or emotional contagion of engagement in team contexts" (p. 23). As such, this study

bolsters the existing engagement crossover literature by examining the how and when engagement crosses over between employees in work teams.

In the following sections, I build on the theoretical frameworks of research on crossover (Westman, 2001), job resources (Demerouti et al., 2001), social comparison (Festinger, 1965), and individual differences (e.g., Hatfield et al., 1994) to propose a theoretical model for my investigation of engagement crossover in the workplace. Westman (2001) highlights that different processes may operate in conjunction to explain crossover effects. Consequently, I examine, both, mediators and moderators of engagement crossover while simultaneously controlling for shared job characteristics. Specifically, I first discuss the direct crossover of engagement using emotional contagion theories (Hatfield, Cacioppo, & Rapson, 1994). Second, I explicate the importance of controlling for common job characteristics when examining engagement crossover. Third, I utilize the Job Demands-Resources model (JD-R; Demerouti et al., 2001) to explain the mediating role of support and positive coworker communication in the crossover process. Lastly, I explore the moderating influence of individual differences, such as, susceptibility to emotional contagion, agreeableness, and self-construal, as well as, colleagues' characteristics, including their organizational hierarchical status (supervisor vs. coworker) and emotional expressiveness, on engagement crossover in the work domain. Importantly, I analyze engagement crossover by specifically examining a targeted (focal) individual's engagement score in relation to the average engagement score of his or her coworkers in the work team.

The Crossover Process

In general terms, crossover is a between-individual process whereby an individual 'catches' the affect, cognition, or behavior of another person (Westman, 2001). This phenomenon is particularly salient among individuals in close relationships, such as married

couples and co-workers (Rusbult & Van Lange, 1996). Westman (2001) has suggested three possible mechanisms to account for the crossover process: (a) direct crossover through empathy or emotional contagion, (b) common stressors (or resources) indicating spurious crossover effects, and (c) indirect crossover through mediating factors.

Direct crossover

Emotional contagion, as defined by Hatfield et al. (1994, p. 44), is “the tendency to automatically mimic and synchronize facial expressions, vocalizations, postures, and movements with those of another person and, consequently, to converge emotionally.” The emphasis of this definition is on non-conscious contagion and studies have indeed shown that people ‘automatically’ mimic the facial expressions, voices, postures, and behaviors of others without being consciously aware of it (Bavelas, Black, Lemery, & Mullett, 1987; Bernieri, Reznick, & Rosenthal, 1988).

Contagion, however, may also occur via a conscious cognitive process by ‘tuning in’ to the emotions of others. This view is in line with the definition of empathy - interpersonal communication that is predominantly emotional in nature and involves the ability to be affected by another’s affective state, as well as the ability to interpret that the affective states of others (Starcevic & Piontek, 1997) – and is also supported by social learning theorists (e.g., Bandura, 1969; Stotland, 1959) who have explained the transmission of emotions as the conscious processing of information, such that, individuals imagine how they would feel in the position of another and thereby come to experience the same feelings.

On the basis of the above two viewpoints, research has indeed demonstrated evidence for crossover effects between closely related persons (e.g., Bakker, Emmerik, & Euwema, 2006; Joiner 1994). In a classic study on contagious depression, Howes, Hokanson, and Loewenstein

(1985) found that students living with a depressed roommate became increasingly depressed over time, whereas, those living with a non-depressed individual showed no such changes. Similarly, coworkers do share a large portion of each working day together and, as such, may be inevitably influenced by the cognitions, affect, and behaviors of their coworkers. Accordingly, the work engagement experienced by one employee has been shown to crossover to another employee (e.g., Bakker et al., 2006; Bakker & Xanthopoulou, 2009). Hence, I expect employees who work closely together to be affected by one another's attitudes, emotions, and behaviors, whether negative or positive. An individual working in a team of highly engaged individuals, for instance, may find her team members' vigor, dedication and absorption to 'rub off' on her. Thus, I propose the following hypothesis:

Hypothesis 1: Coworkers' engagement levels will be positively related to the focal individual's engagement level.

The spuriousness of common job characteristics

The second mechanism proposed by Westman (2001) – 'common stressors' - explains crossover as being a spurious effect. In other words, what appears to be a crossover effect may be the result of common stressors (or resources) in a shared environment that increase (or decrease) the levels of strain (or engagement) among co-workers by similar amounts. Hence, in a work environment where all workers are exposed to the same levels of job resources (e.g., supervisor support and job autonomy), similar levels of engagement across different individuals may not be an indication of crossover. Instead, by virtue of belonging to the same work environment, these individuals experience the same types and levels of job resources, and therefore have similar levels of engagement. It is therefore essential to control for the effects of

these common job characteristics when studying crossover processes between employees in a work group.

In line with the Job Demands-Resources (JD-R) model, several studies have found job resources, relative to job demands, to more robustly predict work engagement (e.g., Demerouti et al. 2001; Hakanen, Bakker, & Schaufeli, 2006; Schaufeli & Bakker, 2004). To rule out the possibility of spurious crossover effects due to a shared work environment, it is necessary to control for job resources that are common to both, the focal individual and his or her coworkers. Interestingly, Bakker, Demerouti, and Schaufeli (2005) found evidence for the crossover of engagement between working parents after controlling for the effects of shared home resources. Similarly, Bakker, Emmerik, and Euwema (2006) also reported engagement crossover between coworkers after controlling for job resources. Accordingly, I expect engagement crossover between coworkers to be present in the current study even after controlling for common job resources, such as, job autonomy, performance feedback, and organizational support. As such, I hypothesize the following:

Hypothesis 2: Coworkers' engagement levels will be positively related to the focal individual's engagement level, even after controlling for common job resources.

Indirect crossover via mediating processes

Westman (2001) proposed that crossover can also occur through mediating processes. I propose that the process of engagement transference from one worker to another can be mediated by (a) coworker support provision and (b) positive coworker communication. Previous studies have indeed provided evidence for crossover mediation (e.g., Jones & Fletcher, 1993; Westman & Vinokur, 1998). For instance, Jones and Fletcher (1993) reported that the nature of communication mediates the relationship between partners' moods. Specifically, they found that

husbands who were distressed became withdrawn and distracted and this, in turn, fostered the development of negative moods in their wives. In another study, Westman and Vinokur (1998) found that women experiencing depression increased their undermining behaviors (reduced support and increased conflict) toward their husbands, who, as a result, experienced an increase in depressive symptoms.

Support as a mediator. The enrichment hypothesis (Rothbard, 2001), which is primarily articulated by role accumulation and multiple roles theories (Sieber, 1974; Marks, 1977), suggests that engagement in one role facilitates performance in other roles. This argument directly challenges the notion that people have fixed resources, and proposes instead, that attention and energy can expand. Specifically, it is a person's emotional response to a role that determines whether participation in another role is enhanced or detracted (Marks, 1977). As mentioned previously, engagement can be conceptualized as a positive, work-related emotional response (Schaufeli et al., 2002), and, as such, is expected to increase one's energy and resources, thereby facilitating participation in other roles. An individual who is engaged at work may experience an expansion of energy and personal resources, such as, positive affect and self-efficacy. In turn, this may increase the likelihood that he or she would participate in other roles, such as providing support to coworkers.

Piotrkowski's (1979) research further supports the above theoretical proposition by indicating that a person's emotional response to a role is a critical factor influencing his or her interpersonal availability and psychological presence in a different role. Positive emotions are associated with an outward focus of attention, such that, when people are happy, they report increased liking for others and are more willing to initiate conversations and offer help (Clark & Isen, 1982). Thus, being less internally focused may increase one's emotional availability,

prompting individuals to initiate helping and supporting others. Engagement is a positive work-related state of mind and, as such, I expect a person who is engaged at work to be psychologically available to his or her coworkers and subsequently be more likely to provide the necessary support to them.

The JD-R model (Demerouti et al., 2001; Xanthopoulou, Bakker, Demerouti, Schaufeli, 2007) proposes that job resources, such as (organizational, supervisor, and/or coworker) support, (a) reduces job demands and their associated physiological and/or psychological costs, (b) aids in the achievement of work-related goals, (c) stimulates personal growth, learning, and development, and (d) increases personal resources (e.g., optimism and self-efficacy) that enhance perceptions of control and facilitate effective functioning at work. This subsequently fosters intrinsic motivation in the form of engagement. Studies lending support to the JD-R model have indeed found supervisor and co-worker support to predict work engagement among individuals across different occupations (e.g., Llorens, Bakker, Schaufeli, & Salanova, 2006; Schaufeli & Bakker, 2004; Xanthopoulou et al., 2008). Support yields benefits such as approval, respect, access to information, and other forms of aid needed to effectively carry out one's job, thereby inducing work-related enthusiasm in the form of engagement. In line with this explanation, it seems likely that individuals receiving high levels of support from their coworkers will be more engaged in their work. Therefore, I expect engaged coworkers to provide more support to the focal individual, who in turn, would experience higher levels of engagement upon receiving this support. I thus propose the following hypothesis:

Hypothesis 3: Coworker support mediates the relationship between coworker engagement and the focal individual's engagement, such that, highly engaged coworkers will provide more support to focal individuals, who, in turn, will become highly engaged.

Positive coworker communication as a mediator. Besides support, another potential mediating factor underlying the crossover process is the interpersonal interaction and communication between coworkers. Schaufeli and his colleagues (2001) interviewed several employees and found that engaged workers were generally optimistic, took personal initiative, and were proud of their work. Hence, it is likely that these workers would tend to speak more positively about their jobs relative to their disengaged counterparts. Indeed, researchers have reported higher levels of optimism among engaged employees (e.g., Medlin & Green, 2009). By speaking positively about their work and/or organization, engaged employees convey a positive notion about work to others working with them; this, in turn, is likely to increase their coworkers' optimism and/or positive affect (Arakawa & Greenberg, 2007). In line with the theoretical propositions of the JD-R model (see Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2007), similar to job resources, personal resources, such as, optimism, self-efficacy, and self-esteem, are able to drive work engagement by increasing one's propensity to take action and deal with job demands effectively (Aspinwall & Taylor, 1997). Accordingly, an individual working with highly engaged coworkers is more likely to have positive and encouraging work-related conversations (rather than work-related complaints) with his or her coworkers, and in the process, is likely to become more optimistic and engaged. Accordingly, I hypothesize the following:

Hypothesis 4: Coworker communication mediates the relationship between coworker engagement and the focal individual's engagement, such that, highly engaged coworkers will speak more positively about work-related matters and this, in turn, will enhance the engagement level of the focal individual.

The Moderating Effects Of Individual Differences In The Focal Individual

According to Westman (2001), personal attributes may facilitate engagement crossover by influencing one's susceptibility to others' attitudes, emotions, and behaviors. As such, I identified three relevant personal characteristics that may affect the strength of engagement crossover between coworkers: (a) susceptibility to emotional contagion, (b) self-construal, and (c) agreeableness.

Susceptibility to emotional contagion

Hatfield and her colleagues (1994) have argued that inter-individual variability in empathic tendencies may cause some people to be especially likely to "catch" others' emotions while other people may be less prone to doing so. Correspondingly, several studies have shown that stable individual differences exist in people's susceptibility to emotional stimuli (Doherty, Orimoto, Singelis, Hatfield, & Hebb, 1995; Stiff, Dillard, Somera, Kim, & Sleight, 1988) and that these individual differences are good predictors of the extent to which people catch, both, the positive and negative emotional states from others. Moreover, emotional contagion is particularly likely if individuals pay close attention to others and if they are exposed to others' emotions relatively often (Hatfield et al., 1994). According to Haviland and Malatesta (1981), people differ in (a) how interested they are in social stimuli, (b) how carefully they attend to nonverbal cues of emotion, (c) how skillful they are in interpreting emotional cues, and (d) their willingness to respond to those emotional cues. Further, in an experimental study, Osgood (1976) found that students, who were asked to mimic the posed facial displays of another student, more accurately identified expressions of pain than those who had not been instructed to do so. If the mimicry produced as a result of experimental instructions enhanced the transmission of emotions, it is reasonable to expect that individual differences in spontaneous mimicry would

have similar effects, such that, individuals who have the tendency to mimic others' facial, vocal, and postural expressions should be especially vulnerable to emotional contagion.

Indeed, there has been some indication that one's susceptibility to emotional contagion is positively related to crossover strength. Utilizing the emotional contagion scale developed by Stiff et al. (1988), Bakker, Schaufeli, Sixma, and Bosveld (2001) found that general practitioners who (a) perceived burnout complaints among their colleagues and (b) were highly susceptible to the emotions expressed by their colleagues, reported the highest levels of emotional exhaustion. In a similar vein, Bakker and Schaufeli (2000) found the prevalence of perceived burnout among teachers' colleagues to be most strongly related to teachers' own levels of burnout when the teachers themselves were highly susceptible to others' emotions. Furthermore, Ilies and his colleagues (2007) presented evidence for the role of susceptibility to emotional contagion in increasing the relationship between individuals' mood and their team's collective mood. Based on the above theoretical and empirical evidence, it seems highly plausible for the crossover of engagement to be dependent on a focal individual's susceptibility to emotional contagion. An individual who has a high susceptibility to emotional contagion is more likely to be attentive to his or her co-workers' level of engagement and subsequently have a greater tendency to mirror her coworkers' engagement levels. Therefore, I hypothesize the following:

Hypothesis 5: Susceptibility to emotional contagion moderates the crossover of engagement, such that, coworkers' engagement levels are more strongly related to the focal individual's engagement level when the individual is highly susceptible to others' emotions.

Agreeableness

In reviewing the existing crossover literature, it is evident that researchers have yet to examine personality variables, including the Big Five (McCrae & Costa, 1987) in relation to the crossover phenomenon. As such, Westman (2001) suggested that “future crossover research should include personal attributes such as the Big Five personality trait dimensions (Digman, 1990)” to fill an important gap in the existing crossover literature. The current study examines one of the Big Five traits – agreeableness – as a possible moderator of the crossover of engagement.

Agreeableness is the extent to which individuals are compliant, altruistic, trustful, modest and tender-minded (Costa & McCrae, 1989). Agreeable individuals are typically cooperative and likeable and are very much concerned with maintaining friendly relationships with others. Aronoff and Wilson (1985) suggested that agreeable team members work cooperatively with others in the pursuit of team objectives. Accordingly, research has found agreeableness among team members to be positively associated with team and task cohesion and negatively associated with interpersonal conflict (e.g., Barrick, Stewart, Neubert, & Mount, 1998; O’Neill & Kline, 2008; van Vianen & De Dreu, 2001). For instance, van Vianen & De Dreu (2001) explained that highly agreeable individuals are likely to comply with team goals even if these goals may conflict with their own self-interest. As such, in work teams with high levels of agreeableness, there exists strong compliance with team goals and high levels of cooperation, which results in high task and team cohesion. Therefore, it is reasonable to expect highly agreeable individuals to conform to group norms as well as adjust their own behaviors or psychological states to be congruent with those of others, so as to avoid conflict and maintain good relations with others. Accordingly, individuals high in agreeableness may be especially likely to be influenced by their

coworkers' engagement levels as they would attempt, as much as possible, to match their own engagement levels to those of their coworkers' in order to avoid potential negative interpersonal outcomes such as social ostracism. As such, a highly agreeable individual may increase her level of engagement if she works with others who are highly engaged, whereas, the same individual may lower her engagement levels if she works with lowly engaged others. Therefore, I hypothesize the following:

Hypothesis 6: Agreeableness moderates the crossover of engagement, such that, coworkers' engagement levels are more strongly related to the focal individual's engagement level when the focal individual is highly agreeable.

Self-construal

In addition to an individual's susceptibility to emotional stimuli, his or her self-concept can play a vital role in moderating the strength of the crossover effect. According to Hatfield and her colleagues (1994), an individual whose self is construed as fundamentally interrelated with others should be more vulnerable to emotional contagion than one whose self is construed as distinct and unique from others. A review by Markus and Kitayama (1991) summarize evidence that self-construals do indeed have an impact on emotional experience and contagion, with individuals from cultures that emphasize interdependence being especially vulnerable to the experience of 'other-focused' emotions. According to the authors, Western culture, such as that in the United States, emphasizes individuality, independence, and uniqueness. As such, socialization in these cultures tends to produce individuals who construe themselves as distinct, independent, and unique from others. Conversely, Asian cultures, such as those in China and Japan, value conformity and harmonious interdependence such that socialization in these countries emphasizes the definition of the self in relation to family and close others.

Consequently, the self, in these ‘collectivistic’ cultures tends to be construed as being part of a social collective.

It is also plausible that individuals *within* a culture differ in the extent to which they construe the self as independent or interdependent (Markus & Kitayama, 1991). Individuals whose self is construed as fundamentally interrelated to others should be more vulnerable to emotional contagion and, hence, more easily be influenced or affected by others’ engagement levels. On the contrary, those whose self is construed as distinct and unique from others should be less vulnerable to emotional contagion and hence, be less likely affected by their co-workers’ engagement levels. In fact, it has been found that, the affective states of individuals who perceive themselves as being part of a group, as opposed to being an individual who is independent of others, are more convergent with their team’s average affective states (Ilies et al., 2007).

Accordingly, I hypothesize the following:

Hypothesis 7: Self-construal moderates the crossover of engagement, such that, coworkers’ engagement levels are more strongly related to the focal individual’s engagement level when the focal individual construes him/herself as highly interdependent with others.

The Moderating Effects of Coworker Characteristics

Besides individual differences in personality, engagement crossover can be facilitated or attenuated by coworker attributes. Colleagues’ (organizational) hierarchical similarity (i.e., supervisor vs. co-worker) and their emotional expressiveness may influence how easily they ‘infect’ others with emotions, attitudes, and behaviors.

Emotional expressiveness

It has long been recognized that emotional states are associated with expressive nonverbal facial expressions and gestures (Buck, Savin, Miller, & Caul, 1972). These expressions communicate to others one's internal psychological states that would otherwise go unperceived. Emotional expressiveness has been theorized to be a central component of individual personality (Friedman, 1979) as it has been found to be relatively consistent across situations (Allport & Vernon, 1933) and across the course of development (Kagan, Reznick, & Snidman, 1988). Several experimental studies have indeed shown that individuals vary in their level of emotional expressiveness (e.g., Buck, Miller, & Caul, 1974) and, thereby, their ability to 'infect' others with their emotions and attitudes. Friedman and Riggio (1980) observed that, "although some of the (individual) differences are in verbal fluency, the essence of eloquent, passionate, spirited communication seems to involve the use of facial expressions, voices, gestures, and body movements to transmit emotions" (p. 47). The authors found that those who scored high on emotional expressiveness were able to "inspire and captivate" others easily. In this case, expressiveness may have facilitated the 'catching' of one's emotions by surrounding others, resulting in greater transference of these emotions from the expressive individual to those around them. In line with these findings, I expect that highly engaged individuals, who are also vocally, behaviorally, and facially expressive, are more likely to transmit their positive psychological states to others around them compared to their less expressive counterparts. In a similar vein, disengaged co-workers who are highly expressive are more likely to infect others with their state of low enthusiasm than their less expressive counterparts. I therefore hypothesize the following:

Hypothesis 8: Emotional expressiveness moderates the crossover of engagement, such that, coworkers' engagement levels are more strongly related to the focal individual's engagement level when the coworkers are highly emotionally expressive.

Organizational hierarchical status of colleagues

According to the social comparison theory (Festinger, 1954), people tend to compare themselves to others who are similar to them or to others within their social category, because information about similar others is most useful for self-evaluation. Moreover, Levy, Freitas, and Salovey (2002) maintain that perceiving similarity between oneself and others can lead one to take the other's perspectives, thus, prompting the experience of empathic emotions (or empathic identification). Accordingly, perceived similarity between colleagues should enhance the crossover effects of engagement between them. Colleagues' (organizational) hierarchical status is one form of similarity that should be salient to an individual. Vertical relationships, like those between supervisors and subordinates, are typically governed by authority ranking, whereas, lateral relationships, like those between coworkers, are generally characterized by equality matching (Fiske, 1992). As such, it is reasonable to expect individuals to perceive their coworkers (as compared to their supervisors) to be more similar to themselves. Consequently, they may have a greater tendency to compare their own psychological states and behaviors to those of their coworkers rather than their supervisors. Schachter (1959) argued that when individuals feel uncertain about the appropriateness of their behaviors or emotions, they tend to reduce this uncertainty by socially comparing and adjusting their behaviors or emotions to those of others. Consistent with Schachter's theoretical argument, Bakker, Westman and Schaufeli (2007) found experimental evidence for the crossover of cynicism when soldiers were exposed to

a video recording of another soldier of the same rank, but not when they viewed a recording of a squadron leader (who was of higher rank).

In addition to perceiving themselves as being more similar to their coworkers, individuals are also more likely to interact frequently with their coworkers due to the greater presence of coworkers relative to leaders in almost any organization (Ferris & Mitchell, 1987). More frequent coworker interactions are also more likely because they generally possess the same status as the focal employee, making exchanges of all types less restricted. It is, thus, expected that individuals are more attuned to the psychological states of their co-workers, as compared to those of their supervisors, by virtue of high perceived similarity and more frequent and/or unrestricted interactions with their co-workers. As such, these individuals may in turn adjust their own psychological states to be similar to those of their co-workers. Hence, because individuals are more susceptible to coworker-related crossover effects relative to supervisor-related crossover effects, I hypothesize the following:

Hypothesis 9: The relationship between coworker engagement levels and the focal individual's engagement level will be stronger than the relationship between supervisor engagement level and the focal individual's engagement level.

Method

Participants and Procedure

Through the collaboration with an advertising company, information of the current study was sent via electronic mail to several organizations that were potentially interested in assessing employee engagement. Among the various organizations solicited, a multi-national engineering and construction firm expressed interest in participating in the study. The firm's human resource vice president and training manager contacted Dr. Spitzmueller and I, and discussed the project's

logistics, deliverables, and deadlines in several face-to-face meetings. Using the employee database with which they provided us, I contacted full-time employees in various business units of the company via electronic mail to participate in an online survey. The electronic message included a web-link to the survey and requested participation by communicating the company's interest in understanding the predictors of employee engagement. The survey was open for a total of 14 days and reminder emails were sent to non-respondents seven days after the start of the survey.

Participants comprised a total of 1142 employees (working in business units across the United States, Canada, and Oman) who voluntarily completed the survey (response rate = 81%). Majority of the participants were ethnically Caucasian (Caucasian = 61%, African-American = 13%, Hispanics = 12%, Asians = 6%, Others = 8%) and male (79%). The average age of the participants was 43 years ($SD = 12.62$) and the average organizational tenure was 6 years ($SD = 6.3$). The majority of participants (78%) possessed a college degree at a minimum. All participants were grouped into a total of 153 work teams according to who was their direct supervisor. Specifically, all employees who had the same direct supervisor were grouped as belonging to the same team [information about employees' supervisors was derived from the employee database provided to us by the company]. Work teams ranged in size from as small as 2 members to as large as 50 members per team. The average team size was 15 members ($SD = 14$).

Measures

Main study variables. All items if not indicated otherwise used a 5-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*).

Engagement. The Utrecht Work Engagement scale (Schaufeli, Bakker, & Salanova, 2006) was used to assess employee engagement. Participants rated nine items selected to represent each dimension of engagement - vigor, absorption, and dedication. Sample items included, “Vigor: At my job, I feel strong and vigorous,” Dedication: I’m enthusiastic about my job,” and “Absorption: I am immersed in my work.”

Positive coworker communication. Individuals’ perceptions of how their co-workers’ spoke about work-related matters were assessed using three items developed for this study. Items included, “My co-workers speak positively about their work”, “My co-workers complain about their supervisor”, and “My coworkers praise our organization”. Participants rated each item on a 5-point Likert scale ranging from 1(*almost never*) to 5 (*almost always*). Negatively-worded items were reverse-coded.

Coworker support. Individuals’ perceptions of co-worker support were assessed by six items adapted from Eisenberger et al.’s (2002) Perceived Organizational Support (POS) scale. The word ‘organization’ in each item was replaced by the word, ‘co-workers’. Sample items included, “My co-workers really care about my well-being” and “My co-workers are willing to extend themselves in order to help me perform my job to the best of my ability”. Negatively worded items were reverse coded.

Susceptibility to emotional contagion. I used six items from the 18-item Emotional Contagion Scale developed by Doherty (1997). The items assessed one’s susceptibility to catching joy and sadness from others. Sample items included, “When someone I am talking to begins to cry, I get teary-eyed” and “Being with a happy person picks me up when I’m feeling down”. Negatively-worded items were reverse coded.

Self-Construal. To assess whether individuals are more likely to construe themselves as independent from or interdependent with others, I used three items from the Self-Construal Scale (Singelis, 1994). Sample items included, ‘It is important for me to maintain harmony within my group’, and ‘I enjoy being unique and different from others in many respects’. Items were coded, such that, high scores indicated a preference for independence whereas low scores indicated a preference for interdependence.

Agreeableness. Agreeableness was assessed with ten items from the IPIP pool of Big five mini markers (Goldberg et al., 2006). Sample items included, “I feel little concern for others” and “I make people feel at ease”.

Emotional expressiveness. Emotional expressiveness was measured using four items from the Emotional Expressivity Scale (Kring, Smith, & Neale, 1994). Sample items included, ‘I do not like to let other people see how I’m feeling” and “I display my emotions to other people”. Items were coded, such that, high scores indicated greater emotional expressiveness.

Control variables. All items if not indicated otherwise used a 5-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*).

Performance feedback. Performance feedback was assessed using three items from the feedback section of Hackman and Oldham’s (1975) Job Diagnostic Survey. Sample items included, “My supervisor often lets me know how well I am doing on the job” and “My coworkers and supervisor almost never give me any feedback about how well I am doing in my work”. Items were coded, such that, high scores indicated the reception of high levels of performance feedback.

Job Autonomy. Job autonomy was measured using three items from Breugh's (1999) Work Autonomy Scale. Sample items include, "I have control over the scheduling of my work" and "I am allowed to decide how to go about getting my job done".

Perceived organizational support. Perceived organizational support was be measured using six items from Eisenberger et al.'s (2002) measure of Perceived Organizational Support. Sample items included, "My organization values my contribution", and "My organization is willing to extend itself to help me perform my job to the best of my abilities". Negatively-worded items were reverse-coded.

Perceived supervisor support. Perceived supervisor support was be measured using six items adapted from Eisenberger et al.'s (2002) measure of Perceived Organizational Support. Sample items included, "My supervisor really cares about my well-being", and "My supervisor is willing to extend him/herself to help me perform my job to the best of my abilities". Negatively-worded items were reverse-coded.

Opportunities for advancement. Perceived opportunities for advancement were assessed using three items developed for this study. Sample items include, "I feel trapped in my current position and see no opportunities for advancement" and "All in all, I am satisfied with the opportunities for advancement and development in my unit".

Positive affect. To prevent any confounding effects of individuals' affect on their engagement, I controlled for positive affect (PA). PA was assessed by ten items from the PANAS Scale developed by Watson, Clark, and Tellegen (1988). Participants were asked to rate 10 adjectives (e.g., 'Inspired', 'Proud', and 'Attentive' etc.) based on how frequently they had experienced those emotions in the past month. Items were scored on a 5-point Likert scale ranging from 1 (*almost never*) to 5 (*almost always*).

Group size. As mentioned earlier, team sizes varied considerably (2 to 50 members per team). To minimize any potential effects of the size of one's work team on the transfer of engagement between coworkers, I controlled for group size in all statistical tests. Indeed, Felps and his colleagues (2009) also controlled for group (department) size when examining the crossover of turnover behaviors between coworkers.

Age and tenure. Information about employees' age and tenure were derived from the employee database provided to us by the company. I controlled for these two variables as past research has shown that they may be related to individual engagement levels (e.g., Schaufeli & Bakker, 2004).

Variables used in supplementary analyses. All items if not indicated otherwise used a 5-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*).

Social comparison tendency. I assessed individuals' tendency to socially compare themselves with others using the six items from the 11-item Iowa-Netherlands Comparison Orientation Scale (Gibbons & Buunk, 1999). Sample items included, "I pay a lot of attention to how I do things compared to how others do things" and "I always try to know what others in a similar situation would do".

Frequency of interaction with coworkers. I assessed individuals' frequency of interaction with their coworkers using three items developed for this study. The items included, "How often, on average do you see your coworkers?", "How often, on average, do you take lunch breaks with your coworkers?", and "How often, on average, do you engage in informal conversations with your coworkers?". Participants rated these items on a 5-point Likert scale ranging from 1 (*once in three weeks or less*) to 5 (*everyday*).

Frequency of interaction with supervisor. Replacing the word, “coworkers” with “supervisor”, I assessed individuals’ frequency of interaction with their supervisors using the same three items developed to assess their frequency of interaction with their coworkers. The items included, “How often, on average do you see your supervisor?”, “How often, on average, do you take lunch breaks with your supervisor?”, and “How often, on average, do you engage in informal conversations with your supervisor?”. Participants rated these items on a 5-point Likert scale ranging from 1(*once in three weeks or less*) to 5 (*everyday*).

Perceived similarity of coworkers. I assessed individuals’ perceptions regarding the extent to which they believed that their coworkers were similar to them, using three items from the perceived-similarity scale developed by Turban and Jones (1988). Items included, “My coworkers are a lot like me in outlook, perspectives, values, and work habits”, “My coworkers and I see things in much the same way”, and “My coworkers and I are alike in a number of areas”.

Perceived similarity of supervisor. I assessed individuals’ perceptions regarding the extent to which they believed that their supervisors were similar to them, using three items from the perceived-similarity scale developed by Turban and Jones (1988). Items included, “My supervisor is a lot like me in outlook, perspectives, values, and work habits”, “My supervisor and I see things in much the same way”, and “My supervisor and I are alike in a number of areas”.

Statistical Analyses

Hierarchical linear modeling. Due to the nature of the research questions and the data in this study (hypotheses involving individuals nested within a total of 153 work groups), I used a hierarchical linear modeling (HLM) framework to test my hypotheses. HLM accounts for non-independence of errors when multiple measures of a variable are taken from the same group. I

used the HLM (version 6.08) software to run all analyses which comprised 2 levels (Level 1 = individual, Level 2 = work group). All variables were entered into Level 1 of the model, except for group size and supervisor engagement, which were entered into Level 2. This is because individuals belonging to the same work group had the same supervisor, and hence shared the same values for group size and supervisor engagement (refer to the Appendix for a summary of the HLM equations used for hypotheses testing).

Coworker engagement. To compute a ‘coworker engagement score’, I averaged the engagement scores of all employees within a team, except the focal individual whose engagement score was analyzed as the outcome. Therefore, each employee had a unique coworker engagement score. The intra-team reliability [Intraclass Correlation Coefficient 1 (ICC1)] for engagement was .13 ($p < .001$), indicating that 13% of the variance in individual engagement scores was accounted for by the work group to which the individual belonged. The measure for group-mean reliability (ICC2) of engagement was .70, indicating a reasonable level of consistency among group mean engagement scores.

Results

Table 1 presents the means, standard deviations, intercorrelations, and internal consistency reliabilities of the variables measured in this study. Hypothesis 1 predicted that individuals’ engagement scores would be positively related to their coworkers’ engagement scores. As shown by the bivariate correlations in Table 1, individual and coworker engagement scores are significantly related ($r = .25, p < .01$), thereby providing support for Hypothesis 1.

Engagement Crossover between Coworkers

Hypothesis 2 predicted that individuals’ engagement scores would be positively related to their coworkers’ engagement scores, even when the influence of personal resources and common

job resources were controlled. Within a two-level modeling framework (Level 1 = individual, Level 2 = work group) I regressed individual engagement scores on coworker engagement scores at Level 1 in the HLM, while controlling for job/personal resources (i.e., job autonomy, performance feedback, organizational support, opportunities for advancement, supervisor support, and positive affect) and individual demographics (i.e., age and organizational tenure) at Level 1, as well as, work group size at Level 2. Table 2 presents the unstandardized coefficients, standard errors, and t-statistics from HLM analyses. Results demonstrate that individuals' engagement scores were significantly and positively related to the average engagement scores of their coworkers ($\gamma_{90} = .15, p = .001$), thereby lending support to Hypothesis 2.

The Mediating Role Of Coworker Support And Positive Coworker Communication

In addition to examining engagement crossover between individuals and their coworkers, I also investigated the influence of two potential mediators of the crossover process: (a) coworker support and (b) positive coworker communication. To test the mediating role of coworker support (Hypothesis 3), I first regressed coworker support on coworker engagement, while controlling for the variables mentioned above (e.g., job autonomy, age, group size etc.). HLM analyses revealed that coworker engagement was not significantly related to coworker support ($\gamma_{90} = .03, p = .52$). As such, I concluded that Hypothesis 3 was not supported, without regressing individual engagement on coworker support.

Next, in testing the mediating role of positive coworker communication in the crossover of engagement (Hypothesis 4), I first regressed positive coworker communication on coworker engagement, while keeping all controls in the HLM analyses (see Table 3). Results revealed that engaged coworkers were more likely to speak positively about their work environment ($\gamma_{90} = .22, p = .002$). I subsequently regressed individual engagement on coworker communication,

controlling for coworker engagement, in addition to the original controls in the HLM (refer to Table 3). Although positive coworker communication was significantly related to individual engagement ($\gamma_{100} = .09, p = .001$), coworker engagement still remained a significant predictor of individual engagement ($\gamma_{90} = .14, p = .001$), suggesting *partial mediation* of positive coworker communication on engagement crossover. Sobel test results (Sobel, 1986) revealed that this mediation was indeed significant ($t = 2.58, p = .01$), therefore providing support for Hypothesis 4.

The Moderating Role Of Susceptibility To Emotional Contagion, Agreeableness, And Self- Construal

To test the moderating influence of individuals' SEC, agreeableness, and self-construal on engagement crossover between coworkers, I regressed individual engagement on the interaction terms created between coworker engagement and each of the three moderators, while keeping the same controls in the HLM analyses. Hypotheses 5 and 6 predicted that engagement crossover between individuals and their coworkers would be moderated by individuals' SEC and agreeableness, respectively. HLM results revealed that SEC ($\gamma_{110} = .01, p = .15$) and agreeableness ($\gamma_{110} = .008, p = .92$) did not moderate engagement crossover, indicating that Hypotheses 5 and 6 were not supported.

Hypothesis 7 predicted that individuals' self-construal would moderate the crossover of engagement between individuals and their coworkers. HLM analyses reveal that self-construal did indeed moderate engagement crossover ($\gamma_{110} = -.20, p = .02$), such that, individuals who construed themselves as being part of a group were more likely to be 'infected' by their coworkers' engagement than those who construed themselves to be unique from others (see Table 4). In other words, the relationship between coworkers' and individuals' engagement

scores was stronger when individuals construed themselves as being interdependent on others, thereby supporting Hypothesis 7. Figure 1 illustrates the pattern of interaction between coworker engagement and individuals' self-construal on individual engagement

The Moderating Role Of Coworker Emotional Expressiveness And Organizational Hierarchical Status

Hypothesis 8 predicted that coworkers' emotional expressiveness would moderate the crossover of engagement between individuals and their coworkers. To test this hypothesis, I regressed individual engagement on the interaction term created between coworker engagement and coworker emotional expressiveness. Results showed that the emotional expressiveness of coworkers did not moderate the relationship between coworkers' and individuals' engagement ($\gamma_{110} = .01, p = .91$). Therefore, Hypothesis 8 was not supported.

Last, to test the hypothesis that engagement crossed over between individuals and their coworkers more readily than individuals and their supervisors (Hypothesis 9), I regressed individual engagement at Level 1 on supervisor engagement at Level 2 in the HLM analyses. Results indicated that supervisor engagement was not significantly related to individuals' engagement ($\gamma_{90} = .02, p = .45$). As individuals' engagement scores were significantly related to their coworkers' engagement scores (refer to findings of Hypothesis 2) but not to their supervisors' engagement scores, Hypothesis 9 was supported.

Supplementary Analyses

I performed supplementary correlation analyses to investigate the relationship between individuals' self-construal and social comparison tendency. Findings revealed that the more 'group-oriented' individuals were, the greater their tendency to socially compare themselves to others ($r = .24, p < .01$). Hence, it is plausible that their greater tendency to compare themselves

with others may have explained why ‘group-oriented’ individuals were more likely to be ‘infected’ by their coworkers’ engagement levels.

Next, I performed a paired-sample *t*-test to explore the possibility that individuals interacted more frequently with their coworkers than with their supervisors. Findings revealed that, on average, individuals interacted more frequently with their coworkers than with their supervisors [$t(1131) = 33.02, p < .001$]. Specifically, descriptive statistics indicated that, on average, individuals interacted with their coworkers “a few times a week” ($M = 3.9, SD = .92$), whereas, they interacted with their supervisors only “once a week” ($M = 2.9, SD = 1.10$). Finally, I performed second paired-sample *t*-test to examine the possibility that individuals perceived their coworkers, rather than their supervisors, to be more similar to them. Findings indicated that individuals perceived their coworkers ($M=3.6, SD=.80$) and their supervisors ($M=3.6, SD=.74$) to be equally similar to them, in terms of perspectives, values, and work habits. [paired-sample *t*-tests were non-significant, $t(1124) = 0.28, p=.78$]. Therefore, it seems that the higher frequency of interaction between coworkers (than between supervisors and subordinates) may have explained why individuals were more likely to be ‘infected’ by their coworkers’ engagement levels and not their supervisor’s engagement level.

Discussion

This study sought to shed light on the crossover of work engagement between coworkers and the mechanisms and conditions under which this process occurs. It also builds on previous research that has primarily demonstrated evidence for the transfer of negative emotions and burnout between closely-related persons (e.g., Bakker, LeBlanc, & Schaufeli, 2005; Ilies et al., 2007). Specifically, I developed and tested hypotheses about the factors that could potentially explain (a) how engagement is transmitted from one employee to another and (b) when the

transmission of engagement between coworkers is enhanced or attenuated. Combining theories relevant to crossover, emotional contagion, and job resources, I investigated the mediating roles of coworker support and positive coworker communication, as well as, the moderating influences of susceptibility to emotional contagion, agreeableness, self-construal, coworker (organizational) hierarchical similarity, and coworker emotional expressiveness, on engagement crossover between employees working closely together.

To summarize, four key findings of the study emerged: (a) coworkers' engagement scores were significantly related to focal individuals' engagement scores even after controlling for common resources (b) positive coworker communication partially mediated the crossover of engagement between coworkers, (c) focal individuals who construed themselves as being part of a group, rather than being independent from others, had engagement scores that were more similar to those of their coworkers, and (d) the engagement scores of focal individuals were related to the engagement scores of their coworkers but not to those of their supervisors. Consistent with previous research demonstrating engagement crossover between coworkers (Bakker, Emmerik, & Euwema, 2006; Bakker & Xanthopoulou, 2009), the current study provides further evidence for the crossover of engagement and precludes alternative explanations for the relationship between coworkers' and focal individuals' engagement, such as, the spuriousness of common job resources.

More importantly, this study theoretically extends the JD-R model to include coworker engagement as a potential 'resource' contributing to individual engagement. At present, the JD-R model does not take into consideration the impact of coworker engagement on individual engagement (Bakker, Albrecht, & Leiter, 2011). Theoretically speaking, however, resources can influence individuals' engagement by directly or indirectly boosting their personal resources,

such as optimism, positive affect, self-efficacy, and self-esteem (Xanthopoulou et al., 2007). In a similar vein, it is plausible for coworker engagement to influence individual engagement through the enhancement of individual optimism and positive affect (individuals, who work with others who are highly engaged, are more likely to be in a positive mood at work; this in turn facilitates the achievement of work-related goals which help boost their level of work engagement).

Therefore, the current study extends the JD-R model by suggesting that coworker engagement be considered a resource that impacts individuals' engagement at work. Nevertheless, future research should examine the relationship between coworker engagement and focal individuals' personal resources (e.g., optimism, positive affect etc.) to investigate the potential mediating role that personal resources play in engagement crossover.

The study's findings also demonstrate the importance of considering three factors - positive coworker communication, self-construal, and coworker (organizational) hierarchical similarity - in the engagement crossover process. In the proceeding sections, I discuss each of these factors in detail.

Positive Coworker Communication

One of the most interesting findings of the current study was that coworkers' verbally-expressed attitudes about their work, supervisor, and organization, partially mediated the crossover of work engagement in a way that highly engaged coworkers transferred their engagement to focal individuals, by speaking positively about their work environment. This is the first study to report a mediator for the crossover of engagement and is consistent with research showing that the extent to which affect converges between individuals and their team members depends on their type (negative or positive) and level (frequency) of communication (Towler & Dipboye, 2001; Totterdell, Wall, Holman, Diamond, & Epitropaki, 2004). Further, in

line with the qualitative findings of Schaufeli and colleagues (2001), as well as, the quantitative findings of Medlin and Green (2009), engaged employees displayed greater optimism, as indicated by their verbally-expressed positive work-related attitudes. Nevertheless, as positive coworker communication was found to be merely a partial mediator of the crossover process, the transfer of engagement may also be due to other mediators that have not been explored in this study. Hence, the investigation of the mediators relevant to the engagement crossover between employees should not end here; future research should continue to examine other mediators of the engagement crossover between coworkers.

Although positive coworker communication was examined as a mediator in this study, the fact that it was directly related to individual engagement suggests that the JD-R model should be extended to constitute a wider variety of resources that impact engagement. Coworkers' verbally expressed work-related attitudes and opinions can potentially be considered a 'resource' that enhances individuals' work engagement by increasing their personal resources optimism and/or positive affect at work (see Xanthopoulou et al., 2007). Hence, the finding that, positive coworker communication related to individuals' engagement, theoretically extends the JD-R model by suggesting that coworker behaviors (in this case, positive coworker communication) be included as resources that can impact individual engagement. Besides coworker and supervisor support, the JD-R model does not adequately include social aspects of the work environment that can serve as potential resources that impact one's work engagement. The findings of the current study emphasize the importance of coworkers' verbally expressed behaviors on individuals' engagement, and should therefore guide the extension of the JD-R model to encompass a wider variety of coworker behaviors (in addition to coworker support) that impact individual engagement. Future research should examine the theoretical link between positive coworker

communication and individual engagement for the purpose of explaining how exactly coworkers' work-related verbal expressions impact individual engagement.

Individuals' Self-Construal

A second important finding was that the way in which individuals construed themselves moderated the crossover of engagement, such that, individuals who were more 'group-oriented' in nature were more likely to be influenced by their coworkers' engagement, compared to individuals who were more 'individualistic' in nature. This finding is consistent with results from 'mood-linkage' research by Ilies and his colleagues (2007) that found that relative to 'individualistically-oriented' team members, 'collectivistic' members were more likely to have similar levels of positive and negative affect to others in their group. Further, supplementary analyses revealed that the more 'group-oriented' individuals were, the greater their tendency to socially compare themselves to others. This finding is in line with the theoretical propositions of Markus and Kitayama (1991) who argue that people with an 'interdependent' self-construal are more likely to compare themselves with others in their ascribed groups and acquire the collective characteristics of the group. Conversely, those with an 'independent' self-construal strive to be unique from others in their groups and therefore are unlikely to converge with their group members on attitudes and behaviors. Hence, it seems plausible that individuals who construe themselves as being interdependent with others are more likely to be 'infected' by their coworkers' engagement through the comparison of their attitudes and emotions to those of their coworkers. Specifically, a focal individual who has a 'group-oriented' mindset, (a) cares more about and pays more attention to her coworkers, (b) compares her own engagement to that of her coworkers, and subsequently (c) adjusts her level of engagement to converge with her coworkers' level of work-related vigor, dedication, and absorption.

Self-construal is a construct that has very much shown to be relevant to how individuals operate in groups (e.g., Ramamoorthy & Flood, 2004). Whereas previous team-related research has demonstrated the link between self-construal (individualism-collectivism) and outcomes such as group cohesiveness and prosocial-cooperative behavior (Ramamoorthy & Flood, 2004; Wagner, 1995), this study is the first to examine the relationship between individuals' self-construal and engagement crossover. Therefore, the results of this examination are important because they suggest that the implications of individuals' self-construal in work groups extend beyond individual- and group-behavioral outcomes, to the *transfer* of work engagement between group members.

Colleagues' Organizational Hierarchical Status

The last finding that engagement crossed over from coworkers to individuals, but not from supervisors to individuals, suggested that colleagues' organizational hierarchical similarity. Supplementary paired-sample *t*-tests revealed that, on average, individuals interacted more frequently with their coworkers than with their supervisors. Therefore, it seems likely that the higher frequency of interaction between coworkers may have facilitated the transference of engagement between them, whereas, the lower frequency of interaction between individuals and their supervisors made it less likely for engagement to cross over between them. Consistent with this finding, Bakker and Xanthopoulou (2009) found engagement to cross over between coworkers, particularly on days when coworkers frequently interacted with one another through e-mail, telephone, or face-to-face interactions. Similarly, in an experimental study, Totterdell et al. (2004) found communication frequency to trigger the crossover of emotions.

Despite proposing that the greater likelihood of engagement crossover between coworkers than between supervisors and their subordinates could be explained by Festinger's

(1954) social comparison theory, supplementary analyses did not support this theoretical proposition. Specifically, I found that individuals perceived themselves to be just as similar to their coworkers as they were to their supervisors, in terms of perspectives, values, and work habits. Social comparison theory proposes that individuals tend to compare themselves to others who they perceive to be similar to them. Although it may seem reasonable to assume that individuals would perceive themselves to be more similar to their coworkers (who have a similar organizational hierarchical status) than to their supervisors (who have a higher organizational hierarchical status), this was not the case, as indicated by the above supplementary findings. Based on these findings, it is reasonable to infer that the greater crossover of engagement between coworkers is likely due to the high frequency of interactions between them.

Null Findings

Contrary to expectations, coworker support did not mediate the crossover of work engagement between coworkers. Specifically, employees who were highly engaged did not provide more support to their coworkers, compared to employees who were less engaged. This finding is contrary to recent research that strongly suggests that engagement is related to higher levels of contextual performance and organizational citizenship behavior (Christian, Garza, & Slaughter, 2011; Rich, Lepine, & Crawford, 2010). I do not know why this is the case but speculate that the major downsizing efforts of this organization may have been a contributing factor to the null findings. For instance, the organization was undergoing massive layoffs since approximately half a year prior to and during data collection. As such, perceptions of job insecurity may have led engaged employees to perform their job-related tasks or ‘in-role’ behaviors optimally while focusing less on citizenship or ‘extra-role’ behaviors (e.g., helping fellow coworkers) that may have had a relatively lower impact on their job security. Indeed,

researchers have found that employees who perceive a lack of job security are less likely to participate in organizational citizenship behaviors (Reisel et al., 2010; Staufienbiel & Konig, 2010). Hence, it is imperative for future research to continue to examine coworker support as a potential mediator of engagement crossover in more economically stable organizations.

Inconsistent with previous research showing that susceptibility to emotional contagion (SEC) facilitates the crossover of positive and negative affect (e.g., Ilies et al., 2007), the current study did not find SEC to moderate the crossover of engagement between coworkers. Reviewing the description and definition of work engagement may shed some light into this unexpected finding. Engagement, as a construct, comprises not only an affective/emotional component (i.e., dedication), but also behavioral-energetic (i.e., vigor) and cognitive (i.e., absorption) components (Schaufeli et al., 2002). Hence, while the crossover of ‘dedication’ may be enhanced by individuals’ SEC, the crossover of ‘vigor’ and ‘absorption’ may remain relatively unaffected by individuals’ SEC. As such, when engagement is considered as a whole, its transfer between coworkers may have been independent of focal individuals’ SEC. Future research should investigate the moderating effects of SEC on each of the three engagement dimensions separately to examine if the impact of SEC on the different dimensions does indeed vary.

Next, I did not find agreeableness to moderate the crossover of engagement. Although I do not know exactly why this is the case, I speculate that agreeableness may be more effective in influencing individuals’ overt behaviors rather than their internal attitudes such as work engagement. Indeed, while research has provided tremendous evidence for behavioral compliance among agreeable individuals, there has yet to be any empirical evidence suggesting ‘attitudinal’ or ‘emotional’ compliance (O’Neill & Kline, 2008; van Vianen & De Dreu, 2001). Hence, whereas agreeable individuals may outwardly ‘appear’ to be engaged in the presence of

their highly engaged coworkers, their external behaviors may not reflect their true internal state of work engagement. In other words, highly agreeable individuals working with highly engaged employees are likely to verbally and behaviorally display enthusiasm in their work without necessarily ‘catching’ the positive, work-related, psychological state of engagement from their coworkers.

Finally, contrary to predictions, coworkers’ emotional expressiveness failed to moderate the crossover of engagement. One potential reason for this is the low variability of emotional expressiveness ($M=2.91$, $SD=.30$) in the study’s sample. Considering the demographic characteristics of the study’s sample (i.e., a high majority of men and a large proportion on employees occupying engineering and construction job positions), it is not surprising that, on average, participants rated themselves as being low on emotional expressiveness and did not differ greatly from one another on this construct. Hence, future studies should examine the moderating influence of emotional expressiveness on engagement crossover in a more diverse sample of employees.

Limitations, Strengths, And Future Research

Although the current study has provided insights about how and when engagement crosses over between coworkers, it is not without limitations. In calling attention to the study’s limitations, I simultaneously suggest directions for future research. First, the cross-sectional nature of the study precludes the examination engagement crossover as a dynamic phenomenon. A repeated-measures methodology, such as the diary-study adopted by Bakker and Xanthapoulou (2009), would be able to capture daily fluctuations in individual- and coworker-engagement. Therefore, future research should adopt a longitudinal (repeated measures) methodology to assess how changes in an individual’s work engagement could be a function of

the changes in his or her coworkers' engagement. Second, the sample of participants in this study was demographically restricted, comprising primarily of Caucasian males. In fact, Westman (2001) highlighted key gender differences in crossover, suggesting that women were more vulnerable to emotional transmission than men. If women are indeed more susceptible to crossover effects, the strength of engagement transference reported in this study may be an underestimation of the true population effect. As such, future research should investigate the role of demographic diversity in engagement crossover and attempt to replicate the current study's findings with a more heterogeneous sample of employees.

The limitations of the study should be considered in light of its strengths. First, whereas previous crossover studies have either utilized students randomly grouped into teams or employees who selected a coworker for the study (Bakker & Xanthopoulou, 2009; Ilies et al., 2007), the current study was conducted in an actual organizational setting, among full-time employees already working in persisting work groups. Besides the high ecological validity of this study, a second strength involves the use of control variables in the statistical analyses. Specifically, I controlled for several variables (resources and participants' demographic characteristics) that have demonstrated, in past research, to influence engagement and potentially, its crossover (e.g., Schuafeli & Bakker, 2004). Moreover, Westman (2001) repeatedly emphasized the importance of controlling for 'shared environmental characteristics' when making any inferences about the occurrence of crossover. Previous crossover research has either neglected the influence of shared environmental characteristics or controlled for only a few common resources between workers (Bakker & Xanthopoulou, 2009; Felps et al., 2009; Ilies et al., 2007). Thus, the current study helps to build our confidence in the existence of the crossover phenomenon by providing evidence for engagement crossover even after common

resources were controlled. Lastly, rather than assessing individuals' 'perceived engagement of coworkers', I took measures of coworker and individual engagement from different sources, thus eliminating the potential for false consensus bias (see Bakker & Schaufeli, 2000).

Practical Implications

The findings of this study have several implications for organizations driven to have an engaged workforce. First, although the literature thus far emphasizes the presence of job resources, such as autonomy, advancement opportunities, and support, in predicting engagement (Crawford, LePine, Jeffery, & Rich, 2010; Halbesleben, 2010), findings from the current study suggest that organizations should not neglect the potential influence of coworkers on individuals' work engagement. Particularly, the benefits of organizational interventions aimed at increasing individuals' job resources may be limited if individuals' coworkers are disengaged – for instance, providing an employee with greater job autonomy may not effectively enhance her work engagement especially if she is surrounded by coworkers who constantly 'spread' their disengagement through negative comments about work. Additionally, in trying to assess the predictors of engagement at work, it is imperative for an organization to also consider the effects of coworker engagement on the individual. As such, consulting firms that conduct large-scale organizational climate assessments of employee engagement should also report the effects of coworker engagement on individual engagement, for a more complete analysis of the predictors of engagement.

Findings from the present study also indicated that engagement (or disengagement) can spread through interpersonal interactions between coworkers. Hence, promptly addressing the grievances of disengaged workers may effectively reduce their tendency to speak negatively about their work, only to indirectly 'infect' their colleagues with their disengagement. Research

on organizational grievance systems has indeed shown that grievance filers are less likely to demonstrate withdrawal behaviors (e.g., absenteeism and turnover) and possess negative work attitudes (e.g., low organizational commitment), if they could make a complaint quickly and easily (e.g., Olson-Buchanan, 1996). Therefore, organizations can reduce the spread of disengagement through interpersonal interaction between coworkers by (a) ensuring an effective and accessible grievance system is in place for employees to file a complaint and (b) training supervisors to address their employees' complaints promptly and effectively.

Concluding Remarks

Despite the relatively long history of crossover research and the rapidly expanding literature on work engagement, little has been done to integrate the two fields together (Bakker, Albrecht, & Leiter, 2011). The present study addresses this gap in the literature by combining theories relevant to engagement (Demerouti et al., 2001) and emotional contagion (Hatfield et al., 1994) to illuminate our understanding of engagement crossover between coworkers. The findings of this study not only support the occurrence of engagement crossover, but also explain the mediating paths and boundary conditions responsible for the transfer of engagement within teams. Importantly, this study theoretically extends the JD-R model to include coworker engagement and behaviors as 'resources' that impact individual engagement, as well as, provides practical implications for organizational practices aimed at enhancing work engagement. Future research should attempt to replicate these findings in other work populations and explore other factors that are relevant to the crossover of work engagement.

References

- Allport, G. W., & Vernon, P. E. (1933). *Studies in expressive movement*. New York, NY US: MacMillan Co.
- Arakawa, D., & Greenberg, M. (2007). Optimistic managers and their influence on productivity and employee engagement in a technology organisation: Implications for coaching psychologists. *International Coaching Psychology Review*, 2, 78-89.
- Aronoff, J., Wilson, J. P. (1985). *Personality in the Social Process*. Hillsdale, NJ : Lawrence Erlbaum Associates.
- Aspinwall, L. G., & Taylor, S. E. (1997). A stitch in time: Self-regulation and proactive coping. *Psychological Bulletin*, 121, 417-436.
- Bakker, A. B., Albrecht, S. L., & Leiter, M. P. (2010). Key questions regarding work engagement. *European Journal of Work and Organizational Psychology*, 20, 4 – 28.
- Bakker, A. B., & Bal, P. (2010). Weekly work engagement and performance: A study among starting teachers. *Journal of Occupational & Organizational Psychology*, 83, 189-206.
- Bakker, A., Emmerik, H., & Euwema, M. (2006). Crossover of Burnout and Engagement in Work Teams. *Work and Occupations*, 33, 464-489.
- Bakker, A. B., Demerouti, E., & Schaufeli, W.B. (2005). The crossover of burnout and work engagement among working couples. *Human Relations*, 58, 661-689.
- Bakker, A. B., Leblanc, P.M., & Schaufeli, W. B. (2005). A multilevel analysis of burnout contagion effects among nurses who work at intensive care units. *Journal of Advanced Nursing*, 51, 276-287.
- Bakker, A., & Schaufeli, W. B. (2000). Burnout contagion processes among teachers. *Journal of Applied Social Psychology*, 30, 2289-2308.

- Bakker, A. B., Schaufeli, W. B., Sixma, H. J., & Bosveld, W. (2001). Burnout contagion among general practitioners. *Journal of Social and Clinical Psychology, 20*, 82-98.
- Bakker, A. B., Westman, M., & Schaufeli, W. B. (2007). Crossover of burnout: An experimental design. *European Journal of Work and Organizational Psychology, 16*, 220-239.
- Bakker, A., & Xanthopoulou, D. (2009). The crossover of daily work engagement: Test of an actor-partner interdependence model. *Journal of Applied Psychology, 94*, 1562-1571.
- Bandura, A. (1969). *Principles of behavior modification*. New York: Holt, Rinehart, & Winston.
- Barrick, M. R., Stewart, G. L., Neubert, M. J., & Mount, M. K. (1998). Relating member ability and personality to work-team processes and team effectiveness. *Journal of Applied Psychology, 83*, 377-391.
- Bavelas, J. B., Black, A., Lemery, C. R., & Mullett, J. (1986). "I show how you feel": Motor mimicry as a communicative act. *Journal of Personality and Social Psychology, 50*, 322-329.
- Bernieri, F. J., Reznick, J., & Rosenthal, R. (1988). Synchrony, pseudosynchrony, and dissynchrony: Measuring the entrainment process in mother-infant interactions. *Journal of Personality and Social Psychology, 54*, 243-253.
- Breaugh, J. A. (1999). Further investigation of the work autonomy scales: Two studies. *Journal of Business & Psychology, 13*, 357-373.
- Buck, R., Miller, R. E., & Caul, W. F. (1974). Sex, personality, and physiological variables in the communication of affect via facial expression. *Journal of Personality and Social Psychology, 30*, 587-596.
- Buck, R. W., Savin, V. J., Miller, R. E., & Caul, W. F. (1972). Communication of affect through

- facial expressions in humans. *Journal of Personality and Social Psychology*, 23, 362-371.
- Christian, M. S., Garza, A. S., & Slaughter, J. E. (2011). Work Engagement: A quantitative review and test of its relations with task and contextual performance. *Personnel Psychology*, 64, 89-136.
- Clark, M. S. & Isen, A. M. (1982). Toward understanding the relationship between feeling states and social behavior. *Cognitive Social Psychology*. Hastorf, A. H., & Isen, A. M. (Eds.). Elsevier: New York.
- Demerouti, E., Bakker, A. B., Nachreiner, F., & Schaufeli, W. B. (2001). The job demands: resources model of burnout. *Journal of Applied Psychology*, 86, 499-512.
- Doherty, R. (1997). The emotional contagion scale: A measure of individual differences. *Journal of Nonverbal Behavior*, 21, 131-154.
- Doherty, R., Orimoto, L., Singelis, T. M., & Hatfield, E. (1995). Emotional contagion: Gender and occupational differences. *Psychology of Women Quarterly*, 19, 355-371.
- Eisenberger, R., Stinglhamber, F., Vandenberghe, C., Sucharski, I. L., Rhoades, L. (2002). Perceived supervisor support: contribution to perceived organizational support and employee retention. *Journal of Applied Psychology*, 87, 565-573.
- Felps, W., Mitchell, T., Herman, D., Lee, T., Holtom, B., & Harman, W. (2009). Turnover contagion: How coworkers' job embeddedness and job search behaviors influence quitting. *Academy of Management Journal*, 52, 545-561.
- Ferris, G. R., & Mitchell, T. R. (1987). The components of social influence and their importance for human resources research. In K. M. Rowland & G. R. Ferris (Eds.), *Research in personnel and human resources management* (pp. 103–128). Greenwich, CT: JAI Press.

- Festinger, L. (1954). A theory of social comparison processes. *Human Relations*, 7, 117-140.
- Fiske, A. P. (1992). The four elementary forms of sociality: Framework for a unified theory of social relations. *Psychological Review*, 99, 689-723.
- Friedman, H. S. (1979). The interactive effects of facial expressions of emotion and verbal messages on perceptions of affective meaning. *Journal of Experimental Social Psychology*, 15, 453-469.
- Friedman, H. S., Riggio, R. E., & Segall, D. O. (1980). Personality and the enactment of emotion. *Journal of Nonverbal Behavior*, 5, 35-48.
- Gibbons, F. X., & Buunk, B. P. (1999). Individual differences in social comparison: Development of a scale of social comparison orientation. *Journal of Personality and Social Psychology*, 76, 129-142.
- Goldberg, L. R., Johnson, J. A., Eber, H. W., Hogan, R., Ashton, M. C., Cloninger, C. R., & Gough, H. C. (2006). The International Personality Item Pool and the future of public-domain personality measures. *Journal of Research in Personality*, 40, 84-96
- Gordon, J. (1992). Work teams: How far have they come? *Training*, (October), 59-65.
- Hackman, J., & Oldham, G. R. (1975). Development of the Job Diagnostic Survey. *Journal of Applied Psychology*, 60, 159-170.
- Hakanen, J., Bakker, A., & Schaufeli, W. (2006). Burnout and work engagement among teachers. *Journal of School Psychology*, 43, 495-513.
- Harrison, D. A., Johns, G., & Martocchio, J. J. 2000. Changes in technology, teamwork, and diversity: New directions for a new century of absenteeism research. In G. Ferris (Ed.), *Research in Personnel and Human Resources Management* (pp. 43-91). JAI Press: Greenwich, CT.

- Harter, J., Schmidt, F., & Hayes, T. (2002). Business-unit level relationship between employee satisfaction, employee engagement, and business outcomes: A meta-analysis. *Journal of Applied Psychology*, 87, 268-279.
- Hatfield, E., Cacioppo, J. T., & Rapson, R. L. (1994). *Emotional contagion*. New York, NY: Cambridge University Press.
- Haviland, J., & Malatesta, C. Z. (1981). Fantasies, fallacies and facts: The development of sex differences in non-verbal signals. In C. Mayo & N. Henley (Eds.). *Gender and non-verbal behavior* (pp. 183-208). New York: Springer-Verlag.
- Howes, M. J., Hokanson, J. E., & Loewenstein, D. A. (1985). Induction of depressive affect after prolonged exposure to a mildly depressed individual. *Journal of Personality and Social Psychology*, 49, 1110-1113.
- Ilies, R., Wagner, D., & Morgeson, F. (2007). Explaining affective linkages in teams: Individual differences in susceptibility to contagion and individualism-collectivism. *Journal of Applied Psychology*, 92, 1140-1148.
- Joiner, T. (1994). Contagious depression: Existence, specificity to depressed symptoms, and the role of reassurance seeking. *Journal of Personality and Social Psychology*, 67, 287-296.
- Jones, F., & Fletcher, B (1993). Transmission of occupational stress: A study of daily fluctuations in work stress and strain and their impact on marital partners. In H. Schroder, K. Rescke., M. Johnston, & S. Maes (Eds), *Health psychology: Potential indiversity*, 328-338. Regensburg: Roderer Verlag.
- Kagan, J., Reznick, J., & Snidman, N. (1988). Temperamental influences on reactions to unfamiliarity and challenge. In G. P. Chrousos, D. Loriaux, P. W. Gold, G. P. Chrousos,

- D. Loriaux, P. W. Gold (Eds.) , *Mechanisms of physical and emotional stress* (pp. 319-339). New York, NY US: Plenum Press.
- Kring, A. M., Smith, D. A., & Neale, J. M. (1994). Individual differences in dispositional expressiveness: Development and validation of the Emotional Expressivity Scale. *Journal of Personality and Social Psychology*, 66, 934-949.
- Levy, S. R., Freitas, A. L., & Salovey, P. (2002). Construing action abstractly and blurring social distinctions: Implications for perceiving homogeneity among, but also empathizing with and helping, others. *Journal of Personality and Social Psychology*, 83, 1224-1238.
- Llorens, S., Bakker, A. B., Schaufeli, W., & Salanova, M. (2006). Testing the robustness of the job demands-resources model. *International Journal of Stress Management*, 13, 378-391.
- Marks, S. R. (1977). Multiple roles and role strain: Some notes on human energy, time, and commitment. *American Sociological Review*, 42, 921-936.
- Markus, H., & Kitayama, S. (1991). Culture and the self: Implications for cognition, emotion, and motivation. *Psychological Review*, 98, 224-253.
- 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, 81-90.
- Medlin, B., & Green Jr., K. W. (2009). Enhancing performance through goal setting, engagement, and optimism. *Industrial Management & Data Systems*, 109, 943-956.
- O'Neill, T. A., & Kline, T. B. (2008). Personality as a Predictor of Teamwork: A Business Simulator Study. *North American Journal of Psychology*, 10, 65-77.
- Osgood, C. E. (1976). *Focus on Meaning*. Oxford, England: Mouton.
- Piotrkowski, C. S. (1979). *Work and the Family System*. New York: Free Press.
- Ramamoorthy, N., & Flood, P. C. (2004). Individualism/collectivism, perceived task

- interdependence and teamwork attitudes among Irish blue-collar employees: A test of the main and moderating effects. *Human Relations*, 57, 347-366.
- Reisel, W. D., Probst, T. M., Swee-Lim, C., Maloles, C. M., & König, C. J. (2010). The Effects of Job Insecurity on Job Satisfaction, Organizational Citizenship Behavior, Deviant Behavior, and Negative Emotions of Employees. *International Studies of Management & Organization*, 40, 74-91.
- Rich, B., Lepine, J. A., & Crawford, E. R. (2010). Job Engagement: Antecedents and effects of job performance. *Academy of Management Journal*, 53, 617-635.
- Rothbard, N. P. (2001). Enriching or depleting? The dynamics of engagement in work and family roles. *Administrative Science Quarterly*, 46, 655-684.
- Rusbult, C. E., & Van Lange, P. M. (1996). Interdependence processes. In E. Higgins, A. W. Kruglanski, E. Higgins, A. W. Kruglanski (Eds.) , *Social psychology: Handbook of basic principles* (pp. 564-596). New York, NY US: Guilford Press.
- Schaufeli, W. B., & Bakker, A. B. (2004). Job demands, job resources, and their relationship with burnout and engagement: a multi-sample study. *Journal of Organizational Behavior*, 25, 293-315.
- Schaufeli, W. B., Bakker, A. B., & Salanova, M. (2006). The Measurement of Work Engagement With a Short Questionnaire: A Cross-National Study. *Educational and Psychological Measurement*, 66, 701-716.
- Schaufeli, W. B., Salanova, M., Gonzalez-Roma, V., & Bakker, A. (2002). The measurement of engagement and burnout: A two sample confirmatory factor analytic approach. *Journal of Happiness Studies*, 3, 71-92.
- Schaufeli, W. B., Taris, T., Le Blanc, P., Peeters, M., Bakker, A., & De Jonge, J. (2001). Work

- and health: The quest of the engaged worker. *De Psycholoog*, 36, 422-428.
- Sieber, S. D. (1974). Toward a theory of role accumulation. *American Sociological Review*, 39, 567-578.
- Singelis, T. (1994). The measurement of independent and interdependent self-construals. *Personality and Social Psychology Bulletin*, 20, 580-591.
- Schachter, S. (1959). *The Psychology of Affiliation*. Stanford: Stanford University Press.
- Sobel, M. E. (1986). Some new results on indirect effects and their standard errors in covariance structure models. In N. B. Tuma (Ed.), *Sociological methodology*, (pp. 159–186). San Francisco: Jossey-Bass.
- Starcevic, V., & Piontek, C. M. (1997). Empathic understanding revisited: Conceptualization, controversies, and limitations. *American Journal of Psychotherapy*, 51, 317.
- Staufenbiel, T., & König, C. J. (2010). A model for the effects of job insecurity on performance, turnover intention, and absenteeism. *Journal of Occupational & Organizational Psychology*, 83, 101-117.
- Stiff, J. B., Dillard, J. P., Somera, L., & Kim, H. (1988). Empathy, communication, and prosocial behavior. *Communication Monographs*, 55, 198-213.
- Stotland, E. (1959). Peer groups and reactions to power figures. In D. Cartwright, D. Cartwright (Eds.), *Studies in social power* (pp. 53-68). Oxford England: Univer. Michigan.
- Totterdell, P. (2000). Catching moods and hitting runs: Mood linkage and subjective performance in professional sport teams. *Journal of Applied Psychology*, 85, 848-859.
- Totterdell, P., Kellett, S., Teuchmann, K., & Briner, R. B. (1998). Evidence of mood linkage in work groups. *Journal of Personality and Social Psychology*, 74, 1504-1515.
- Totterdell, P., Wall, T., Holman, D., Diamond, H., & Epitropaki, O. (2004). Affect Networks: A

- Structural Analysis of the Relationship Between Work Ties and Job-Related Affect. *Journal of Applied Psychology*, 89, 854-867.
- Towler, A. J., & Dipboye, R. L. (2001). Effects of trainer expressiveness, organization, and trainee goal orientation on training outcomes. *Journal of Applied Psychology*, 86, 664-673.
- Turban, D. B., & Jones, A. P. (1988). Supervisor-subordinate similarity: Types, effects, and mechanisms. *Journal of Applied Psychology*, 228-234.
- Van Vianen, A. M., & De Dreu, C. W. (2001). Personality in teams: Its relationship to social cohesion, task cohesion, and team performance. *European Journal of Work & Organizational Psychology*, 10, 97-120.
- Vinokur, A., Price, R.H., & Caplan, R.D. (1996). Hard times and hurtful partners: How financial strain affects depression and relationship satisfaction of unemployed persons and their spouses. *Journal of Personality and Social Psychology*, 71, 166-179.
- Wagner, J. (1995). Studies of individualism-collectivism: Effects of cooperation in groups. *Academy of Management Journal*, 38, 152-172.
- Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology*, 54, 1063-1070.
- Westman, M. (2001). Stress and strain crossover. *Human Relations*, 54, 557-591.
- Westman, M. & Etzion, D. (1995). Crossover of stress, strain, and resources from one spouse to another. *Journal of Organizational Behavior*, 36, 169-181.
- Westman, M., & Etzion, D. (1999). The crossover of strain from school principals to teachers and vice versa. *Journal of Occupational Health Psychology*, 4, 269-278.

- Westman, M., Etzion, D., & Horovitz, S. (2004). The toll of unemployment does not stop with the unemployed. *Human Relations*, 57, 823-844.
- Westman, M., & Vinokur, A. (1998). Unraveling the relationship of distress levels within couples: Common stressors, empathic reactions, or crossover via social interaction? *Human Relations*, 51, 137-156.
- Xanthopoulou, D., Bakker, A., Heuven, E., Demerouti, E., & Schaufeli, W. (2008). Working in the sky: A diary study on work engagement among flight attendants. *Journal of Occupational Health Psychology*, 13, 345-356.
- Xanthopoulou, D., Bakker, A. B., Demerouti, E., & Schaufeli, W. B. (2007). The role of personal resources in the job demands-resources model. *International Journal of Stress Management*, 14, 121-141.
- Xanthopoulou, D., Bakker, A. B., Demerouti, E., & Schaufeli, W. B. (2009). Work engagement and financial returns: A diary study on the role of job and personal resources. *Journal of Occupational and Organizational Psychology*, 82, 183-200.

Table 1
Means, Standard Deviations (SD), Intercorrelations, and Reliabilities (in parentheses)^a

Variables	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Study Variables																				
1. Individual Engagement	3.80	.62	(.88)																	
2. Coworker Engagement	3.79	.42	.25**	-																
3. Supervisor Engagement ^b	3.85	.59	.14**	.25**	-															
4. Coworker Support	3.80	.61	.31**	.10**	.06	(.85)														
5. Positive Coworker Communication	3.31	.81	.48**	.27**	.11**	.48**	(.73)													
6. Susceptibility to Emotional Contagion	3.55	.61	.25**	.05	-.11**	.16**	.16**	(.77)												
7. Self-Construal	1.95	.50	-.31**	-.05	-.08*	-.31**	-.29**	-.37**	(.61)											
8. Agreeableness	3.88	.49	.22**	-.01	-.08*	.26**	.20**	.52**	-.52**	(.82)										
9. Coworker Emotional Expressiveness	2.91	.30	-.01	-.01	-.05	.04	.02	.05	.01	.03	(.75)									
Control Variables																				
10. Job Autonomy	3.81	.78	.43**	.17**	.06*	.27**	.36**	.10**	-.25**	.18**	.01	(.77)								
11. Performance Feedback	3.47	.88	.38**	.14**	.05	.45**	.45**	.05	-.15**	.10**	.02	.35**	(.85)							
12. Organizational Support	3.54	.76	.48**	.19**	.08*	.58**	.60**	.14**	-.26**	.20**	.03	.42**	.58**	(.88)						
13. Supervisor Support	3.83	.75	.39**	.13**	.01	.55**	.55**	.09**	-.26**	.20**	.03	.36**	.62**	.66**	(.90)					
14. Opportunities for Advancement	3.14	.88	.46**	.20**	.10**	.42**	.58**	.10**	-.19**	.12**	.04	.31**	.44**	.60**	.51**	(.76)				
15. Positive Affect	3.71	.68	.55**	.20**	.14**	.27**	.36**	.19**	-.31**	.22**	.01	.23**	.24**	.32**	.26**	.33**	(.92)	-		
16. Age	43.4	12.6	.13**	-.02	-.06	.01	.13**	.09**	-.05	.16**	.01	.11**	-.06*	.06*	.05	.08**	-.01			
17. Organizational Tenure	6.45	6.31	.05	.03	-.01	.04	.06	.06	-.02	.06*	.05	.08**	-.03	.05	.05	.01	-.04	.39**	-	
18. Group Size	15.3	14.4	-.06*	-.12**	.02	-.05	-.12**	-.15**	.10**	-.17**	.05	-.11*	-.06*	-.15**	-.12**	-.04	.05	-.20**	-.08*	-

^aN = 1071 individuals. * $p < .05$, two-tailed. ** $p < .01$, two-tailed.

^bData collected from a total of 153 supervisors.

Table 2

Hierarchical Linear Modeling Results for Hypothesis 2

Variables	Individual Engagement		
	Coefficient	Standard error (SE)	<i>t</i> ratio
Intercept (β_0)			
Intercept (γ_{00})	3.63	.06	64.51**
Group Size (γ_{01})	.00	.00	.41
Job Autonomy (β_1)			
Intercept (γ_{10})	.16	.02	7.81**
Performance Feedback (β_2)			
Intercept (γ_{20})	.07	.02	3.14**
Organizational Support (β_3)			
Intercept (γ_{30})	.11	.03	4.05**
Positive Affect (β_4)			
Intercept (γ_{40})	.34	.02	15.20**
Opportunities for Advancement (β_5)			
Intercept (γ_{50})	.09	.02	4.53**
Supervisor Support (β_6)			
Intercept (γ_{60})	.00	.03	-.13
Age (β_7)			
Intercept (γ_{70})	.01	.00	3.01*
Tenure (β_8)			
Intercept (γ_{80})	.00	.00	-.14
Coworker Engagement (β_9)			
Intercept (γ_{90})	.15 ^a	.04	3.34**

Note. Level 1 $N = 1045$. Level 2 $N = 153$.

^a Coworker engagement accounted for 9% of variance in individual engagement.

** $p < .01$

* $p < .05$

Table 3

Hierarchical Linear Modeling Results for Hypothesis 4

Variables	Dependent Measures					
	Positive Coworker Communication			Individual Engagement		
	Coefficient	Standard error (SE)	<i>t</i> ratio	Coefficient	Standard error (SE)	<i>t</i> ratio
Intercept (β_0)						
Intercept (γ_{00})	3.04	.09	34.4**	3.67	.06	62.60**
Group Size (γ_{01})	.00	.00	-.21	.00	.00	.77
Job Autonomy (β_1)						
Intercept (γ_{10})	.05	.03	1.77	.15	.02	7.00**
Performance Feedback (β_2)						
Intercept (γ_{20})	.03	.03	1.11	.07	.02	3.00**
Organizational Support (β_3)						
Intercept (γ_{30})	.25	.04	6.72**	.10	.03	3.52**
Positive Affect (β_4)						
Intercept (γ_{40})	.15	.03	4.86**	.34	.03	13.9**
Opportunities for Advancement (β_5)						
Intercept (γ_{50})	.20	.03	7.41**	.07	.02	3.46**
Supervisor Support (β_6)						
Intercept (γ_{60})	.20	.04	5.51**	-.04	.03	-1.33
Age (β_7)						
Intercept (γ_{70})	.01	.00	3.53**	.00	.00	1.92
Tenure (β_8)						
Intercept (γ_{80})	.00	.00	-.05	.00	.00	-.21
Coworker Engagement (β_9)						
Intercept (γ_{90})	.22	.07	3.21**	.14	.05	2.95**
Positive Coworker Comm (β_{10})						
Intercept (γ_{100})				.09 ^a	.02	3.59**

Note. Level 1 $N = 1045$. Level 2 $N = 153$.

^a Positive coworker communication accounted for 4% of variance in individual engagement.

** $p < .01$

Table 4

Hierarchical Linear Modeling Results for Hypothesis 7

Variables	Individual Engagement		
	Coefficient	Standard error (SE)	<i>t</i> ratio
Intercept (β_0)			
Intercept (γ_{00})	3.62	.06	64.78**
Group Size (γ_{01})	.00	.00	.61
Job Autonomy (β_1)			
Intercept (γ_{10})	.15	.02	7.45**
Performance Feedback (β_2)			
Intercept (γ_{20})	.07	.02	3.27**
Organizational Support (β_3)			
Intercept (γ_{30})	.11	.03	3.87**
Positive Affect (β_4)			
Intercept (γ_{40})	.33	.02	14.41**
Opportunities for Advancement (β_5)			
Intercept (γ_{50})	.09	.02	4.48**
Supervisor Support (β_6)			
Intercept (γ_{60})	.00	.03	-.35
Age (β_7)			
Intercept (γ_{70})	.01	.00	3.05**
Tenure (β_8)			
Intercept (γ_{80})	.00	.00	-.19
Coworker Engagement (β_9)			
Intercept (γ_{90})	.15	.04	3.28**
Self-Construal (β_{10})			
Intercept (γ_{100})	-.08 ^a	.03	-2.70**
Coworker Engagement*Self-Construal (β_{11})			
Intercept (γ_{110})	-.20 ^b	.09	-2.27*

Note. Level 1 $N = 1045$. Level 2 $N = 153$.

^a Self-construal accounted for 3% of variance in individual engagement.

^b The interaction term (coworker engagement*self-construal) accounted for 8% of variance in individual engagement.

** $p < .01$

* $p < .05$

Figure 1 - Interaction between self construal and coworker engagement.

Dependent variable: Individual engagement.

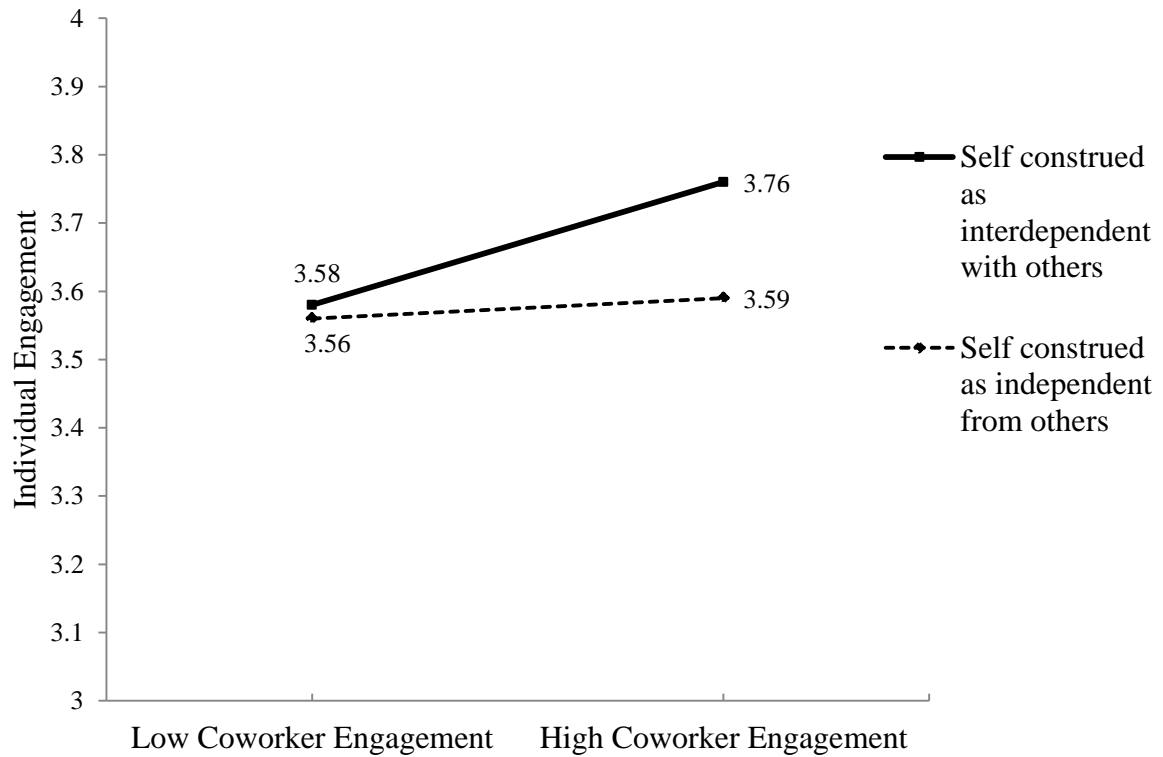


Figure 1. The moderating role of self-construal on the relationship between coworker engagement and individual engagement.

Appendix

Random Intercept Equations

1. General Multilevel Equation:

$$\text{Level 1 (L1): } Y_{ij} = \beta_{0j} + \beta_{1j}X_{ij} + r_{ij}$$

$$\begin{aligned} \text{Level 2 (L2): } \beta_{0j} &= \gamma_{00} + \gamma_{01}W_j + u_{0j} \\ \beta_{1j} &= \gamma_{10} \end{aligned}$$

Y_{ij} = Dependent Variable (Individual Engagement)

X_{ij} = Predictor (Coworker Engagement)

β_{0j} = L1 Intercept (Average Coworker Engagement for group j)

β_{1j} = L1 Slope (Average effect of Coworker Engagement for group j)

r_{ij} = Random Error in the Dependent Variable for individual i (L1 error)

γ_{00} = Mean Value for L1 Dependent Variable, controlling for L2 predictor, W_j

W_j = L2 Predictor

γ_{01} = Effect (Slope) of L2 Predictor

u_{0j} = Random Error in the Dependent Variable for group j (L2 error)

γ_{10} = Mean Value for L1 Slope

2. Sample Multilevel Equation used in the Current Study (*Hypothesis 2*):

$$\begin{aligned} \text{L1: Individual Engagement} &= \beta_{0j} + \beta_1(\text{Job Autonomy}) + \beta_2(\text{Performance Feedback}) \\ &+ \beta_3(\text{Organizational Support}) + \beta_4(\text{Positive Affect}) \\ &+ \beta_5(\text{Opportunity for Advancement}) \\ &+ \beta_6(\text{Supervisor Support}) + \beta_7(\text{Age}) + \beta_8(\text{Tenure}) \\ &+ \beta_9(\text{Coworker Engagement}) + r_{ij} \end{aligned}$$

$$\text{L2: } \beta_{0j} = \gamma_{00} + \gamma_{01}(\text{Group Size}) + u_{0j}$$

$$\beta_1 = \gamma_{10}$$

$$\beta_2 = \gamma_{20}$$

$$\beta_3 = \gamma_{30}$$

$$\beta_4 = \gamma_{40}$$

$$\beta_5 = \gamma_{50}$$

$$\beta_6 = \gamma_{60}$$

$$\beta_7 = \gamma_{70}$$

$$\beta_8 = \gamma_{80}$$

$$\beta_9 = \gamma_{90}$$