

DISSERTATION

THE RELATIONAL CONTEXT OF EMPLOYEE ENGAGEMENT: AN INTRINSIC  
PERSPECTIVE

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## ABSTRACT

### THE RELATIONAL CONTEXT OF EMPLOYEE ENGAGEMENT: AN INTRINSIC PERSPECTIVE

The purpose of the current study was to expand on the existing understanding of the relational context of employee engagement. Previous studies and theories applied to understanding the relational context of work and employee engagement have predominately adopted an instrumental perspective of relationships. An instrumental perspective of relationships assumes individuals engage in relationships (and benefit from them) because the relationship is a means to an end, with the end being some other reason such as task-related support, power, influence, or other extrinsic reasons. Conversely, an intrinsic perspective of relationships views them as beneficial due to the inherent enjoyment, interest, and holistic wellbeing individuals experience as a result of their interactions. Based on an intrinsic perspective of relationships, grounded in self-determination theory, this study tests the notion that the quality of work relationships is an important consideration for more fully understanding the relational context of employee engagement. Data collected from 364 working adults, across diverse industries and occupations, revealed that leader relationship quality (intrinsic perspective) is a stronger predictor of employee engagement than leader support (instrumental perspective), thereby supporting the argument that the previous focus of engagement research (i.e., mainly adopting an instrumental perspective of relationships) is incomplete. Additionally, results showed that coworker relationship quality (relative to leader relationship quality) is a stronger predictor of satisfaction of relatedness needs at work. Overall, the results of this study

suggest there is value in examining an intrinsic perspective of relationships in regards to engagement.

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## DEDICATION

This dissertation is dedicated to my parents, Jim and Susie. Thank you for teaching me the importance of hard work, perseverance, generosity, and kindness. You have been and continue to be my inspiration, my role models, and my rock.

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## INTRODUCTION

In 2013, CEB Talent Management conducted a survey of HR Professionals and revealed that the number one concern for a majority of their sample ( $n = 592$ ) was employee engagement and retention (Fallaw & Kantrowitz, 2013). Likewise, a 2012 Society for Human Resource Management survey revealed that 63% of organizations sampled reported employee engagement as a “very important” challenge ( $n = 767$ ; Society for Human Resource Management, 2012). The empirical literature supports this growing focus of practitioners, demonstrating that employee engagement has many beneficial organizational outcomes such as job performance (Salanova, Agut, & Peiro, 2005), organizational citizenship behaviors (Saks, 2006), low intentions to quit (Saks, 2006), and low absence frequency (Schaufeli, Bakker, & Van Rhenen, 2009), to name a few. Moreover, from a positive psychology perspective, employee engagement is important in its own right as it is related to employees’ healthier functioning on both a psychological and physiological level (Attridge, 2009; Koyuncu, Burke, & Fiksenbaum, 2006; Schaufeli, Taris, & Van Rhenen, 2008).

Employee engagement has many different work-related antecedents such as job characteristics (e.g., task variety, task significance, feedback), individual characteristics (e.g., positive affect, conscientiousness), and organizational factors (e.g., perceived organizational support, organizational climate; Christian, Garza, & Slaughter, 2011; Saks, 2006; Salanova et al., 2005). Though many researchers have examined relational variables such as coworker and leader support (e.g., Bakker, Hakanen, Demerouti, & Xanthopoulou, 2007; Christian et al., 2001; Saks, 2006), few researchers have empirically examined the relationship between the quality of work relationships and employee engagement. This lack of research is problematic because the current

work environment is more socially constructed than ever before (Grant & Parker, 2009). As the current work environment becomes progressively more interdependent and team-based (Harrison, Johns, & Martocchio, 2000), the study of work relationships becomes even more essential to fully understanding employee engagement.

Prior scholars have theorized that the quality of work relationships is crucial for creating the optimal conditions that foster employee engagement (Kahn, 1990; Kahn & Heaphy, 2014). In support, research shows that leaders are a part of the socially constructed environment such that the relationships subordinates have with their leaders are related to their level of engagement. For example, leader-member exchange has been shown to be positively correlated with employee engagement (e.g., Agarwal, Datta, Blake-Beard, & Bhargava, 2011; de Villiers & Stander, 2011). Similarly, supportive leader relationships have also been positively correlated with employee engagement (Bakker et al., 2007; May, Gilson, & Harter, 2004). In summary, initial research suggests that leader relationships are part of the social context related to employee engagement.

Another influential relationship important in this context and part of the social construction of the work environment is coworker relationships. However, coworker relationships are comparatively the most under-studied type of work relationship, with the majority of research and theory focusing on the leader-subordinate relationship (e.g., Graen & Uhl-Bien, 1995) and the employee-organization relationship (e.g., Shore & Coyle-Shapiro, 2003). A growing body of empirical research on coworker relationships suggests it is a topic that deserves additional attention due to the beneficial individual and organizational outcomes associated with such relationships (e.g., Chiaburu & Harrison, 2008; Grant & Parker, 2009; Sias, 2009). For example, recent research shows that coworker relationships have been positively

correlated with job satisfaction (Baldwin, Bedell, & Johnson, 1997), organizational commitment (Liden, Wayne, & Sparrowe, 2000), job performance (Jehn & Shah, 1997), and work motivation (Fernet, Gagné & Austin, 2010). These initial results suggest that although coworker relationships are indeed part of the social construction of the work environment, the research examining the relationship between coworker relationships and employee engagement to date remains narrow in focus (Kahn & Heaphy, 2014).

Specifically, research examining coworker relationships and employee engagement has predominately operationalized coworker relationships as social support. For example, research shows a moderately strong relationship between coworker social support and employee engagement (e.g.,  $r = 0.32$ ; Christian et al., 2011; Halbesleben, 2010; Schaufeli et al., 2009). However, research also suggests coworker relations can take many different forms and that these different types of relationships offer different types of benefits to the participants in those relationships (Baldwin et al., 1997; Kram & Isabella, 1985; LePine, Methot, Crawford, & Buckman, 2012). For example, Kram and Isabella (1985) found that coworker relations can be one of three main categories: “information peer”, “collegial peer”, or “special peer” (p. 119). The “information peer” offers mostly information sharing, whereas the “collegial peer” offers career strategizing and job-related feedback. Conversely, the “special peer” offers the greatest benefits including confirmation, emotional support, friendship, and personal feedback. Kram and Isabella’s research demonstrates there are multiple types of coworker relationships and each type provides or fulfills some unique benefit. Thus, focusing on only one dimension of coworker relations, namely social support, has potentially resulted in a limited understanding of the complex dynamics of coworker relationships and the associated outcomes, namely engagement.

Kahn (1990), one of the leading scholars in the field of employee engagement, suggested that coworker relationships are important, not only for their support value, but more importantly because of their ability to foster employees' experiences of meaningfulness, psychological safety, and psychological availability, which are considered essential antecedents to engagement (Kahn, 1990; Kahn & Heaphy, 2014). Kahn (2007) argued it is the depth of connections people have that enables them "to bring themselves more authentically into their work" (p. 190). Thus, the examination of coworker relationships conceptualized as social support "implies but does not fully explore" the importance of coworker relationships to engagement (Kahn & Heaphy, 2014, p. 82). Hence, we can consider the extant research examining the relationship between social support and employee engagement too narrow in focus.

To be fair, the construct of social support was not intended to capture the depth of connections at work. In the context of employee engagement, it has largely been operationalized as an instrumental resource for employees that aids them in achieving work goals, reducing job demands, and reducing employees' experiences of strain (Xanthopoulou, Bakker, Heuven, Demerouti, & Schaufeli, 2008). Though Kahn (2007) and others (e.g., Sias, 2009) do recognize that work relationships will commonly contain some degree of instrumentality (i.e., a means to an end such as work-related help, advice, information), the argument put forth here is that there is more to work relationships than just instrumentality. Moreover, the additional components of work relationships that can signify their depth (e.g., trust, positive regard, mutuality) are not currently captured in the literature and are argued to be the most essential aspects for fostering employee engagement (Kahn & Heaphy, 2014). It is important to note there is not an agreed upon definition of the 'depth' of work relationships. However, analysis of Kahn's (2007; Kahn & Heaphy, 2014) work and a review of the literature that has attempted to define the depth of

dyadic work relationships (e.g., Graen & Uhl-Bien, 1995; Marsden & Campbell, 1984, Sias & Cahill, 1998) lends credence to the proposition that the underlying meaning of depth refers to the *quality* of dyadic relationships. The two most important dyadic relationships in the workplace are with one's coworkers and one's supervisor/leader (Sias, 2009). As such, coworker relationship quality (CRQ) and leader relationship quality (LRQ) will be the focus of this study.

Similar to depth, the quality of work relationships has not been clearly defined in the literature. By definition, quality refers to how good or bad something is. Applied to relationships, quality refers to one's subjective evaluation of the relationship he or she has with another person in regards to how positive or negative it is perceived (Clark & Reis, 1988). Some have defined quality in terms of relationship types (e.g., acquaintance, friend; Jehn & Shah, 1997; Sias & Cahill, 1998), and others define quality in regards to relationship dimensions (e.g., instrumentality, trust, positive regard, loyalty; Carmeli, 2009; Carmeli, Brueller, & Dutton, 2009; Ferris, Liden, Munyon, Summers, Basik, & Buckley, 2009; Heaphy & Dutton, 2008). Synthesizing the previous literature on work relationships, it seems logical to conclude that relationship quality is evaluated on the presence or absence of various relationship dimensions (e.g., trust, loyalty, positive regard) and that certain types of relationships tend to be of higher quality, with friendship relationships being the highest quality relationship aside from marital or familial relationships (Clark & Mills, 1979; Clark & Mills, 2012). Instrumental relationships differ from friendships as they are usually based on exchange and reciprocity, and they tend to be regarded as comparatively lower quality relationships (Clark & Mills, 1979; Clark & Mills, 2012; Jehn & Shah, 1997). Since the literature on employee engagement has largely focused on instrumental relationships (operationalized as social support), an unintended consequence is the narrowing of our understanding of the relational context of engagement.

The purpose of the current study was to explore the relational context of employee engagement from an intrinsic perspective. Whereas an instrumental perspective of relationships view them as beneficial due to an extrinsic reward or outcome (Lawler, 2006), an intrinsic perspective of relationships views them as beneficial due to sheer enjoyment and interest, with no expectation for any gain. In the current study, an intrinsic and an instrumental perspective will be simultaneously tested to examine the relative contribution of each for explaining employee engagement. To explain the intrinsic perspective, I incorporate self-determination theory (SDT), a motivational theory grounded in the positive psychology movement, because of its ability to explain intrinsically-based relationships (Deci & Ryan, 1985; Ryan & Deci, 2000).

SDT proposes people can be motivated to engage in certain behaviors due to intrinsic interest and enjoyment, rather than merely extrinsic rewards or reinforcement (Deci & Ryan, 1985). When a social environment supports satisfaction of three basic psychological needs (relatedness, autonomy, and competence), such as through high quality relationships, SDT proposes that people are likely to experience intrinsic motivation. Additionally, when behaviors are viewed as voluntary (rather than controlled), individuals are also more likely to experience intrinsic motivation. Though not identical, employee engagement is similar to intrinsic motivation (Inceoglu & Fleck, 2011; Meyer & Gagné, 2008) and therefore SDT is an appropriate theory for use in engagement research.

Thus, using an intrinsic perspective as a framework, as framed with SDT, I propose that the relationship between CRQ and employee engagement will be mediated by satisfaction of the need for relatedness proposed in SDT (i.e., need for relatedness satisfaction; see Figure 1). However, research suggests that due to the nature of work relationships, even the highest quality coworker relationships still typically contain some degree of instrumentality (Ferris et al., 2009).

The explanatory mechanism for the instrumentality component of coworker relationships, operationalized as coworker social support, is not theorized to be related to the intrinsic variable, need for relatedness satisfaction. Thus, I propose coworker social support will demonstrate a direct relationship with employee engagement (see Figure 1). Additionally, I propose that CRQ will demonstrate incremental variance over coworker social support in regards to employee engagement because of the importance of relationship quality (Kahn, 2007; Kahn & Heaphy, 2014).

Though no previous empirical work has investigated the relationship between CRQ and employee engagement, a few researchers have investigated the relationship between leader-member exchange, a related construct to leader relationship quality (LRQ), and employee engagement. For example, research shows leader-member exchange quality is positively correlated with employee engagement (e.g., Agarwal et al., 2011; de Villiers and Stander, 2011). However, very few (for exception see Li & Hung, 2009) have examined the effects of LRQ in conjunction with CRQ, and no one to date has examined the simultaneous association of LRQ and CRQ with employee engagement.

The limited research that does exist, which examines coworker relationships simultaneously with leader relationships, proposes that coworker relationships can be more impactful with certain outcomes (e.g., training maintenance and transfer, job involvement, absenteeism, and performance) and demonstrate stronger relationships as compared to leader relationships (Chiaburu, 2010; Chiaburu & Harrison, 2008). These results are congruent with the proximity principle, which proposes that people tend to form higher quality relationships with individuals they interact with frequently (as compared to individuals they do not interact with frequently; Festinger, Schachter, & Back, 1950). Because coworkers tend to be more proximal

and interact more frequently with each other than with their leaders, it logically follows that coworkers will tend to develop a higher quality relationship with each other as compared to with their leader (Chiaburu, 2010; Chiaburu & Harrison, 2008). Partners of high quality relationships tend to exert greater influence on the other partner (as compared to lower quality relationship partners) because of greater interdependence, trust, and positive regard (Berscheid & Reis, 1998; Haythornthwaite & Wellman, 1998; Krackhardt & Porter, 1985). Additionally, coworker relationships are arguably more voluntary than leader relationships due to the hierarchical nature of leader-subordinate relationships. Based on SDT, voluntary relationships are more likely to develop into intrinsic relationships, composed of interest and enjoyment, rather than extrinsic relationships, characterized by external reinforcement and rewards (e.g., reciprocity, exchange expectations; Deci & Ryan, 2012). Thus, on the basis of the aforementioned empirical research SDT, and Kahn's (1990) framework of engagement, I propose that CRQ will demonstrate a stronger relationship with employee engagement than will LRQ.

Lastly, similar to coworker relationships, leader relationships can be characterized as instrumental, operationalized as social support, or intrinsic, operationalized as quality (LRQ). Based on SDT, I propose the intrinsic aspect of leader relationships (LRQ) will be mediated by need for relatedness satisfaction. The instrumental aspect of leader relationships (operationalized as social support) is not theorized to be related to the intrinsic variable, need for relatedness satisfaction and therefore should demonstrate a direct relationship with employee engagement. Similar to CRQ, I propose that LRQ will demonstrate incremental variance over leader social support in regards to employee engagement because of the importance of relationship quality (Kahn, 2007; Kahn & Heaphy, 2014). The full theoretical model is presented in Figure 3.

In summary, I propose a new theoretical framework for understanding the relational context of employee engagement from an intrinsic perspective. Whereas the majority of the published research examining the relational context of work in regards to employee engagement has focused on an instrumental perspective (i.e., operationalized as social support), I propose that relationship quality is a critical and essential consideration. Furthermore, CRQ and LRQ will demonstrate incremental variance in predicting employee engagement above and beyond coworker social support and leader social support. Additionally, I propose that CRQ will be a stronger correlate of employee engagement than will LRQ.

The current study has several potential theoretical implications for the employee engagement literature. First, this study expands instrumental perspectives of work relationships for fostering employee engagement, proposing a new theoretical model for understanding the relational context of employee engagement. Though much has been theorized and investigated in regards to the value of social support for employee engagement, I argue this examination is too narrow because it focuses on only one aspect of work relationships (i.e., instrumental aspect) thereby ignoring the intrinsic value of such relationships. This study contributes to our understanding of other important ways (i.e., aside from social support) that work relationships can be positively associated with employee engagement. Second, by utilizing SDT to understand employee engagement, this study contributes to explaining *why* the relational context of work environments is related to employee engagement thereby contributing to a greater understanding of how employee engagement can be fostered. In doing so, this study also expands the current conceptualizations of theories and models applicable to explaining employee engagement. Given that employee engagement is still an emergent field that has largely been dominated by a single theoretical model (job demands-resources model; Bakker, Demerouti, De Boer, & Schaufeli,

2003; Demerouti, Bakker, Nachreiner, & Schaufeli, 2001), further explication of theoretical ways to foster employee engagement is necessary to progress the science and practice of the field. Overall, this study contributes to expanding our current understanding of factors that relate to employee engagement, as well as the explanatory mechanisms of why such factors are related by proposing and testing a theoretical model of the relational context of employee engagement based on an intrinsic perspective.

In the next sections, I will present the background literature upon which my new theoretical model is based, as well as present specific hypotheses for testing the model.

## **Literature Review**

### **Interpersonal Relationships at Work**

Interpersonal relationships are a fundamental aspect of human life because humans possess an overarching and widespread “need to belong” (Baumeister & Leary, 1985, p. 497). The “need to belong” refers to an inherent motivation most humans possess to form and maintain positive and significant relationships with others. This inherent need to belong guides behaviors, thoughts, and emotions (Alderfer, 1969; Baumeister & Leary, 1985). The need to belong is also pervasive across many contexts and the work environment is no exception (Deci & Ryan, 2012).

*Interpersonal relationship* refers to the association between two people that resides in the interaction between them, with each partner influencing the other (Berscheid & Regan, 2005). Influence, a defining feature of relationships, means that each partner’s behaviors affect the other partner’s future behavior (Reis, Collins, & Berscheid, 2000). Moreover, a relationship exists if two people are interdependent and their behaviors, emotions, and thoughts are causally interconnected (Kelley et al., 1983). Relationships are based on more than a single episode – they form as a result of repeated interaction (Berscheid & Regan, 2005). Additionally, each

partner's evaluation of the relationship is based on the repeated interactions wherein he/she reflects on the past interactions to determine the overall evaluation or quality of the relationship (Clark & Reis, 1988). Furthermore, the higher the quality the relationship, the more influence each partner tends to have on the other (Berscheid & Reis, 1998; Haythornthwaite & Wellman, 1998; Krackhardt & Porter, 1985; Reis et al., 2000).

There are many different sources of work relationships any given person can have. For example, employees may have relationships with their supervisor, immediate coworkers, team members, senior management, colleagues in other departments or units, clients, and/or customers. Additionally, relationships with others vary in the strength of ties (Granovetter, 1983). Workplace relationships can be based entirely on job-related, instrumental exchanges; they can include personal components such as positive regard and respect; they can also be friendships, characterized by trust, intimacy, and permanence; or they can be any combination of the previously mentioned dimensions (Allen & Eby, 2012; Ferris et al., 2009). Thus, individuals can have relationships with multiple individuals at work, and these relationships can be of varying quality (e.g., Kram & Isabella, 1985).

The literature on workplace relationships is still in its infancy (Reich & Hershcovis, 2011) thus, there are many questions about workplace relationships that remain unanswered. For example, what types of workplace relationships are most important for influencing employee and organizational outcomes? To date, the empirical literature on dyadic workplace relationships has largely focused on only one dyadic relationship, the relationship between supervisors and subordinates (Sias, 2009).

**Leader relationships.** *Leader relationships* refer to the quality of the dyadic relationship between leaders and their subordinates. Because leader relationships represent a form of

interpersonal relationships, each partner's evaluation of the relationship is based on the repeated interactions that ultimately determine the overall evaluation or quality of the relationship each partner holds. In regards to employee engagement, the leader relationship has typically been studied as one of two theoretical frameworks: leader-member exchange theory or organizational support theory.

Leader-member exchange theory (Dansereau, Graen, & Haga, 1975; Graen & Cashman, 1975; Graen, 1976) was originally introduced as the vertical dyad linkage (VDL) model (Dansereau et al., 1975) and through many refinements, has now become known as the leader-member exchange theory (LMX). LMX theory focuses on the relationship between a leader/supervisor and the subordinate. The current conceptualization of LMX focuses on three dimensions of the leader and subordinate relationship: respect, trust, and obligation (Graen & Uhl-Bien, 1995). The main premise of LMX is that the quality of the leader and subordinate relationship determines many different outcomes for the leader, the subordinate, and the organization (Graen & Uhl-Bien, 1995). For example, there are many benefits to be gained (e.g., for the employee, the leader, and the organization) by having high quality relations between a leader and his or her subordinates such as job performance, overall satisfaction, organizational commitment, less role conflict, role clarity, competence, and fewer turnover intentions (Gerstner & Day, 1997; Graen & Uhl-Bien, 1991).

The underlying theoretical basis for LMX is social exchange theory (Sparrowe & Liden, 1997). Social exchange theory (SET; Blau, 1964; Homans, 1958; Thibaut & Kelley, 1959) suggests that relationships may develop into trusting and loyal relationships over time (i.e., quality relationships) and that the major mechanism through which this occurs is by means of 'exchange' (Cropanzano & Mitchell, 2005). Exchanges are defined as a series of social

interactions that generate obligations of reciprocity (Emerson, 1976). As such, exchanges are evaluated on the basis of reciprocity including dimensions such as immediacy of returns, equivalence of returns, and interest of the parties involved (e.g., self-interest, mutual interests; Sahlins, 1972). Thus, the theoretical basis for LMX is instrumental due to the focus on reciprocity and exchange.

The other major theoretical framework through which leader and subordinate relations is studied is perceived supervisor support (PSS; House, 1981; Karasek, Triantis, & Chaudhry, 1982; Kottke & Sharafinski, 1988) which stems from perceived organizational support theory (POS; Eisenberger, Cummings, Armeli & Lynch, 1997; Rhoades & Eisenberger, 2002). POS theory suggests that employees' form a general view of how much their organization cares about them, values them, and is committed to them (Eisenberger et al., 1997; Rhoades & Eisenberger, 2002). Because supervisors are perceived as agents of the organization, representing the organization itself, when supervisors demonstrate emotional and instrumental support for their subordinates (perceived supervisor support; PSS), employees extend these perceptions to the organization itself, thereby perceiving their organization is committed to and values them. Thus, PSS refers to emotional and instrumental support provided by one's supervisor (House, 1981). Emotional support refers to work-related empathy, care, concern, and trust, whereas instrumental support refers to concrete behaviors intended to help the other person such as providing job-related information and task support (House, 1981). PSS is one of the three general categories of support defined in perceived organizational support theory (POS; Eisenberger, Cummings, Armeli & Lynch, 1997; Rhoades & Eisenberger, 2002). Like LMX, perceived organizational support theory is based on SET, making reciprocity a central tenant of POS as well. POS proposes that when employees perceive their organization values them (by means of PSS)

employees will respond favorably to the treatment such as with superior performance (Eisenberger, Fasolo, & Davis-LaMastro, 1990), organizational commitment, job satisfaction (Ng & Sorensen, 2008), or organizational citizenship behaviors (Moorman, Blakely, & Niehoff, 1998). In summary, there are two main theoretical perspectives through which researchers have studied the relationship between leaders and their subordinates (i.e., LMX and POS - PSS). However, both frameworks are theoretically grounded in SET and thus, represent instrumental perspectives on the leader relationship in that relationships are theorized to be sustained through the reciprocation of benefits.

As compared to coworker relationships, leader relationships have unique characteristics due to their hierarchical nature. That is, leaders have formal power over their subordinates, controlling resources, job opportunities, and promotions. Hence, there are noteworthy differences between coworker relationships and leader relationships. Moreover, as the research on coworker relationships accumulates, there appears to be a growing debate as to which type of relationship (i.e., coworker relationships or leader relationships) is more significant in regards to predicting employee outcomes. Historically, relationships with supervisors have been considered the most important work relationship an employee has (Dienesch & Liden, 1986). However, more recent research shows coworker relationships can demonstrate stronger associations with employee outcomes (Basford & Offerman, 2012; Li & Hung, 2009), calling into question the belief that leader relationships are the ‘most important’ work relationship an employee may have. For example, Li and Hung (2009) investigated the simultaneous effects of LMX and coworker-exchange and found that coworker-exchange is a stronger predictor of organizational citizenship behavior, whereas LMX is a stronger predictor of task performance. Thus, there is initial

empirical evidence to suggest that coworker relationships may be more important than leader relationships for influencing employees' behaviors.

**Coworker relationships.** *Coworker relationships*, as defined in this study, refer to relationships between individuals at the same hierarchical level as one another or between individuals who have no formal authority over one another (Sias, 2009). The first introduction of the concept and the importance of peer work relationships (i.e., coworker relationships) was presented in Kram and Isabella's (1985) study identifying different types of peer relationships associated with career development. Based on interviews and qualitative analysis, Kram and Isabella concluded there are three main types of peer relationships: information peers, collegial peers, and special peers (1985). Moreover, the results of their research suggested that the three different types of peer relationships exhibited different outcomes for the participants in regards to career and psychosocial development. The highest quality relationship identified, special peers, was associated with the widest range of beneficial outcomes in regards to personal and professional career development and support (Kram & Isabella, 1985).

As a testament to the growing evidence that coworker relations are important, within the last ten years, the topic of coworker relationships has received increasing attention. For example, many empirical studies have been conducted (e.g., Fernet et al., 2010; Riordan & Griffeth, 1995; Sias & Cahill, 2008; Simon, Judge, & Halvorsen-Ganepola, 2010), numerous books have been published on the topic (Dutton & Raggins, 2007; Eby & Allen, 2012; Sias, 2009), a meta-analysis has been presented (Chiaburu & Harrison, 2008), and the topic has debuted as a chapter in the most recent version of the American Psychological Association's *Handbook of Industrial and Organizational Psychology* (Reich & Hershcovis, 2011).

As a result of the accumulated research, a number of different outcomes of coworker relations have been identified. Coworker relationships have been positively related to attitudinal outcomes such as job satisfaction (Baldwin et al., 1997; Morrison, 2004; Winstead, Derlega, Montgomery, & Pilkington, 1995), life satisfaction (Simon et al., 2010), organizational commitment (Liden et al., 2000), and perceptions of job significance (Mao, Hsieh, & Chen, 2012). Additionally, coworker relationships have been associated with influential process variables such as information sharing (Kram & Isabella, 1985), communication (Jehn & Shah, 1997), and help with decision-making (Kram & Isabella, 1985). Lastly, positive coworker relations have been positively associated with production outcomes such as job performance (Jehn & Shah, 1997; Liden et al., 2000) and work motivation (Fernet et al., 2010; Richer, Blanchard, & Vallerand, 2002).

Overall, the literature presented above suggests that coworker relationships are important in many regards. However, much remains unknown about the nature of coworker relationships, such as other potential outcomes of coworker relationships, the best way to measure coworker relationships, the importance of coworker relationship quality for predicting outcomes, and the relative contribution of coworker relationships compared to other prevalent work relationships (e.g., leader relationships). As such, though the accumulate evidence to date demonstrates coworker relationships are essential to understanding important organizational and employee outcomes, a more thorough investigation of coworker relationships is needed, particularly in regards to outcomes such as employee engagement.

### **Employee Engagement**

Over the years, two dominant approaches to defining and understanding engagement have been proposed. The first, proposed by Kahn (1990), remains the most widely cited

(Christian et al., 2010). Kahn (1990) defined employee engagement as “the harnessing of organization members’ selves into their work roles” (p. 694). When employees are engaged in their work, they are more than just physically present, they are also psychologically present (Kahn, 1990, 1992). Engaged employees are active in their work performance, rather than passive recipients of the environment, investing their personal energy into the work they perform. Kahn’s conceptualization was that engagement reflects individuals’ simultaneous investment of physical, cognitive, and emotional energy into their job performance (1990). Thus, when employees are engaged, they are physically involved in their tasks, cognitively focused and attentive, and emotionally connected to others and to their work (Kahn, 1990).

Kahn (1990) suggested there are three main psychological conditions (i.e., psychological meaningfulness, psychological availability, and psychological safety) that are necessary for an individual to experience employee engagement. Psychological meaningfulness refers to a psychological state individuals experience when they feel valuable, useful, able to give to others, and able to receive from others (Kahn, 1990). Psychological availability refers to the psychological state wherein individuals feel they are able to bring their physical, emotional, or cognitive resources (e.g., physical energy, emotional energy, and attention) into their work performances and be free from outside distractions (Kahn, 1990). Psychological safety refers to the psychological state wherein individuals feel comfortable expressing their true selves “without fear of negative consequences to their self-image, status, or career” (Kahn, 1990, p. 708). Essentially people ask themselves three questions and engage based on the answer to the questions. The three questions are: “(1) How meaningful is it for me to bring myself into this performance; (2) How safe is it do so; and (3) How available am I to do so” (Kahn & Heaphy, 2014, p. 83). Kahn proposed numerous ways to facilitate the experience of these psychological

states including factors specific to the job (e.g., task characteristics), organization (e.g., organizational norms), and person (e.g., personal energy), as well as factors resulting from social interactions (e.g., interpersonal relationships).

According to Kahn, employees' experiences of meaningfulness, safety, and availability largely derive from the relationships they create at work (1990, 2007; Kahn & Heaphy, 2014). That is, the answers employees provide themselves to the three questions presented above are significantly influenced by the quality of relationships they have at work. Work relationships can deepen people's experiences of purpose at work, heighten their sense of belonging at work, affirm their identity, enable trust, alleviate anxieties, build and sustain energy, and provide emotional relief (Kahn & Heaphy, 2014). However, an influential aspect of work relationships is the quality of the relationships such that higher quality relationships, rather than lower quality, offer greater potential to satisfy the three psychological conditions of engagement (Kahn, 2007; Kahn & Heaphy, 2014).

The second dominant approach to defining and understanding engagement evolved from research on occupational stress and burnout (Maslach & Leiter, 1997). Originally theorized as the opposite of burnout, this approach currently conceptualizes engagement as an independent, but related construct to burnout. Engagement is defined as a positive, fulfilling, work-related state of mind characterized by dedication, absorption, and vigor (Schaufeli, Salanova, González-Romá, & Bakker, 2002). Dedication refers to a sense of involvement, pride, enthusiasm, and significance with one's work. Absorption refers to full concentration in one's work where time passes quickly and one has difficulty detaching from work. Lastly, vigor refers to high levels of energy and mental resilience, or persistence in the face of difficulties.

Bakker, Demerouti, and colleagues (Bakker et al., 2003; Demerouti et al., 2001) proposed a model of employee engagement, the job demands-resources model (JD-R). The JD-R model suggests that for every job, there exists an interplay between job demands and job resources that determines how and when an individual may experience employee engagement (Bakker et al., 2003; Demerouti et al., 2001). Job demands are defined as aspects of the job that require physical or psychological effort (e.g., work overload, job insecurity), whereas job resources are defined as aspects of the job that may be functional in achieving work goals, reducing job demands, and/or stimulating personal growth and development in the context of work (e.g., feedback, job control, social support; Demerouti et al., 2001). As the definitions imply, job demands and resources can constitute many different aspects of the work environment including physical, psychological, social, or organizational aspects of the job. Generally speaking, the JD-R model suggests that job demands are negatively related to engagement whereas job resources are positively related to engagement.

Two resources identified in the literature are social support from coworkers and social support from leaders. Both coworker social support and leader support have been hypothesized as positive resources for employees, and thus instrumental in obtaining work goals. Empirical research confirms the positive relationships between coworker social support (e.g., Christian et al., 2011; Halbesleben, 2010; Schaufeli et al., 2009), leader social support (e.g., Bakker et al., 2007; Hakanen, Bakker, & Schaufeli, 2006) and employee engagement. However, though these studies support the role of coworker and leader support in fostering employee engagement, the majority of published research has been limited to this instrumental perspective of relationships. I propose the instrumental perspective of relationships is incomplete for fully understanding why work relationships would be associated with employee engagement. Specifically, previous

research has demonstrated that just because a relationship is considered instrumental (i.e., supportive) does not necessarily mean it is also of high quality (Uno, Uchino, & Smith, 2002). High quality work relationships are valued as an end in themselves because they are intrinsically rewarding (Gersick, Dutton, & Bartunek, 2000; Wright, 1984). An instrumental perspective of work relationships cannot fully explain this intrinsic type of relationship.

Evidence from practitioner literature also supports the proposition that quality of the relationship is an important characteristic for fostering employee engagement. Specifically, a global consulting firm, the Gallup Organization, published the Q12, a popular employee engagement survey used in applied settings. It is essential to note that many have questioned the validity of the Q12 for measuring employee engagement due to construct overlap with satisfaction (Little & Little, 2006). However, regardless of the weaknesses of the scale, one of the most controversial questions on the twelve-item Q12 “I have a best friend at work” provides insight into the importance of the quality of relationships in fostering engagement (Gallup, 1999). Due to the controversy of this question, Gallup made many revisions to the question in an attempt to appease consumers. For example, they attempted to remove the word “best” so the item would read “I have a friend at work.” They report, however, that even small changes, such as softening the language to state “good” or “close” reduces the predictive validity of the question (Gallup, 1999), thereby implying that the relationship quality denoted by the word “best” is an important factor for predicting employee engagement. Unfortunately, the Q12 is an empirically derived measure that lacks any theoretical foundation for explaining engagement (Buckingham & Coffman, 1999).

With interest growing and few theories available, there is an urgent need to further explicate theory on employee engagement. The JD-R remains the most commonly applied model

to understanding employee engagement. Given the multitude of ways to conceptualize job demands and resources, the JD-R (Bakker et al., 2003; Demerouti et al., 2001) model can be, and has been, applied in a variety of different situations to understand the factors that promote or hinder employee engagement. Certainly one of the advantages of this model is its breadth of application. However, the main disadvantage of the JD-R model is that it lacks specificity regarding what constitutes job demands and job resources, thereby making it relatively easy to support but difficult to refute. Additionally, the exact nature of the interplay between job resources and job demands remains unclear. For example, it is not clearly articulated how many or what types of resources are needed to buffer demands for an employee to experience engagement.

More directly relevant to the current study, as noted above, the theoretical basis of the JD-R adopts an instrumental perspective for explaining relationships, thus lacks an explanation for the quality and depth of important coworker relationships. Based on the accumulated theory and empirical evidence suggesting there is more to work relationships than just their instrumental value, I propose an intrinsic theory is needed to more fully understand the relational context of employee engagement.

### **Fostering Engagement**

According to self-determination theory (SDT; Ryan & Deci, 2000), an intrinsic theory of motivation, quality work relationships can fulfill basic needs of employees. There are a few aspects of SDT that require more discussion prior to explaining how and why work relationships are related to employee engagement. However, a full review of the history and development of SDT is beyond the scope of this study (readers are directed to Deci & Ryan, 1985; Gagné & Deci, 2005; Ryan & Deci, 2000 for more comprehensive reviews).

SDT focuses on social and contextual conditions that foster natural processes of self-motivation and healthy psychological functioning (Ryan & Deci, 2000). SDT distinguishes between various types of motivation ranging from external regulation (entirely externally influenced; extrinsic motivation) to intrinsic motivation (self-motivation; Ryan & Deci, 2000). Extrinsic motivation refers to performing a behavior because of some external reward or reinforcement, whereas intrinsic motivation refers to doing something for the enjoyment and interest inherent in the behavior (Deci & Ryan, 1985).

Extrinsic motivation includes four different types of motivation ranging on a continuum from external motivation to integrated motivation, varying in terms of how autonomous or controlled the motivated behaviors are (see Figure 4 below; Ryan & Deci, 2000). Specifically, external motivation and introjected motivation refer to motivation wherein the individual performs a behavior to achieve an external reward and avoid feelings of guilt about not living up to expectations (respectively; Ryan & Deci, 2000). These two types of extrinsic motivation are considered the least autonomous and such behaviors tend to have an external locus of control (Ryan & Deci, 2000). Conversely, identified motivation refers to motivation to perform a behavior because it is personally important or aligns with the individual's values. Integrated motivation refers to motivation that is fully internalized, meaning the behaviors are in congruence with one's own values and needs. Identified and integrated motivation, though still considered extrinsic, are the most autonomous and least controlled forms of extrinsic motivation. Intrinsic motivation is considered the most autonomous form of motivation (Ryan & Deci, 2000).

SDT is a psychological macro-theory encompassing five mini-theories (Deci & Ryan, 2012). One of the mini-theories, labeled basic needs theory, is the most informative for understanding the relationship between work relationships and employee engagement. Basic needs theory (Ryan, Sheldon, Kasser, & Deci, 1996) posits that there are three universal psychological needs including autonomy, competence, and relatedness. Autonomy refers to feelings of choice and control of one's actions (Deci, 1975). Competence refers to feelings of being able to obtain one's desired goals and being able to perform challenging tasks (White, 1959). Lastly, relatedness refers to the need for social interaction and relationships marked by trust, care, concern, and reliance on one another (Baumeister & Leary, 1995).

SDT suggests that social environments supporting the satisfaction of these basic needs allow for feelings of vitality (energy available to the self), control, and ultimately the conditions needed for intrinsic motivation (Deci & Ryan, 2012). Conversely, environments that do not support these needs promote more external, controlled forms of motivation (i.e., external motivation and introjected motivation; Deci & Ryan, 2012). Relatedness is just one of the three basic needs but it is an influential need in contexts that are interdependent and socially created, such as work environments (Richer et al., 2002; Vallerand, 2000).

Though employee engagement is not synonymous with intrinsic motivation, there are many similarities between employee engagement and intrinsic motivation that support the use of SDT for explaining employee engagement. Specifically, employee engagement is appropriately considered a motivational construct due to the focus on intensity and persistence of behavior, in addition to a cognitive and affective connection to one's work performance (Inceoglu & Fleck, 2011). Likewise, vitality (the energy available to the self; a core concept of SDT) is also a core concept of employee engagement (Deci & Ryan, 2012; Kahn, 1990; Schaufeli et al., 2002). For

example, Kahn (1990) proposed that psychological availability (i.e., the sense of having the physical, emotional, or cognitive resources to engage) is a necessary condition for fostering employee engagement. Both concepts (vitality and psychological availability) refer to the amount of energy or resources available to an individual. Similarly, Schaufeli and colleagues (Schaufeli et al., 2002) proposed that vigor (high levels of energy and mental resilience) is a defining component of engagement. Thus, both dominant approaches to understanding employee engagement contain a construct similar to vitality and overall, reflect the notion that engagement incorporates mental and physical energy. In summary, though intrinsic motivation and employee engagement are distinct constructs (e.g., Rich, LePine, & Crawford, 2010), they share overlapping characteristics. Therefore, I propose that based on these similarities, need for relatedness satisfaction is positively related to employee engagement.

*Hypothesis 1: Need for relatedness satisfaction is positively related to employee engagement.*

Need for relatedness satisfaction refers to the need for relationships marked by dimensions of high quality relationships (e.g., trust, care, concern; Baumeister & Leary, 1995). High quality relationships expand beyond instrumental exchanges (e.g., resource exchange) thereby allowing for greater feelings of control and intrinsic motivation. Thus, because quality relationships fulfill the need for relatedness, I propose CRQ and LRQ are positively related to engagement, mediated by need for relatedness satisfaction.

*Hypothesis 2a: CRQ is positively related to employee engagement via need for relatedness satisfaction.*

*Hypothesis 2b: LRQ is positively related to employee engagement via need for relatedness satisfaction.*

However, since CRQ and LRQ represent the intrinsic perspective, the instrumental value of work relationships is not fully captured by CRQ and LRQ. Rather, the instrumental value of work relationships is denoted by coworker support and leader/supervisor support. Thus, I propose that coworker support and leader/supervisor support have a direct relationship with engagement, not mediated by need for relatedness satisfaction.

*Hypothesis 3a: Coworker support is positively related to employee engagement.*

*Hypothesis 3b: Leader/supervisor support is positively related to employee engagement.*

I also propose that the intrinsic perspective, operationalized as CRQ and LRQ mediated by need for relatedness satisfaction, will explain incremental variance above and beyond the instrumental perspective, operationalized as coworker support and leader/supervisor support, in explaining employee engagement because the quality of relationships is theorized to be relatively more important than the exchange value of relationships (Kahn, 2007; Kahn & Heaphy, 2014). Thus, I propose the mediated relationship between CRQ and LRQ with employee engagement explains additional variance in employee engagement when considering coworker support and leader/supervisor support.

*Hypothesis 4a: CRQ explains additional variance in employee engagement when considering coworker support simultaneously.*

*Hypothesis 4b: LRQ explains additional variance in employee engagement when considering leader/supervisor support simultaneously.*

Lastly, there is reason to believe that CRQ will demonstrate a stronger relationship with the outcomes in this study as compared to LRQ due to the nature of such relationships. Specifically, coworkers tend to be more proximal and interact more frequently with each other than with leaders (Chiaburu, 2010; Chiaburu & Harrison, 2008). According to the proximity

principle (Festinger et al., 1950), people are more likely to develop high quality relationships with individuals most proximal to them. Furthermore, the higher the quality the relationship, the more influence each partner tends to have on the other (Berscheid & Reis, 1998; Reis et al., 2000). Thus, based on previous theory, employees should develop higher quality relationships with coworkers, as compared to leaders, and these relationships should also be more influential as a result of the quality of the relationship. In support, the limited number of studies that have been conducted examining both coworker relationships and leader relationships simultaneously demonstrated that coworker relationships can be a stronger predictor of employee motivation, intent to stay, and organizational citizenship behaviors as compared to leader relationships (Basford & Offerman, 2012; Li & Hung, 2009).

Furthermore, leader relations, by definition, always contain some element of authority, whereas coworker relations, by definition, do not contain this element. Due to the element of authority, coworker relationships can be perceived as more voluntary (i.e., less controlled) than leader relationships. Based on SDT, the voluntary nature of behavior is another key tenant to fostering inherent interest and enjoyment (Deci & Ryan, 1985). Therefore, when adopting an intrinsic perspective of relationships, CRQ should be more strongly related to employee engagement as a result of the voluntary nature of such relationships when compared to LRQ. All study hypotheses (with the exception of Hypotheses 4a and 4b) are depicted in Figure 5 below.

*Hypothesis 5a: Coworker relationship quality (CRQ) is a stronger predictor of employee engagement as compared to leader relationship quality (LRQ).*

*Hypothesis 5b: Coworker relationship quality (CRQ) is a stronger predictor of need for relatedness satisfaction as compared to leader relationship quality (LRQ).*

## Summary

In conclusion, the purpose of the current study is to expand on the existing understanding of the relational context of employee engagement. Previous studies and theories applied to understanding the relational context of work and employee engagement have predominately adopted an instrumental perspective of relationships. Though this perspective contributes to our understanding of employee engagement, I propose it is too narrow in focus. Furthermore, I suggest that based on an intrinsic perspective of relationships, the quality of work relationships is an important consideration for more fully understanding the relational context of employee engagement.

A theoretical framework of motivation, SDT, is applied to employee engagement to investigate the mediating mechanisms through which CRQ and LRQ relate to employee engagement. I propose, based on SDT, that CRQ and LRQ will be related to employee engagement via need for relatedness satisfaction. I will simultaneously examine using structural equation modeling (SEM) the instrumental value of work relationships (operationalized as social support) and the intrinsic value (operationalized as CRQ and LRQ) to test the hypothesis that the intrinsic perspective explains additional variance in employee engagement. Moreover, the current study will compare the strength of CRQ to the LRQ in regards to the study outcome, employee engagement, as well as the mediating mechanism, need for relatedness satisfaction. On the basis of previous research and theory, I propose CRQ will demonstrate a stronger relationship as compared to LRQ with employee engagement and need for relatedness satisfaction.

## **Alternative Model**

Because a good fitting model in SEM does not necessarily mean it is the best model, it is important to examine other theoretically plausible models of the hypothesized relationships to offer greater confidence the main model represents the hypothesized relationships best (Schumacker & Lomax, 2004). The alternative model displayed below (see Figure 6) proposes that leaders are most influential for determining the relational context of engagement. This is in contrast to the study hypotheses which, on the basis of the empirical and theoretical literature, propose coworker relationships will be the most significant relationship for predicting employee engagement. However, this alternative model is also theoretically plausible. Social learning theory (Bandura, 1977) suggests that people can learn new information and behaviors by watching others, labeled observational learning. This alternative model is developed on the basis of social learning theory and proposes that employees can learn to develop supportive and high quality work relationships with their coworkers when leaders demonstrate supportive and high quality relationships with their subordinates. That is, if employees observe their leader developing and maintaining supportive and/or high quality relationships with subordinates, they may mimic these behaviors thereby developing supportive and high quality relationships with coworkers. Similarly, if a leader demonstrates that high quality relationships and/or supportive relationships are both acceptable and desirable in the work context (by developing these relationships with subordinates), the subordinates may be more likely to engage in supportive and/or high quality relationships with coworkers. Hence, supportive and high quality leader relationships may be necessary conditions for fostering supportive and high quality coworker relationships. This proposition is also consistent with many leadership theories such as transformational leadership theory (Bass, 1985), authentic leadership theory (Avolio, Gardner,

Walumbwa, Luthans, & May, 2004; Cooper, Scandura, & Schriesheim, 2005) and charismatic leadership theory (House, 1977), all of which suggest that in general, leaders can model desirable/appropriate behavior and subordinates learn what behaviors to adopt from the behavioral modeling of their leaders (e.g., Podsakoff, MacKenzie, Moorman, & Fetter, 1990; Ilies, Morgeson, & Nahrang, 2005; Shamir, House, & Arthur, 1993). Thus, I propose it is plausible that part of the variance in the leader relationship variables (perceived leader support, LRQ) is explained by the coworker variables (perceived coworker support, CRQ), in predicting need for relatedness satisfaction and employee engagement.

## METHOD

### Participants

A total of 481 working adults completed some portion of the survey items. As will be discussed in subsequent sections, the data was screened based on a number of factors including response frequency, completion time, and invariant responding. A total of 116 participants were excluded as a result of these data screening approaches. One additional case was removed as it represented an extreme univariate and multivariate outlier (discussed below) resulting in a final sample size of 364 participants.

The participants varied in age ( $M = 36.71$ ,  $SD = 11.09$ ); 12.9% were between the ages of 18 and 25, 43.7% were between the ages of 26 and 35, 22.4% were between the ages of 36 and 45, 19.6% were between the ages of 46 and 65, and 1.4% were age 66 or older. There was a roughly equal distribution of gender with 49.7% of participants identifying as Female, and 49.5% of participants identifying as Male. Participants were predominately White, Non-Hispanic (77.5%) however, other ethnicities represented include Black or African American (5.2%), Hispanic (5.8%), Asian/Pacific Islander (5.8%), and American Indian or Alaska Native (0.8%).

Participants were predominately employed full-time (81%). Every industry option provided (see demographic questions in Appendix A) was selected by at least one participant suggesting the industries represented in this sample are diverse. The most common industries represented in this sample include: Professional, Scientific, or Technical Services (20.9%); Retail Trade (13.2%); Education Services (10.4 %); Health Care and Social Assistance (9.9%); Arts, Entertainment, and Recreation (6.3%); Manufacturing (6.0%); and Finance/Insurance (5.2%). Participants worked in organizations of varying sizes with 30.5% of participants working in

organizations with greater than 500 employees, 28.6% of participants working in organizations with between 101 and 500 employees, 23.6% of participants working in organizations with between 26 and 100 employees, and 16.5% of participants working in organizations with less than 25 employees. Most participants reported being in non-managerial positions with no supervisory responsibilities (48.6%), followed by mid-level management positions (14.3%), non-managerial supervisory positions (13.2%), first-line management positions (12.6%), and upper management positions (4.9%). Most participants have worked in their current company between 1 and 5 years ( $M = 6.22$ ,  $SD = 5.49$ ), and have also worked in their current position between 1 and 5 years ( $M = 4.23$ ,  $SD = 3.81$ ).

## **Procedures**

Participants were recruited for this study in a number of different ways. For all recruitment methods, it was stipulated that participants must be at least 18 years old, employed at least part-time, and have coworkers to be eligible for participation. Coworkers were defined for participants as individuals at the same hierarchical level or individuals who have no formal authority over one another.

A large portion of the sample was recruited through Amazon's Mechanical Turk (MTurk; [www.MTurk.com](http://www.MTurk.com)). MTurk is a website created for many purposes beyond soliciting participants for research. In summary, it is a mechanism for individuals or companies (called the "requestors") to solicit "workers" to complete a variety of tasks. Once the workers complete the task, they are compensated with a monetary sum specified by the requestor. For this study, specifications were made that to be eligible for participation, workers needed to be employed at least part-time (20 hours or more per week), reside within the United States, and report having

coworkers. In exchange for participation, participants from this sample were provided modest compensation.

Participants were also recruited from online master's level courses. In some cases, the course instructor offered extra credit points in exchange for agreeing to participate. However, in other courses wherein the instructor was unable or unwilling to provide extra credit, students participated without any expectations of compensation or extra credits points. Lastly, participants were recruited from local networking groups for Human Resource and Organizational Development professionals (via LinkedIn pages and group automatic email mailing lists). In total, 66.48% of the final sample was recruited through MTurk, 21.15% of the sample was recruited from the online master's level courses, and 12.36% of the sample was recruited from local networking groups.

All participants were provided with an online, anonymous web link to complete the survey. Because the survey was anonymous, there was no way to track participation of individual participants. Thus, in the case of students who agreed to participate in exchange for extra credit, all students who agreed to participate received extra credit, regardless of whether they actually participated in the survey. Compensation for MTurk participants was processed anonymously through Amazon's website. There was no compensation offered for participants recruited from local networking groups. However, in exchange for participation, I agreed to share the results of this study with those interested. Nine participants self-identified to request a summary of the research results.

## **Measures**

All measures used in this study were self-reported. Due to nature of the variables of interest, self-report is both justifiable and necessary to assess the self-referential perceptions such

as perceived support and perceived relationship quality. Though it is possible to solicit others' perceptions of the relationship quality, research suggests that dyads can have differing opinions of the relationship quality (e.g., Campbell, White, & Johnson, 2003; Schriesheim, Neider, & Scandura, 1998), thereby making others' perceptions of the relationship quality a slightly different research question. Moreover, because it is the individuals' subjective perception of their relationships that is of interest, the partner's report of the relationship quality is not informative for the purposes of this study. Additionally, there is arguably no such construct as 'objective relationship quality' given relationship quality is defined by subjective evaluations (Clark & Reis, 1988). Therefore, self-report is the most appropriate method of data collection given the variables in this study. A full list of all survey items is provided in Appendix A.

A potentially problematic issue with collecting all of the data via self-report methods is common method variance (CMV; Campbell & Fiske, 1959). CMV refers to variance that is attributable to the measurement method rather than intended variables (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). Measuring different constructs with the same method (e.g., self-report) can result in a situation wherein at least some of the observed covariation between variables is due to the method of measurement rather than the true relationship among variables of interest (Podsakoff et al., 2003). To address CMV as an alternative explanation for the results of this study, a number of procedural and statistical remedies were applied.

In regards to procedural remedies, proximal separation and psychological separation between predictor and criterion was applied a priori. Proximal separation refers to the distance between the predictor(s) and criterion in the actual survey design (Podsakoff et al., 2003; Podsakoff, MacKenzie, and Podsakoff, 2012). Psychological separation refers to deceiving participants regarding the true nature of the research by using a cover story to reduce the salience

of the linkage between the predictor and criterion variables (Podsakoff et al., 2003; Podsakoff et al., 2012). Though deception was not used, participants were intentionally given vague information about the purpose of the research study (i.e., “The purpose of this study is to understand how relationships one has at work, with their coworkers and leaders, may impact various employee behaviors and attitudes”). Hence, both approaches were used to reduce common biases theorized to contribute to CMV such as participants’ desire to remain consistent in their responses across items, and the participants’ unconscious desire to interpret the purpose of the study and respond accordingly to fit with that purpose.

Other procedural approaches to addressing CMV that were incorporated include reducing ambiguity. Oftentimes, when the test items or instructions are ambiguous, participants may be uncertain how to respond, which increases the likelihood they will respond with systematic response tendencies (e.g., extreme or midpoint response styles; Podsakoff et al., 2012). By selecting measures of the underlying constructs in which the items are simple, concise, and specific, ambiguity can be mitigated (Podsakoff et al., 2003). Furthermore, clear instructions were provided for each scale and key terms were defined for participants to further reduce potential ambiguity. For example, given the central role of coworker relationships in the hypothesized relationships, coworkers was clearly defined for participants when asked to answer questions about their coworkers. Additionally, all points on the response scale were clearly labeled (as compared to only labeling the end points) to further reduce item and response ambiguity (Krosnick, 1991).

When applying statistical remedies to address CMV, it is important to consider what potential biases may be likely given the nature of the research questions (Spector & Brannick, 2009). Common biases cited as influential for causing CMV include social desirability and

positive and negative affectivity (Podsakoff et al., 2003). Social desirability refers to a tendency for individuals to respond to test items in order to make a good impression (Nederhof, 1985). That is, individuals may have a tendency to deny socially undesirable traits and endorse socially desirable traits when answering survey items. Additionally, positive and negative affectivity refers to an individual's dispositional affect. As a source of bias, individuals with negative affectivity tend to report high levels of distress and negativity across situations (Watson, Pennebaker, & Folger, 1988). To investigate the potentially biasing effects from social desirability and negative affectivity, both variables were measured. Statistical analyses of the effects of these variables will be discussed below.

Two additional control variables (positive affectivity and generalized self-efficacy) were also included to address alternative explanations and to allow for statistical control of the variables when examining the research hypotheses. First, positive affectivity was measured to address an alternative explanation as it represents a variable that may be theoretically related to main variables in this study. For example, based on broaden and build theory (Fredrickson, 2001), it is conceivable that as a result of high quality relationships, individuals experience more positive emotions, which then serve as a personal resource for employees, thereby fostering engagement (Salanova, Schaufeli, Xanthopoulou, & Bakker, 2010). Thus, by measuring positive affectivity, statistical analyses (discussed below) could be conducted to examine the influence of positive affectivity and determine if the effects of positive affectivity should be statistically controlled.

Lastly, generalized self-efficacy was measured as a control variable. Similar to positive affectivity, generalized self-efficacy represents a variable that is theoretically related to the main variables in this study, but not directly related to the research hypotheses. Generalized self-efficacy is defined as one's overall belief of his or her competence across a variety of situations

(Eden, 2001; Judge, Erez, & Bono, 1998). According to Wright's (1984) theory of friendship, high quality relationships (i.e., friendships) offer a self-affirmation and ego support value, concepts conceptually similar to generalized self-efficacy. Additionally, in regards to engagement, self-efficacy has been operationalized as a personal resource for employees that based on the JD-R model is positively related to employee engagement (Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2007). Generalized self-efficacy is also conceptually similar to competence (defined as beliefs that one can obtain desired goals and perform challenging tasks; White, 1959), another basic psychological need discussed previously in regards to SDT (Deci & Ryan, 2012). Thus, based on a priori theory, generalized self-efficacy should be significantly related to one or more study variables and therefore, measuring generalized self-efficacy is important for determining if this variable should be statistically controlled.

**Coworker variables.** Traditionally in organizational research, coworker relationships are assessed using a single, multi-item scale to measure employees' perceptions of their coworker relationship quality (e.g., Carmeli, 2009; Carmeli, Brueller, & Dutton, 2009; Heaphy & Dutton, 2008; Raabe & Beehr, 2003; Sherony & Green, 2002). Typically, instructions for participants are vague in terms of whom they should reference (e.g., "Rate the quality of relationships you share with your coworkers"; Carmeli, 2009). This is problematic because using only one scale to capture multiple relationships (e.g., Bob's relationship with Mary, David, Sue, and Jim), contaminates the results of the data such that it is not clear what the data actually represents in terms of Bob's coworker relationship quality. For example, suppose Bob has a high quality relationship with Mary, a mediocre relationship with Sue and David, and a poor relationship with Jim. By asking Bob to report on all his relationships, we cannot be certain whether he is averaging across these four relationships, reporting about only the strongest relationships (e.g.,

with Mary), reporting about only the weakest relationship (e.g., with Jim), or some other combination. In summary, using a single scale to measure multiple coworker relationships results in data wherein one cannot be certain what is actually being measured.

Social network analysis is a method of data collection developed specifically to study relationships and serves as a better method (i.e., compared to using a single scale) for addressing the research questions in this study (Brass, 2012). This study adopted a version of social network analysis, ego network analysis to ask all survey questions about coworkers. Ego network analysis is best suited to explore the relationships between individuals (Brass, 1995; Brass, 2012).

Whereas most applications of social network analysis examine an entire network of individuals (sociocentric networks), I am interested in understanding the relationships each participant has with others in the work environment (egocentric networks; Brass, 1995). Ego network analysis is the preferred method when seeking to answer questions about the relationships each individual has in regards to individual level outcomes (e.g., social support, attitudes; Walker, Wasserman, & Wellman, 1993). Therefore, ego network analysis is the most appropriate form of social network analysis for the current study.

Ego network analysis, also commonly referred to as personal network analysis, is a method for measuring the relationships each individual has with others. The respondents (called the ego) are asked to answer a variety of questions about individuals in their social network (called alters). Some approaches to ego network analysis also ask the egos to answer questions about relationships between alters they list, so that the researcher can further explore the composition and structure of each ego's network (Brass, 1995). However, the focus of the current study is the dyadic relationships, not the entire composition of social networks, making

the relationships between alters irrelevant. Therefore, information about the relationships between alters was not collected.

The ego network data was collected in a series of steps. In the first step, typically referred to as the 'name generator' (Borgatti, Everett, & Johnson, 2013), participants were asked to generate the names of up to three coworkers with whom they interact most frequently at work. Then, participants were asked to consider all coworkers and generate the names of up to three additional coworkers (different individuals than identified previously) with whom they feel they have the highest quality relationship. Participants were told the additional three coworkers could be located anywhere within their organization. If the participants did not feel they had quality relationships with coworkers aside from the three they interact with most frequently, they had the option of leaving this section blank. Participants were also instructed not to include their supervisor/leader. Participants were offered a definition of coworkers (i.e., relations between individuals at the same hierarchical level or between individuals who have no formal authority over one another; Sias, 2009).

The primary purpose of the name generator step is to collect the names of alters in the respondent's network so that in the next step, the name interpreter step, questions can be asked (see Appendix A) about each of the distinct names listed by the respondent. Because the true identity of each alter is inconsequential for the research purposes, participants were told they could identify their coworkers using first names only, last names only, nicknames, initials, or pseudonyms. They were informed it is important that each name they provide is unique so they can differentiate between coworkers when asked questions about each coworker. Participants were informed about the purpose of collecting the names (i.e., to ask questions about each person in subsequent survey questions) and they were assured the information they provided was

confidential and only used for the purposes described above. The second step of ego network analysis is called the name interpreter step. During this step, participants were asked questions about the relationship quality and perceived social support with each of the alters (coworkers) they listed in the previous step. The actual measurement scales used to measure CRQ and coworker support are described below.

Previous research on the validity and reliability of ego network analysis suggests that people are able to remember and accurately report about significant and typical interactions they have (Freeman, Romney, & Freeman, 1987). Some of the factors that have been identified as influential in terms of the reliability and validity of ego network data include the way questions are asked, the number of alters participants are asked to report about, and the type of relationships participants have with the alters (Marsden, 1990). For example, participants are more accurate and consistent in their reports (evaluated using a multitrait-multimethod approach) when asked all of the questions about each alter individually ('by alters' method), as opposed to when they are presented with each question and asked to report about each alter in response to the question ('by question' method; Kogovšek & Ferligoj, 2005). Moreover, there is naturally a limit to the number of relationships any individual can accurately report about. Research suggests that participants are more accurate in their reports when asked to report on a small network as compared to a large network (Brewer, 2000; Marsden, 1990). Additionally, participants are more accurate and consistent when asked to report about alters with whom they either have frequent contact or a significant relationship (Brewer, 1995; Freeman & Webster, 1994; Kogovsek & Ferligoj, 2005; Romney & Weller, 1984).

The approach to ego network data collection in the current study was designed to address the reliability and validity research findings described above. For example, this study used a 'by

methods' approach (i.e., the participants will be asked all questions about each alter sequentially) to enhance the validity and reliability of the data. Additionally, participants were only asked to report on a relatively small number of relationships (maximum six relationships) to alleviate issues associated with asking participants to report on a large network of relationships. Lastly, participants were only asked to report on relationships with (a) coworkers they interact with most frequently or (b) coworkers with whom they feel they have a high quality relationship.

***Coworker relationship quality (CRQ).*** CRQ was assessed using a six-item friendship prevalence scale developed by Nielsen, Jex, and Adams (2000). All six items were measured on a five point Likert-type scale where 1= 'Strongly Disagree' and 5 = 'Strongly Disagree'. A sample item is "I feel I can trust many coworkers a great deal." Minor adaptations were made to reflect an individual person, rather than one's perceptions of coworker relationships in general (e.g., "I feel I can trust this person a great deal"). Nielsen et al. (2000) provide appropriate convergent, discriminant, and criterion-related validity evidence, all supporting the use of the friendship prevalence scale for measuring friendship relationships at work. Reliability estimates for the current sample ranged from  $\alpha = 0.86$  to  $\alpha = 0.88$  ( $M = 0.87$ ) across all six coworkers assessed.

***Coworker support.*** Coworker support was measured using a six-item scale originally developed by Setton and Mossholder (2002) and adapted slightly by Tews, Michel, and Ellingson (2013). All six items measure instrumental social support. One item was modified slightly to be more general for all occupations/positions. The item originally read "My coworkers show me where things are that I need to do my job" and was modified to read "This person helps me get the resources I need to do my job." All items were rated on a five point Likert-type scale where 1= 'Strongly Disagree' and 5 = 'Strongly Agree.' The Setton and Mossholder coworker

support scale was developed on the basis of a perceived organizational support scale developed by Eisenberger, Huntington, Hutchinson, and Sowa (1986). Validation evidence for the original POS scale is provided by Eisenberger et al. (1986). Additionally, Setton and Mossholder (2002) as well as Tews et al. (2013) provide additional validation evidence of the adapted versions of the coworker support scale demonstrating discriminant and convergent validity evidence. Overall, the accumulated validation evidence for this scale supports the use of this scale for measuring instrumental support. Reliability estimates for the current sample ranged from  $\alpha = 0.93$  to  $\alpha = 0.95$ .

**Leader relationship quality (LRQ).** The six-item friendship prevalence scale developed and validated by Nielsen et al. (2000) used above to assess CRQ was modified to assess perceptions of the leader/supervisor relationship. For example, a sample item “I feel I can trust many coworkers a great deal” was modified to read “I feel I can trust my supervisor a great deal.” The use and adaptation of this measure, developed to measure coworker relationships, is justified given the lack of pre-existing measures regarding the quality of the leader-subordinate relationship as well as the conceptual meaning of the test items. For example, the LMX-7 (Graen & Uhl-Bien, 1995; Scandura & Graen, 1984) is frequently used to measure relationship quality. However, the LMX-7 measures both quality and support, thereby confounding the two constructs. To illustrate, a sample item on the LMX-7 reads “Regardless of how much formal authority he/she has built into his/her position, what are the chances that your leader would use his/her power to help you solve problems in your work?” This item is conceptually very similar to items on a supervisor support scale such as the following item on the Tews et al. (2013) scale: “My supervisor goes out of his/her way to help me with work-related problems.” Thus, to operationalize leader relationship quality as distinct from leader support, I adapted the Nielsen et

al. (2000; see Appendix A) measure given the congruence between the conceptual meaning of the test items and the way relationship quality has been defined in the literature (e.g., Ferris et al., 2000; Jehn & Shah, 1997; Sias & Cahill, 1998). Scale scores were created for LRQ by averaging the items in this scale. Reliability estimate for the current sample was  $\alpha = 0.89$ .

**Leader support.** Leader support was assessed using the same six-item scale for coworker support. The wording of the items was modified to reflect perceptions of one's supervisor (rather than coworkers). All six items measure instrumental social support. A sample item is "My supervisor assists me with heavy workloads." All items are rated on a five point Likert-type scale where 1= 'Strongly Disagree' and 5 = 'Strongly Agree.' Scales scores were created for this variable by averaging the items in this scale. Reliability estimate for the current sample was  $\alpha = 0.94$ .

**Need for relatedness satisfaction.** Need for relatedness satisfaction was assessed with a three-item scale (Sheldon, Elliot, Kim, & Kasser, 2001). Participants were asked to rate their level of agreement with each of the three statements. Responses were measured on a five-point Likert-type scale where 1= 'Strongly Disagree' and 5 = 'Strongly Disagree'. A sample item from this scale is "I feel close and connected with other people who are important to me." The scale is intended to be general and instructions can be adapted to reflect participants' experiences in a particular context (Sheldon & Niemic, 2006; Sheldon & Hilpert, 2012). As such, the instructions were adapted to ask participants to rate their level of agreement with each of the three statements considering only their experiences at work. Scale scores were created for need for relatedness satisfaction by computing the mean of the three-item responses. Research using a multitrait-multimethod matrix approach to validation (Campbell & Fiske, 1959) supports the construct

validity of the scale (Sheldon & Hilpert, 2012). Reliability estimate for the current sample was  $\alpha = 0.86$ .

**Employee engagement.** Employee engagement was measured with an 18-item scale by Rich et al. (2010). Participants were asked to rate their level of agreement with each of the 18 statements measuring their physical, emotional, and cognitive energy while at work. A five-point Likert-type scale was used where 1 = 'Strongly Disagree' and 5 = 'Strongly Agree'. A sample item from the physical energy subscale is "I work with high intensity." A sample item from the emotional energy subscale is "I put my emotions into what I do." A sample item from the cognitive energy subscale is "I give my full attention to my job." Research suggests the scale demonstrates adequate factor structure, discriminant validity (i.e., with job involvement, perceived support), and predictive validity (i.e., with supervisor ratings of organizational citizenship behavior; Rich et al., 2010). Scale scores were created for employee engagement by averaging responses across all 18 items. Reliability estimate for the current sample was  $\alpha = 0.95$ .

**Demographics.** Demographic information was collected including information on gender, ethnicity, age, highest educational level obtained, company size, industry, work status, job tenure, and organizational tenure.

**Control variables.**

**Social desirability.** Social desirability was measured using the Social Desirability Scale-17 revised (SDS-17R) developed by Stober (2001). The SDS-17R is a 16-item measure (one item was deleted from the final version of the scale) measuring impression management (Stober, 2001). A sample item is "In conversations, I always listen attentively and let others finish their sentences." All items were rated as either 'True' or 'False' with seven reverse-scored items. There were five reverse-coded items. After reverse coding these five items, scale scores were

created for social desirability by following the recommendations of Stober (2001) and summing across all 16 items. There are a total of 16 points available for this scale. A score of 16 represents extreme social desirability responding, whereas a score of zero represents no social desirability responding. The first validation evidence was provided by Stober (2001) demonstrating adequate convergent and discriminant validity. More recently, Blake, Valdiserri, Neuendorf, and Nemeth (2006) provided additional convergent and discriminant validation evidence of the SDS-17R. Reliability estimate (i.e., Kuder-Richardson 20 coefficient because the scale items are dichotomous) was found to be 0.67 in the current sample.

***Positive and negative affectivity.*** Positive and negative affectivity were measured using a 20-item scale developed by Watson et al. (1987). The scale consists of 20 words that describe feelings and emotions with 10 items representing positive affectivity and 10 items representing negative affectivity. Participants were asked to indicate the extent to which they generally feel this way, or how they feel on average, in regards to each emotion or feeling. All items were rated on a five-point Likert-type scale where 1= 'Very slightly or not at all' and 5= 'Extremely.' An example item representing positive affectivity is "Excited." An example item representing negative affectivity is "Hostile." Scale scores were created for positive affectivity by averaging the responses to the 10 items representing positive affectivity. Likewise, scale scores were created for negative affectivity by averaging the responses to the 10 items representing negative affectivity. Factorial, convergent, and discriminant validity evidence of both sub-scales was reported in Watson et al.'s (1987) original scale development studies. In the current sample, reliability estimates for the positive and negative affectivity scales were  $\alpha = 0.91$  and  $\alpha = 0.89$ , respectively.

**Generalized self-efficacy.** Generalized self-efficacy was measured with a 8-item scale developed by Chen, Gully, and Eden (2001). A sample item is “When facing difficult tasks, I am certain that I will accomplish them.” All items were rated on a 5-point Likert-type scale ranging from ‘strongly disagree’ (1) to ‘strongly agree’ (5). Scale scores were created for generalized self-efficacy by averaging responses across all items. Validation studies conducted by Chen et al. (2001) measure support the construct, convergent, discriminant and criterion-related validity of the scale for measuring generalized self-efficacy. Reliability estimate for the current sample  $\alpha = 0.89$ .

### **Data Cleaning**

Prior to conducting any statistical analyses of the data, I used multiple approaches to clean the data. Because the majority of the total sample represented MTurk workers (who were compensated for their participation), I had concerns regarding potential measurement error associated with participant motivation. Specifically, it is possible (if not highly likely) that there were at least some participants who were primarily motivated to receive compensation as quick as possible, rather than genuinely answer the survey items. Huang, Curran, Keeney, Poposki, and DeShon (2012) have labeled this type of responding insufficient effort responding (IEF), and define it as “a response set in which the respondent answers a survey measure with low or little motivation to comply with survey instructions, correctly interpret item content, and provide accurate responses” (Huang et al., 2012, p. 100). Naturally, IEF introduces measurement error and therefore, must be examined. Following the recommendations of Huang et al. (2012), I screened the data on the basis of three factors: response infrequency, completion time, and invariant responding. Each will be discussed in more detail below.

**Response frequency.** Depending on the number of coworker participants listed, there were between 101 and 173 questions in the survey. That is, if participants listed only one coworker, they only answered the CRQ and coworker support items regarding that one coworker (total of 14 items). Conversely, if they listed six coworkers, they answered the CRQ and coworker support items about all six coworkers (total of 84 items). If participants completed less than 90% of the survey items, there is reason to doubt their motivation for completing the survey. Moreover, large amounts of missing data are problematic for analyses. Thus, the original sample of 481 participants was screened for cases where response frequency was below 90%. Though I was less concerned about participants' motivations in the other samples (e.g., master's students, HR/OD networking groups), I also screened the data collected from these other samples in regards to response frequency due to the problematic nature of missing data. A total of 81 cases were identified as missing at least 10% of the data (i.e., 90% response to the survey items). The majority of these cases (70%;  $n = 57$ ) were MTurk participants. Additionally, all 81 cases were screened to pinpoint where the missing data was occurring. In all cases missing data occurred for entire scales of one of the main study variables (i.e., coworker relationships, leader relationships, engagement), and no responses were reported after the missing data suggesting that the participants stopped completing the survey. Moreover, though 90% response was the cut-off, all cases identified did not even approach this cut-off with response rates ranging from 0% to 50%. Thus, it was determined that removing these cases was the best option due to the pattern and amount of missing data associated with each (Howell, 2007).

**Completion time.** One way of determining if someone is seriously answering the survey items is to evaluate the time it takes them to respond to the entire survey. To reiterate, there were between 101 and 173 questions on the survey. Based on initial pilot studies asking participants

( $N=3$ ) to read and complete the survey, findings revealed that participants spent between nine and fifteen minutes completing all items. Thus, I estimated it would take approximately 10-15 minutes to complete given the pilot response times. To estimate how quickly the survey *could* be completed, I asked another group of pilot participants ( $N=4$ ) to complete the survey as quick as possible, while still reading, comprehending, and answering each question. Response times for this pilot ranged from seven to nine minutes. To be conservative, I set the cut-off for a minimum total response time of six minutes. This resulted in the elimination of 68 participants. All of the eliminated participants were from the MTurk sample. There were no participants from the other samples that completed the survey quicker than six minutes.

**Response invariance.** Response invariance, as the name implies, refers to response patterns of participants that contain relatively small amounts of variance in item responding. If the participant answered genuinely, it is very unlikely they would respond to every item the same, particularly across multiple scales that included positively- and negatively-worded items. Thus, I calculated the amount of variance for each participant, for each scale in the study (i.e., main variables and control variables). Then, I calculated the mean variance across all scales for each participant. I screened cases with less than 0.20 mean variance. Like the completion time screening discussed above, only participants in the MTurk sample met this criterion. A total of 54 participants were identified. However, 49 (91%) of these participants had already been screened out due to completion time. Thus, an additional five participants were removed from analyses on the basis of response invariance.

Overall, a total of 116 participants were removed from analyses on the basis of the three factors discussed above. Of the 116 participants removed, 93 of these participants were MTurk workers. The majority of these 93 participants were identified as problematic cases by more than

one screening techniques (e.g., in completion time analyses and invariant responding analyses) thereby corroborating the problematic nature of these cases. The remaining sample size is 365 cases.

**Coworkers identified.** When initially examining the data, it became apparent that a few of the participants did not comply or fully understand the instructions. That is, there were six participants that listed the same coworkers in the first section (where they were asked to list up to three coworkers they worked with most frequently) as they did in the second section (where they were asked to identify up to three different coworkers whom they felt they had the highest quality relationship with). This was apparent by examining the names, initials, or nicknames listed. Certainly, individuals could have listed two different individuals who happened to have the same initials or names. However, when the same three identifiers were listed for coworkers in section one as the coworkers listed for section two, it is most likely the participants did not understand the directions. For example, in section one, one of the participants listed LK, PM, and JH as their three coworkers. In section two, the same participant listed LK, PM, and JH (in the same order). Though it is possible these are different individuals, it is arguably more likely that these are the same individuals, and the participant did not fully read or understand the directions. By analyzing the way the participants responded to the questions about these coworkers, it was clear these were referring to the same person given the ratings they provided for each coworker (e.g., LH from section one, LH from section two) were identical. Thus, in cases where the same exact nicknames, initials, or names were repeated in section two (and comparison of ratings confirmed these were the same individuals), the repeated coworker identifiers and the associated data were removed. This was true for six participants. Given this represents only 0.02% of the

participants, it is reasonable to conclude that the far majority of participants read, understood, and complied with the survey instructions.

### **Data Analyses**

Prior to conducting any analyses, the data were screened to check for univariate outliers and univariate non-normality. To check for univariate outliers, scale scores were converted to standard scores (z scores). A common rule is that a case exceeding three standard deviations (i.e.,  $|z| > 3.0$ ) indicates an outlier (Kline, 2011). If outliers are discovered, it is advised to first check the data for coding. If the data is coded correctly, then it is important to consider why this case may be more extreme as compared to the rest.

The data was also analyzed for univariate and multivariate non-normality including skew and kurtosis. Multivariate normality is an assumption of structural equation modeling (SEM; the desired analysis method) using maximum likelihood estimation (the most commonly used estimation procedure; Kline, 2011). Thus, prior to conducting any SEM analyses, it is important to examine this assumption. If this assumption is not met, alternative estimation procedures are advised, such as maximum likelihood robust estimation.

The next step in analyzing the data involved transforming the ego network data into an estimate of CRQ and coworker support. To reiterate what was discussed previously, data were collected about CRQ and coworker support in relation to multiple coworkers. Participants reported anywhere from three to six coworkers, and then answered both scales (CRQ and coworker support) in regards to each coworker they reported. To calculate a composite score of CRQ and coworker support, responses across all coworkers were averaged. I also calculated a composite score of the variance associated with both scales (the average standard deviation

across all coworkers) to determine if these values (composite scores of variance associated with CRQ and coworker support) should also be included in model estimation.

Data analyses to test the research hypotheses were conducted using EQS 6.1 (Bentler, 2006) and followed the two-step approach proposed by Anderson and Gerbing (1988). The two-step modeling approach involves starting with a measurement model to determine if it fits the data, followed by a structural model to test the study hypotheses. Thus, the model identification (measurement model) steps included a confirmatory factor analyses for each of the constructs individually. To reiterate, all of the hypothesized variables are theorized to be a single factor with the exception of employee engagement and positive/negative affectivity. For the engagement scale, confirmatory factor analyses were conducted to compare a one-factor, three-factor, and higher-order factor model. The higher-order factor model is theorized to best represent the construct of employee engagement (Kahn, 1990; Rich et al., 2010). For the positive and negative affectivity scale, a two factor structure was hypothesized, examined, and compared to a single factor model (Watson et al., 1987). Lastly, a confirmatory factor analysis depicting all constructs loading on their independent factors was conducted to allow for confirmation that the constructs in the model each represent their own distinct variable.

Overall, the above steps (i.e., measurement model steps) assessed the adequacy of measured latent variables in preparation for the full structural model assessment. Evaluation of the measurement models was primarily based on the chi-squared difference test (when appropriate) and other widely used indices of model fit. Sometimes, the chi-square value is used in research to determine appropriate fit. In general, a significant chi-square value indicates a poorly fitting model. However, with larger samples, the chi-square statistic tends to be significant. Given the sample size of this study is considered relatively large ( $N = 364$ ), other

widely used fit indices such as root mean square error of approximation (RMSEA; close to 0.06 to indicates good fit), comparative fit index (CFI; values greater than 0.95 indicate good fit), and Akaike information criterion (AIC) were used to assess model fit (Hu & Bentler, 1999). These indices were selected based on a review of the literature by Hooper, Coughlan, and Mullen (2008) who found these particular indices were the most insensitive to sample size, model misspecification, and parameter estimates. Where appropriate, a chi-square difference test was used to determine if a nested model (identical model in terms of variables and factors but with more parameter restrictions) fit better as compared to the comparison model (model with less restrictions). A significant chi-square difference test indicates the more complex model (i.e., model with more parameters) fits the data significantly better. Additionally, when testing the structural models, the AIC index was used to test between competing nonhierarchical models. There is not cut-off standard for AIC values. Rather, AIC is used to indicate which model is most likely to replicate in other samples (allowing for comparisons of non-hierarchical models). The model with the smallest AIC value indicates the model most likely to replicate (Kline, 2011). Evaluation of the research hypotheses was based on path coefficients and visual evaluation of the fit indices given the recommendations for fit described above.

## RESULTS

### Normality and Outliers

As previously discussed, outliers were examined by computing standard scores ( $z$  scores). Standard scores that exceed three standard deviations (i.e.,  $|z| > 3.0$ ) indicate outliers (Kline, 2011). The results of this analysis identified one case that met this criterion. Examination of the data and characteristics associated with this case (e.g., response patterns and response time), revealed that there were no errors with coding, but rather responses on the survey appeared to represent a random pattern of responding (e.g., indicating opposing perceptions on similarly worded items). Additionally, response time for this particular case (6.08 minutes) barely met the minimum threshold (i.e., 6 minute) for retaining cases. This case was also flagged as problematic due to multivariate non-normality (as indicated by Mardia's index; Mardia, 1970). The triangulation of evidence suggests that this particular case was indeed an extreme score, differing significantly from the rest of the data. On the basis of associated characteristics (response patterns and response scores), this case was flagged as an extreme score because of random responding and thus, measurement error. Therefore, this case was removed from subsequent analyses resulting in a final sample size of 364.

To analyze univariate normality, skew and kurtosis values were calculated for each item and scale score. When variables have no skew or kurtosis, skew and kurtosis values equal zero. Generally speaking, values greater than the absolute value of 1 indicates significant skew or kurtosis (Kline, 2011). Many items (e.g., engagement items #14, #15, #16) indicated univariate non-normality by demonstrating skew and kurtosis values exceeding the absolute value of 1. Additionally, analysis of scale scores revealed significant skew and kurtosis of two variables

(negative affectivity and generalized self-efficacy). Furthermore, analysis of multivariate normality (using Mardia's test in the confirmatory factor analyses described below; Mardia, 1985) indicated the presence of multivariate non-normality as well. Thus, in the SEM analyses described below, maximum likelihood robust estimation was used.

### **Composite Variables of Coworker Scales**

Partial correlations were obtained to examine if adding a composite variable representing the variance of responses to the coworker items (CRQ and coworker support, averaged across all coworkers) added any value to explaining the main outcomes in this study (employee engagement and need for relatedness satisfaction) while controlling for the mean level of responses to these items. These analyses were conducted because it is possible that the variance in coworker ratings may significantly relate the main outcomes. For example, if Participant A reported six coworker relationships all of mediocre quality, whereas Participant B reported three coworker relationships of high quality and three coworker relationships of low quality, these participants could have roughly the same mean composite score, but are arguably reporting very different coworker relationship experiences. To assess whether this type of variability was important to estimate (i.e., given one of the advantages of the ego network analysis is to allow for this type of estimation) composite variables representing the variance in CRQ and coworker support were created.

The results suggested that a composite variable representing the variance in CRQ (labeled CRQ\_SD), did not significantly predict employee engagement ( $r = -0.08, p = 0.15$ ) or need for relatedness satisfaction ( $r = 0.15, p = 0.07$ ). Likewise, results of the analysis suggested that a composite variable representing the variance in coworker support (labeled CWSS\_SD) did not significantly predict employee engagement ( $r = -0.09, p = 0.08$ ) nor need for relatedness

satisfaction ( $r = 0.03, p = 0.61$ ). Thus, the ego network data of CRQ and coworker support were formed into composites representing the mean level of ratings across all coworkers. Because the variance of ratings in CRQ and coworker support across all coworkers was not a significant predictor of need for relatedness satisfaction or employee engagement, it was determined that a composite representing the variance was not necessary to include.

### **Descriptive Statistics**

Means, standard deviations, intercorrelations, and reliability estimates for all study variables are depicted in Table 1. Reliability estimates for the CRQ composite and coworker support composite were not calculated given these estimates represent composite variables, rather than individual constructs. Internal consistency reliability estimates, such as Cronbach's coefficient alpha, are intended to measure the extent to which a scale measures the same construct, and therefore the estimate provides an assessment of the degree to which item responding is consistent across a set of items for a given construct (Cronbach, 1951). Because I do *not* expect individuals to respond to questions about different coworkers in the same manner (i.e., the reason for collecting data on multiple coworkers), computing an internal consistency reliability estimate of the composite variables is nonsensical. However, to ensure that the individual scales that comprise the composites are reliable measures of the constructs of interest (i.e., CRQ and coworker support), reliability estimates were conducted for each coworker identified for both scales. Internal consistency reliability estimates for the CRQ scales ranged from 0.86 to 0.88 ( $M = 0.87$ ) and internal consistency reliability estimates for the coworker support scales range from 0.93 to 0.95 ( $M = 0.94$ ). Overall, all reliability estimates for this sample were adequate in size (Nunnally, 1978; Lance, Butts, Michels, 2006), with the exception of the social desirability scale. The reliability estimates for the social desirability scale in this

sample ( $KR-20 = 0.67$ ) was below what is considered acceptable reliability suggesting a good deal of error was present in the measurement of this construct.

### **Control Variables**

Four variables were hypothesized as important control variables to include in the structural model to address alternative explanations to the hypothesized relationships. These included positive affectivity, negative affectivity, social desirability, and generalized self-efficacy. To examine the influence of each of these variables in regards to main study outcomes (i.e., need for relatedness satisfaction and employee engagement), a visual inspection of bivariate correlations was conducted. As depicted in Table 1, all four variables demonstrated significant relationships with employee engagement. To examine the influence of each variable, while controlling for all other variables in the model, partial correlations were calculated for each variable in regards to employee engagement. Results suggested that only two of the four variables remained significant, after controlling for the other variables in the study (including the other control variables). The relationship between negative affectivity and employee engagement became non-significant ( $r = -0.09, p = 0.07$ ), as did the relationship between social desirability and employee engagement ( $r = 0.04, p = 0.42$ ). The fact that these partial correlations became non-significant after considering the other study variables suggests that variance each variable is contributing (in regards to the outcome) is fully explained by the other variables in the model. The relationship between positive affectivity and employee engagement remained significant ( $r = 0.49, p = 0.00$ ), as did the relationship between generalized self-efficacy and employee engagement ( $r = 0.21, p = 0.00$ ). Thus, negative affectivity and social desirability were dropped from further analyses, whereas positive affectivity and generalized self-efficacy were retained as control variables.

## **Confirmatory Factor Analyses**

Confirmatory factor analyses (CFA) were used to test the hypothesized factor structure of all study variables (individually) as well as to test the distinctness of each variable when considering all variables together. In doing so, CFA results can provide internal construct validity evidence for each of the variables examined. Additionally, CFA analyses (the first step in the two-step approach to SEM) allow for evaluation of the measurement model, in preparation for testing the structural models. Confirmatory factor analyses were conducted using the software program, EQS 6.1 (Bentler, 2006) with maximum likelihood robust estimation. Missing data was addressed using listwise deletion (the entire record is excluded if a single value is missing). This resulted in at most four cases being excluded. Thus, the sample size ranged from 362 – 364, depending on the variables estimated.

Most of the study variables were hypothesized to be a single factor with the exception of employee engagement (hypothesized to be a higher-order factor with three lower-order factors). The factor structure of each variable was tested accordingly.

Similar to the argument discussed above regarding the reliability estimates of the composite variables CRQ and coworker support, testing a unidimensional factor structure for the composite variables also does not make sense. That is, the composite variables are not intended to represent a single, underlying factor. Thus, CFA analyses were not performed for the composite variables. However, CFA analyses were performed for both of the formative scales (CRQ and coworker support) for each coworker identified.

Results of the analysis of the CRQ scales consistently indicated one item (item 6, the only reverse-scored item) did not perform well. Interestingly, three participants commented on the confusion this item created. The item (“I do not feel this person I work with is a true friend”) is

conceptually similar (but reverse coded) to another item in the scale (“I have formed a strong friendship with this person”). Thus, it was determined that dropping this item would likely not impact the construct validity of the overall scale. Though there is disagreement regarding cut-off values for factor loadings statistics in CFA, items with  $R^2$  values less than 0.5 generally indicate the item is not performing well in regards to the specified factor (Kline, 2011). That is, the factor is explaining less than 50% of the variance in the item, suggesting there is an equal (if not greater) percentage of variance that is not explained by the factor. Across six CFAs (one for each coworker), the  $R^2$  value (ranging from 0.23 to 0.61) only exceeded 0.5 in two instances, thereby providing initial empirical support that this item was not performing well. All other items exceeded the 0.5 estimate across all coworkers. Because the two models (one with the reverse-scored item, and one without the item, replicated across all six coworkers) are not nested, a chi-square comparison test could not be performed. However, examination of AIC values revealed the five-item factor (removing the reverse-scored item) demonstrated a lower AIC value in five out of the six cases, indicating it is more likely to replicate. Additionally, other model fit statistics (see Table 2), often improved with the removal of this item, as did the internal consistency reliability estimates. Thus, this item was removed from the composite variable CRQ.

Similar to CRQ, CFAs were conducted for each coworker listed for the coworker support scale. The coworker support scale is hypothesized to represent a single factor. Across all six coworkers and all six items, the amount of variance explained in each item by the designated factor ( $R^2$ ) exceeded 0.50 in all cases. Fit statistics (reported in Table 3) were generally all within an acceptable range (with the exception of RMSEA). RMSEA values indicated poor fit for the model. Given the formula for calculating RMSEA values incorporate degrees of freedom in the estimate calculations, RMSEA tends to decrease (indicate better fit) as degrees of freedom

increases, thereby suggesting that a model with a relatively small number of degrees of freedom (i.e.,  $df = 9$  in this case), is more likely to violate this cut-off. Thus, RMSEA will be evaluated again in the full measurement model to ensure appropriate fit.

LRQ, like CRQ, was hypothesized to be a single factor. CFA results suggested that similar to CRQ, item six in the LRQ scale did not perform well. To reiterate, this was the only reverse-scored item. This item had a  $R^2$  of 0.04, well below the suggested cut-off of 0.50 (Kline, 2011). Comparison of fit indices suggested the 5-item factor solution fit better than the 6-item factor solution (see Models A and B in Table 4). Thus, item six was removed from subsequent analyses.

CFAs were conducted for each of the remaining variables in the study. Fit statistics (reported in Table 4) and examinations of unstandardized and standardized factor loadings, as well as the associated  $R^2$  for each item, were also conducted. Need for relatedness satisfaction sufficiently fit as a one-factor solution, as expected (with exception of RMSEA). Employee engagement best fit as a higher-order factor, again as theorized (Rich et al., 2010).

Regarding the control variables, generalized self-efficacy fit well as a one factor solution. However, positive affectivity demonstrated poor fit as a single factor, indicating the model specified did not fit the data well. Analyses of the positive affectivity items revealed two items were not explained well by the positive affectivity factor. These items were “Alert” and “Attentive.” Conceptually, these items differ from the others in that they are referring to being mentally focused and aware, whereas the other items (e.g., “Excited”, “Enthusiastic”) refer more to mood states associated with positive affectivity. Because it was already determined that positive affectivity was an important control variable to retain, the measurement issues related to this factor were important to investigate.

There is typically a trade-off when deciding how to handle problematic items, such as the two identified on the positive affectivity scale. On the one hand, retaining these items would introduce more measurement error in the structural model estimations, and potentially attenuate the important effects. On the other hand, dropping the items may threaten the construct validity of the scale given all of the items in this scale are unique (i.e., there are no similarly worded items). Specifically, these two items appear to represent a unique portion of positive affectivity (mental focus/awareness) when conceptually compared to the rest of the items (positive mood states). Post hoc analyses using relative weight analyses (Johnson, 2000) to predict the main outcome variable, employee engagement, suggested these two items were amongst the weakest predictors of employee engagement, when compared to the other scale items. Relative weights analysis is a method for determining the relative influence of each predictor variable in regards to an outcome variable, when there is multicollinearity among the predictor variables (see Johnson & LeBreton, 2004 for a review on this methodological approach). Given the items of the positive affectivity scale are all correlated, conducting a relative weights analysis was an appropriate approach for determining the influence each variable exhibits in regards to the main outcome, employee engagement. Because these two items were the worst predictors (relative to the others; i.e., explained the least amount of variance) of employee engagement, dropping these items should have the least impact on the analyses of this study. Combined with the evidence they were identified as problematic items, I elected to drop these items from further analysis to minimize the amount of measurement error in the structural models. The reduced 8-item version of the positive affectivity scale indicated appropriate fit for a single factor model (see Model J in Table 4).

After confirming the hypothesized factor structure for each of the variables in the study, a CFA was conducted including all variables in the model, each loading on their respective factors. Due to the strong correlation between LRQ and leader support ( $r = 0.73, p = 0.00$ ), as well as the theoretical justification for why these factors should be related, I allowed the LRQ and leader support factors to covary in the final measurement model. All variables were evaluated and confirmed as distinct factors and model fit statistics supported the measurement model (see Model L in Table 4). Correlations between final study variables and controls are reported in Table 5.

### **Structural Models**

To test hypotheses 2a and 2b (i.e., mediated relationships; CRQ and LRQ, respectively, were predicted to positively relate to employee engagement via need for relatedness satisfaction) the steps recommended by MacKinnon, Fairchild, and Fritz (2007) were followed. These steps involve testing the statistical significance of the X (i.e., CRQ and LRQ) to M (i.e., need for relatedness satisfaction) relation, and then the M (i.e., need for relatedness satisfaction) to Y (i.e., engagement) relation. If both are statistically significant there is evidence of mediation (MacKinnon et al., 2007). Conceptually, these steps are similar to the recommendations of Baron and Kenny (1986), the most commonly applied recommendations for examining mediated relationships. Results of the M to Y relation suggested that need for relatedness satisfaction was not significantly related to engagement ( $\beta = 0.03, p = 0.29$ ), thereby failing to support Hypothesis 1, 2a, and 2b. Additionally, visual inspection of the fit indices (see Model A in Table 6) revealed room for model improvement with the CFI value being lower than recommended by Hu & Bentler (1999). Thus, the direct path from need for relatedness satisfaction to engagement was removed to assess improvements in model fit. Results from the chi squared difference test

revealed the revised model (Model B in Table 6) represented a significant improvement in model fit. Thus, the remaining study hypotheses were evaluated on the basis of the revised model (Model B in Table 6; also see Figure 7).

Hypothesis 3a proposed that coworker support is positively, directly related to employee engagement. Parameter estimates of the path from coworker support to employee engagement (see Figure 7) were not significant ( $p = 0.12$ ) thereby failing to support hypothesis 3a.

Hypothesis 3b proposed that leader support is positively, directly related to employee engagement. Parameter estimates of the path from leader support to employee engagement (see Figure 7) were also not significant ( $p = 0.19$ ) thereby failing to support hypothesis 3b.

Hypotheses 4a proposed that CRQ explains additional variance in employee engagement when considering coworker support simultaneously. Similarly, hypothesis 4b proposed that LRQ explains additional variance in employee engagement when considering leader support simultaneously. Results of this analysis showed that although the standardized path coefficient for CRQ was slightly larger than the standardized path coefficient for coworker support (see Figure 7), neither coefficient was statistically significant ( $p = 0.11$ ,  $p = 0.12$ , respectively). Thus, hypothesis 4a was not supported. Visual inspection of the standardized path coefficient for LRQ compared to leader support revealed the coefficient for LRQ was larger in size and statistically significant, whereas the coefficient for leader support was not statistically significant, therefore supporting hypothesis 4b.

Hypothesis 5a proposed that CRQ would be a stronger predictor of employee engagement as compared to LRQ. Results of the model displayed in Figure 7 above suggest the reverse is true; LRQ is a stronger predictor of employee engagement (relative to CRQ). Thus, hypothesis 5a was not supported. Hypothesis 5b stated that CRQ would be a stronger predictor of need for

relatedness satisfaction, as compared to LRQ. Visual inspection of the standardized parameter estimates (Figure 7) reveals CRQ ( $\beta = 0.55, p < .01$ ) to be a stronger predictor as compared to LRQ ( $\beta = 0.14, p < .01$ ) of need for relatedness satisfaction, thereby supporting hypothesis 5b.

In summary, structural equation models used to test all study hypotheses (while controlling for generalized self-efficacy and positive affectivity) do not support most of the study hypotheses. Specifically, only two hypotheses were supported – hypothesis 4b (LRQ explains additional variance in employee engagement when considering leader/supervisor support simultaneously) and hypothesis 5b (CRQ is a stronger predictor of need for relatedness satisfaction as compared to leader relationship quality LRQ).

### **Alternative Model**

The alternative model (Figure 6) suggests two paths: one for the support variables (leader support leading to coworker support) and one for the relationship quality variables (LRQ leading to CRQ). The previous models tested above demonstrated that need for relatedness satisfaction does not relate to employee engagement. Thus, this variable was dropped from the alternative model. Additionally, previous models tested demonstrated that neither leader support nor coworker support were significantly related to engagement. However, these variables were retained to account for the variance of these two variables, while testing the LRQ to CRQ relationship.

As discussed above, testing for mediation involves first testing the X to M relationship and M to Y relationship for statistical significance. First in testing the X (LRQ) to M (CRQ) relationship (see Model C in Table 6), the results of the model specified this path was significant ( $\beta = 0.30, p = 0.00$ ). Testing the M (CRQ) to Y (engagement) relationship (see Model D in Table 6) demonstrated this path was also significant ( $\beta = 0.19, p = 0.00$ ). Testing full mediation was

not necessary, given the alternative model proposed specifies partial mediation (i.e., LRQ also relates directly to engagement). Thus, the direct path from LRQ to engagement was added (see Model E in Table 6). Both the direct path from LRQ to engagement ( $\beta = 0.18, p = 0.01$ ) and the path from LRQ to CRQ remained significant ( $\beta = 0.30, p = 0.00$ ). However, the path from CRQ to engagement was no longer significant ( $\beta = 0.05, p = 0.21$ ). Neither of the social support variables was significantly related to engagement. These results suggest that LRQ relates positively and significantly to CRQ, as well as engagement, but does not relate to engagement by means of CRQ (i.e., no partial mediation). Comparison of model fit statistics between the alternative model and the hypothesized model (i.e., AIC values, the only meaningful fit statistic to compare since the models are not nested) suggests that the hypothesized model (displayed above in Figure 7) fits the data better than and is more likely to replicate in other samples as compared to the alternative model proposed.

### **Additional Analyses**

A few different post hoc analyses were conducted to further help with interpretation and understanding of the data. First, to address concerns regarding multicollinearity of the predictor variables (discussed below), an alternative statistical approach was taken. Second, because a large percentage of MTurk participants (i.e., 23%) were screened out on the basis of the response time and/or invariant responding, the models estimated above were re-estimated including these cases ( $N = 437$ ) to assess the impact these cases would have had, if they had not been removed. Third, to address the possibility that the composite variables created were not representing the constructs of CRQ and coworker support well, all models were re-estimated using the ratings about coworker #1 and coworker #4, rather than the composite variables. Lastly, because CFI fit indices of the full and revised hypothesized models (e.g., Model A and B in Table 6) were lower

than the cut-off values recommended by Hu and Bentler (1999; i.e.,  $CFI \geq 0.95$  indicates good fit), modification indices, such as those produced by the multivariate Lagrange Multiplier Test (LM Test) were used to determine where model fit could be improved. Results of these post hoc analyses are discussed below.

An important concern regarding the research results discussed above concerns the degree to which many of the variables were correlated with each other. Specifically, some of the predictor variables exhibited moderate multicollinearity (e.g., LRQ and leader support, CRQ and coworker support). As such, CRQ and coworker support, as well as LRQ and leader support, were allowed to covary in model estimation. Failure to allow these variables to covary resulted in poor model fit. Furthermore, given the theoretical reasons for these variables to covary, it makes substantive sense to allow for this covariance.

Nonetheless, multicollinearity potentially creates problems in model estimation when attempting to understand the unique effects (and incremental variance) of each predictor. For example, Grewal, Cote, and Baumgartner (2006) found in a series of Monte Carlo simulation experiments, multicollinearity between 0.6 and 0.8 can result in high Type II error rates (between 50% and 80%) when other study characteristics are also present such as low reliability estimates of latent variables, explained variance ( $R^2$ ) is low, and sample size is small. Furthermore, Grewal et al. (2006) found that even in cases of less extreme multicollinearity (e.g. 0.4 to 0.5), Type II error rates can still be inflated when reliability estimates are low, explained variance ( $R^2$ ) is low, and sample size is small. Though the reliability estimates of the latent variables are appropriate in the current study ( $\alpha = 0.86$  to  $\alpha = 0.95$ ), and the sample size is not particularly small ( $N = 364$ ), the explained variance is low, and multicollinearity of the variables is moderate in some cases (e.g., LRQ and leader support,  $r = 0.73$ ; CRQ and coworker support,  $r = 0.53$ ). Thus, a

post hoc relative weights analysis was conducted to examine the relative influence of each predictor in explaining variance in the outcome, employee engagement. Results of the relative weights analysis analyzing each of the four main predictor variables (CRQ, LRQ, coworker support, leader support) in relation the main outcome (engagement) are displayed in Table 7. Results suggest that these four predictor variables explain approximately 10% of the variance in employee engagement. Results of the analysis also suggest that CRQ is the strongest predictor of engagement, followed by LRQ, leader support, and coworker support (in rank order). However, examination of the confidence intervals demonstrates this conclusion has caveats (i.e., overlapping confidence intervals) that will be explained in the Discussion section below.

As mentioned above, a large percentage of the MTurk participants (i.e., 23%;  $n = 73$ ) were screened out due to completion time or response invariance. Out of the 73 participants screened out, 93% of these cases violated both the completion time cut-off and the response invariance cut-off. Violation of both of these cut-offs supports the assumption that these cases represented insufficient effort responding, therefore introducing additional measurement error into the data analyses. However, it is possible to test this assumption further by adding these cases back into the dataset, and re-examining the models estimated above with these cases included. Starting with the full measurement model, visual inspection of changes in model fit statistics supports the hypothesis that these cases represented mainly error. That is, all of the fit indices were negatively impacted when these cases were added back into the sample. The overall measurement model with 364 cases (displayed in Model L in Table 4) indicated adequate model fit. When this same model was compared with the previously excluded cases included ( $N = 437$ ), visual examination of the fit statistics suggested the model including the excluded cases demonstrated poorer fit. For example, RMSEA increased to 0.06 (0.05 previously), chi squared

increased to 1278.75 (894.26 previously), and AIC increased to 356.75 (-27.74 previously). Thus, this post hoc comparison supports the notion that the 73 excluded cases contained excessive measurement error.

To examine and address any potential concerns related to the use of composite variables for CRQ and coworker support, all hypotheses were re-estimated twice, once using coworker #1 ratings (for both CRQ and coworker support) and once using coworker #4 ratings (for both CRQ and coworker support). Coworker #1 and coworker #4 were selected because these relationships represented (on average) the strongest relationships participants reported. That is, 35.4% of participants reported coworker #4 represented the strongest coworker they had in regards to CRQ where as 21.7% of participants reported coworker #1 as the strongest coworker relationship they had in regards to CRQ. Similarly, 22.3% of participants reported coworker #1 represented the strongest coworker relationship they had in regards to coworker support and 28.6% of participants reported coworker #4 as the strongest relationship they had in regards to coworker support. Thus, coworker #4 and coworker #1, on average, were the strongest coworker relationships participants' reported for the majority of participants. It is interesting to note that only 58.8% of participants reported the same coworker as the strongest relationship in regards to CRQ and coworker support. Specifically, for 41.2% of participants, the coworker identified as the strongest relationship in regards to quality was not the same person as the coworker identified as the strongest relationship in regards to coworker support.

As mentioned above, all hypotheses that involved CRQ or coworker support (i.e., Hypotheses 2a, 3a, 4a, 5a, and 5b) were re-analyzed twice, once using coworker #1 ratings and then using coworker 4 ratings. Across all hypotheses, model fit statistics were either unaffected or showed slightly poorer fit. Given the composite variables were estimated as observed

variables (i.e., no measurement error was calculated), it makes sense that incorporating CRQ and coworker support as latent variables would slightly decrease model fit (i.e., more measurement error was being accounted for). Therefore, the more important determinant is the significance and size of the parameter estimates. Results revealed that the significance of parameter estimates did not change for any of the hypotheses when using coworker #1 ratings nor when using coworker #4 ratings. That is, none of the previously non-significant parameters estimates became significant and vice versa. Results also revealed that the size of parameter estimates did not meaningfully change. Small, subtle changes occurred but evaluation of the study hypotheses (support or reject) was not impacted by these subtle changes. Overall, results of this post hoc analysis demonstrated that the findings reported were not specific to the use of the composite variables – the same results would have been achieved using only coworker #1 ratings, or using only coworker #4 ratings.

To further test the contributions of the ego network analysis approach, simple bivariate correlations were conducted to examine the relationship between ratings of each coworker for CRQ and social support, relative to the relationship between the composite variables, in regards to employee engagement. Because the differences between ratings of each individual coworker, as compared to the composite variables, were likely to be subtle, analyzing simple bivariate correlations may help understand these subtle differences better. Results of the bivariate correlations conducted are presented in Table 8 (CRQ) and Table 9 (coworker support). As can be seen in the visual comparison of correlation sizes across coworker ratings, there is slight variation in regards to the relationship with engagement and need for relatedness satisfaction depending on which coworker was referenced. Additionally, the results reveal the composite

variable explains relatively more variance, as compared to any of the individual coworker ratings.

The last post hoc analysis performed was examination of modification indices, such the multivariate Lagrange Multiplier Test (LM Test). The LM Test provides information about where the model parameters previously constrained to zero should be freely estimation. It is important to note the LM Test is entirely driven by empirical criteria (e.g., statistical significance). As such, these indices should not direct model re-specification because model re-specification should be conducted on the basis of theoretical rationale (Kline, 2011). However, these modification indices can help to better understand why fit is not better in a given model. Examination of the multivariate LM Test results revealed that model fit would be improved by correlating many of the error terms in the model (both within factors and across factors). For example, the most significant model fit would be achieved by correlating two of the items with the engagement physical sub-scale. This suggests there is variance shared between these two variables that is not explained by the engagement sub-factor, physical engagement. Additionally, there were many error terms across factors identified in the LM Test. For example, results of the LM Test revealed that an item on the positive affectivity scale should be allowed to covary with an item on the engagement scale. Though correlating error terms will almost always result in improved model fit (when based on the results of the LM Test), best practice in SEM dictates that only error terms specified a priori as correlated should be allowed to covary in the model estimation (Kline, 2011). Thus, this post hoc analysis is presented mainly to highlight that the simple model structure specified (i.e., each variable loads on one and only one factor with no cross-loadings) did not appear to fit this data well.

## DISCUSSION

The purpose of the current study was to explore the relational context of employee engagement from an intrinsic perspective. To evaluate the contributions of an intrinsic perspective relative to an instrumental perspective, both perspectives were operationalized and simultaneously tested. Specifically, the influence of leader relationship quality (LRQ) and coworker relationship quality (CRQ; i.e., intrinsic variables) was examined relative to the influence of coworker support and leader support (i.e., instrumental variables) for predicting employee engagement. Additionally, based on an intrinsic theory of motivation (i.e., SDT), a basic psychological need (need for relatedness) was tested as a mediator in the relationship between LRQ and CRQ with engagement. The results of the empirical tests described above reveal new insights into understanding the relational context of engagement, thereby having important theoretical and practical implications.

Two main conclusions can be offered on the basis of these results. First, coworker relationship quality is a stronger predictor, relative to leader relationship quality, of need for relatedness satisfaction. This indicates that the quality of coworker relationships is more important than the quality of the leader relationship for meeting one's need for relatedness in the work environment. Second, leader relationship quality is a stronger predictor of engagement relative to leader support. This suggests, as proposed, that the intrinsic value of leader/subordinate relationships is relatively more important for predicting engagement than the instrumental value. Failure to support many of the other study hypotheses will be discussed below.

Based on SDT, need for relatedness satisfaction was hypothesized not only to relate significantly and positively to engagement, but also to mediate the relationship between coworker relationship quality and leader relationship quality with engagement. Results failed to support these hypotheses. Perhaps the most straightforward explanation for these findings is that despite the similarities between engagement and intrinsic motivation, SDT is not an appropriate theoretical framework for understanding the relational context of employee engagement.

Though a number of researchers have proposed that SDT can be appropriately applied to better understand engagement (Inceoglu & Fleck, 2011; Meyer & Gagné, 2008), few have actually empirically tested this assumption (for exception see Deci, Ryan, Gagne, Leone, Usunov & Kornazheva, 2001; Kovjanc, Schuh, & Jonas, 2013; Van den Broeck, Vansteenkiste, De Witte, & Lens, 2008). Examination of the results from others who have tested this reveals inconsistent findings (Deci et al., 2001; Kovjanc et al. 2013). For example, Deci et al. (2001) reported similar effect sizes to those found in this study for the relationship between need for relatedness satisfaction and engagement, suggesting the results of the present study are not anomalous. Conversely, the results of Kovjanc et al. (2013) reveal a much larger effect. It is important to note that each study examined both constructs (need for relatedness satisfaction and employee engagement) using different measurement scales. That is, Deci et al. (2001) used a measure of school engagement adapted to fit the work context (i.e., Connell, 1990), Kovjanc et al. (2013) used short form of a work engagement developed by Schaufeli, Bakker, and Salanova (2006), and the present study used an employee engagement scale developed by Rich et al. (2010). Additionally, Deci et al. (2001) used a Bulgarian and U.S. sample, whereas Kovjanc et al. (2013) used a German sample. Thus, some variation in the reported correlation size may be anticipated as a consequence of these measurement and sample differences. However, the

variation is more extreme than would be anticipated on the basis of measurement or sample differences. Thus, comparison of previous research with the current suggests there are still many empirical questions remaining regarding the relevance of SDT for predicting employee engagement.

Another alternative explanation is that SDT may indeed be an appropriate theoretical framework for engagement, but need for relatedness is not one of the dominant basic psychological needs for predicting engagement. To illustrate, generalized self-efficacy was included as a control because conceptually it is similar to need for competence, another basic psychological need. The correlation between generalized self-efficacy and engagement (in this sample) was moderate in size indicating that the basic psychological needs proposed by SDT may be relevant for predicting engagement, just not need for relatedness. However, more rigorous analyses specifically developed to examine these questions are needed to substantiate the relevance of the basic psychological needs, and more generally, SDT, for predicting engagement.

Results of this study also failed to support the hypotheses that coworker and leader support are related to employee engagement. These findings were unexpected given multiple studies have shown both variables to be significantly related to engagement (e.g., Bakker et al., 2007; Christian et al., 2011; May et al., 2004; Saks, 2006). There is, however, a logical explanation for this discrepancy. For example, some of the previous studies operationalized social support (both coworker and leader) as emotional and instrumental support (e.g., May et al., 2004), whereas other studies merely labeled the construct as coworker or leader support without specifying the type of support (e.g., Christian et al., 2011; Saks, 2006). In the current study, I intentionally used an instrumental-only support scale to minimize the conceptual overlap

between social support and relationship quality. Thus, though I previously suggested that the majority of extant studies seeking to understand the relational context of engagement focused mainly on an instrumental perspective (at least in regards to theoretical explanations), the actual operationalization of such constructs varied significantly, and at times, appears to more closely mirror the items on the coworker and leader relational quality scales, rather than the instrumental-only support scales. Thus, one explanation for my findings as different than others is that findings of previous research may actually reflect some aspects of coworker and leader relational quality, rather than only support, thereby explaining the larger effect sizes reported previously (i.e., because coworker and leader relationship quality are stronger predictors of engagement). In support, visual comparisons of the correlation sizes reported from previous studies that operationalized social support as only instrumental support (e.g., Bakker et al., 2007) reveals similar effect sizes as found in this study for the relationship between leader support and engagement.

Therefore, though the same construct labels are used (e.g., supervisor support, coworker support), the operationalization of these constructs has varied widely in the extant research. Comparing the results of this study to those of previous studies suggests that the way social support is operationalization has important implications for predicting engagement. Namely, this discrepancy suggests that though instrumental support and leader/coworker relationship quality appeared to be distinct in this study, it is questionable how distinct leader and coworker relationship quality are from emotional support (leader and coworker).

The results of the current study also failed to support the hypothesis that coworker relationship quality would explain additional variance in engagement, over coworker support. There are a few plausible explanations for this null result. Due to multicollinearity of the two

variables (i.e., coworker relationship quality and coworker support), it was necessary to allow these variables to covary in model estimation, thereby making it more difficult to distinguish their unique effects. That is, the larger the correlation between two predictor variables, the larger the standard errors will be, and the less likely it is for the coefficients to reach statistical significance (Kline, 2011). Hence, it is plausible there was not enough statistical power to differentiate these effects. Though there was sufficient statistical power to test the overall structural model, attempting to differentiate two moderately correlated variables, when both variables represent a small to moderate effect in regards to the outcome, requires even greater statistical power that was possibly not achieved in this study.

Results of the post hoc relative weights analysis (see Table 7) support the notion that coworker relationship quality may explain additional variance in engagement (over coworker support). However, further analysis suggested that the differential effect of coworker relationship quality and coworker support is small, and there is a possibility that there is no statistical difference between these in terms of predicting engagement. Thus, there appears to be a trend in the data that coworker relationship quality explains additional variance in engagement as compared to coworker support, but greater statistical power may be needed to more fully investigate this difference.

Another logical explanation for why coworker relationship quality is not a stronger predictor of engagement than coworker support is that it is possible the coworker relationship is not an important relationship in regards to the relational context of engagement. This would explain why neither coworker variable was a significant predictor of engagement. Though there are theoretical reasons to suggest otherwise, empirical examination of the benefits of coworker relationships is still an emerging area.

Congruent with this explanation is the unexpected finding that leader relationship quality is a stronger predictor of engagement than coworker relationship quality. On the basis of SDT, the opposite was hypothesized. That is, due to the hierarchical nature of leader relationships, I proposed that leader relationships would be seen as less voluntary. However, there are also logical reasons for the reverse to be true. These findings make sense if coworker relationships are seen as *less* voluntary, rather than more voluntary than leader relationships. Typically when applicants interview and consider a new position, they are able to meet, talk with, and ask questions of the position supervisor. It is uncommon that applicants are able to talk with and ask questions of their potential coworkers. Thus, one could argue that individuals make decisions about the supervisor relationship when accepting a position, thereby offering greater perceptions of autonomy in participating in that relationship. Conversely, because applicants are not able to evaluate the coworker relationships to the same degree when making decisions about accepting a position, it is possible these relationships are perceived as less autonomous (i.e., less choice in the decision therefore more controlled). Though worth considering, this explanation is inconsistent with the results demonstrating coworker relationship quality is a stronger predictor of need for relatedness satisfaction than leader relationship quality. Hence, the relevance of SDT for explaining the relational context of engagement must be questioned.

Similar to the explanation offered above regarding the null results for coworker relationship quality and coworker support in predicting engagement, the most direct explanation for unexpected finding that leader relationship quality is a stronger predictor of engagement than coworker relationship quality, is that for certain outcomes, coworker relationship have been shown to be more influential than the leader relationships, whereas for other outcomes, the opposite is true (Basford & Offerman, 2012; Chiaburu, 2010; Chiaburu & Harrison, 2008; Li &

Hung, 2009). In this study, coworker relationship quality was more important for predicting need for relatedness satisfaction, whereas leader relationship quality was more important for predicting engagement. Since research examining both coworker and leader relationships simultaneously has been limited, this finding reveals important insights for more fully understanding the importance of dyadic work relationships. Namely, more research is needed to understand the boundary conditions of each relationship (coworker or leader) relative to each other.

### **Theoretical implications**

One of the main goals of this research was to empirically investigate the theoretical distinction between the intrinsic value of work relationships, and the instrumental values of work relationships. The results of my study suggest this theoretical distinction is indeed an important one to make in regards to leader/subordinate relationships. Whereas the majority of previously research has focused on an instrumental perspective (either by means of theories used to support research hypotheses and/or the way leader relationships have been operationalized), this study is the first to suggest that the intrinsic value of such relationships is more important in regards to employee engagement (for the leader relationship). Given the majority of published engagement research has been theoretically grounded in an instrumental theory (i.e., JD-R; Bakker et al., 2003; Demerouti et al., 2001), the theoretical implications of this study suggest our understanding of engagement has been inappropriately limited. This study highlights the need to further articulate theory on employee engagement to include both an instrumental and intrinsic focus in regards to leader relationships. Similarly, my results suggest that in general, more elaborate and fully developed models are needed to describe the climate for engagement.

Another important theoretical contribution of my study concerns the use of SDT as a theoretical framework for understanding employee engagement. A number of hypotheses in this study were developed based on SDT and were not supported. Combined with the contradictory results regarding need for relatedness satisfaction and engagement, the relevance of using SDT for predicting engagement is still inconclusive. Nonetheless, in regards to leader relationships, this study demonstrated that an intrinsic perspective better explained employee engagement as compared to the instrumental perspective. When considering there is an overall dearth of other intrinsic theories for understanding work relationships and behaviors, it may be premature to suggest that SDT is not relevant for explaining engagement. Rather, this study highlights the imperative of further assessing the theoretical relevance of SDT for predicting engagement.

### **Practical Implications**

The practical implications of this research are perhaps less straightforward (compared to the theoretical implications) given the research represents a nascent pursuit to better understand the relational context of engagement, an inherently theoretical endeavor. The results of this research generate more specific empirical questions to ask and examine, rather than providing definitive answers and results that can be translated into practice. However, there are three main aspects of the results of this study that may have practical implications.

First, though the study failed to fully differentiate relationship quality variables from social support variables, more generally, this study did highlight the value of relationships for predicting engagement. The implications of these findings are that the relationships one has at work can have an influence on one's ability to be engaged at work. Thus, one potential practical implication is the importance of building positive social capital to foster employee engagement. Organizational practices such as relational selection, on-boarding, collaborative meeting

techniques, and team incentives can be used to support and foster high quality relationships in the work environment (Bakker & Dutton, 2007). The results of this study also highlight the importance of providing training in relational skills, rewarding these skills, and addressing relational incivility through interventions (e.g., Leiter, Spence Laschinger, Day, & Oore, 2012) as a means of promoting positive relational experiences for employees.

The second main aspect of the results presented here that may have practical implications is the differentiation of social support and relationship quality. Though participants appeared to make a distinction between the two constructs, the empirical distinction between these constructs ranged from being non-existent to very small, at best. Given these small differences, it most likely does not make practical sense to attempt to differentiate these in regards to interventions aimed at fostering employee engagement. Therefore, the practical implication is that when considering dyadic work relationships (i.e., coworker relationships and leader relationships) it is important to consider multiple aspects of the relationships including support value *and* dimensions of relationship quality.

The third main aspect of the results presented here that may have practical implications concerns the measurement of coworker relationships. The results of post hoc analyses suggested that asking participants about multiple coworker relationships was perhaps unnecessary. For example, the results did not change when analyzing the models on the basis of only one coworker reported as compared to incorporating ratings of all coworkers reported. Hence, though measuring multiple coworker relationships allowed for a variety of analyses, it did not appear to make a difference in regards to overall results and conclusions. Future research is needed to determine if the costs associated with this approach (i.e., participant demands) outweigh the benefits.

## **Strengths, Limitations, and Future Research Directions**

Limitations of the study include the cross-sectional nature of the data, the use of all self-report data, the use of convenience samples, and the statistical power available to analyze the research hypotheses. First, the data for this study were cross-sectional. Thus, conclusions regarding causal relationships cannot be made. Models were developed on the basis of theory and previous research suggesting the direction of relations tested was justified. Additionally, by testing an alternative model and including theoretically relevant control variables, other possible explanations were evaluated. The theoretical basis of the hypotheses and the evaluation of an alternative explanation both offer greater confidence in the direction of the tested relationships despite the use of cross-sectional data. Lastly, given the main research questions involve coworker relationship quality and leader relationship quality, variables that are arguably difficult, if not impossible to manipulate in an experimental setting, a cross-sectional field study is the best approach and perhaps the only feasible approach to studying coworker and leader relationship quality.

Another limitation of the current study is the use of only one measurement source, self-report, for collecting all variables. Using only one source for collecting all data potentially introduced common method variance (Campbell & Fiske, 1959), wherein at least some of the variability in the hypothesized relationships was due to the measurement method rather than the intended variables (Podsakoff et al., 2003). As previously noted, to address this limitation, a number of procedural and statistical remedies were applied thereby increasing confidence the final results reflect the intended constructs, rather than omitted variables or common method variance.

Another limitation of the proposed study is the use of convenience samples for data collection. The use of convenience samples can limit the generalizability of the findings since convenience samples are a type of non-probability sampling. However, the samples collected were diverse, which can alleviate some of the concern regarding non-probability sampling. Examination of participant characteristics indicate the sample was diverse in regards to most demographic variables collected. Indeed, the use of multiple samples may actually be a strength of this study. Though the sample used in this study is most appropriately considered a convenience sample, it is also considered a field sample of working adults representing a variety of occupations, industries, positions, and locations. The diversity of the sample, as well as the fact that over 80% of the sample was employed full-time, is a notable strength in regards to generalizing these findings across many different positions, industries, and occupations of full-time working adults.

The last limitation is the statistical power available to detect meaningful differences of interest. Though a priori power analyses were conducted to determine the needed sample size, the results revealed some unexpected findings indicating a much larger sample than anticipated may have been necessary. For example, results revealed slightly smaller effect sizes than anticipated. Additionally, some of the predictor variables in this study exhibited moderate multicollinearity. Thus, even with sufficient power to test the overall structural model, the ability to find meaningful differences amongst a set of multicollinear predictors may have required substantially greater power.

Despite the limitations presented above, the contributions of this study to advancing our knowledge of the relational context of employee engagement far outweigh the limitations. For example this study is the first step to expanding previous theory and empirical research on the

relational context of employee engagement. Though the results of this study are far from conclusive and will require future research, this study signifies an initial step to more fully considering the relational context of employee engagement and can serve an impetus for future research, informing research questions and research design. Given the current work environment is more socially constructed than ever before, understanding the relational context of engagement is essential to understanding how to foster an engaged workforce.

Second, there are a number of notable strengths in the methodology such as the use of field samples, the exploration of a theoretically-derived alternative model and control variables, and a priori consideration of common method variance. All of these strengths in methodology contribute to the external validity of the results. Third, the use of ego network analysis is also a strength of the study. By incorporating ego network analysis, I used a technique designed for measuring relationships and determined it may not be as useful in differentiating working relationships as it is for nonworking relationships. Additionally, in doing so I addressed concerns expressed by other researchers regarding the use of a single, multi-item scale to measure multiple working relationships, thereby providing initial evidence to abate these apprehensions.

In regards to future research questions, first and foremost, researchers should empirically test the relevance of SDT for explaining employee engagement. Second, the results of this research highlight the need for better development and refinement of the scales measuring workplace relationships. Specifically, the coworker/leader relationship quality scale selected was not originally developed to assess dimensions of high quality work relationships per se. Rather, this scale was created to assess the prevalence of friendship, often considered the highest quality relationship one may have outside of familial or romantic relationships (Clark & Mills, 1979; Clark & Mills, 2012). Thus, by proxy this measure was justified as an indicator of relationship

quality. However, future research specifically designed to develop measures of relationship quality as distinct from social support should be pursued. Specifically, though emotional support was not measured in this study, comparison of the current results to previous research seems to indicate that emotional support may be more closely related to relationship quality, as compared to instrumental support. Hence, further investigation of the construct overlap and uniqueness of support (emotional and instrumental) and relationship quality would aid future attempts at delineating the effects of each. Based on the results of this research, it is likely that delineating the constructs, in terms of coworker relationships, may not be empirically meaningful. Thus, researchers should explore new scale construction, wherein dimensions of social support and relationship quality are incorporated, thereby providing a more holistic, accurate, and robust measure of coworker relationships. In regards to leader relationships, however, this distinction, between social support and relationship quality, appeared to be necessary.

Additionally, researchers should strive to be more articulate regarding construct labels. As mentioned previously, the construct 'social support' is used in many different ways in the engagement literature. To avoid issues regarding construct contamination, researchers should focus attention on the way they label and operationalize their relationship variables. Additionally, if the constructs are appropriately defined and used in future research, meta-analytic analyses could be incredibly informative for addressing questions of construct uniqueness, and potentially unique correlates of the relationship variables. Another method that may help in delineating social support and relationship quality is the use of exploratory structural equation modeling. The results of the post hoc analysis of modification indices indicated the simple structure required in structural equation modeling did not fit the data well. There were many variables across scales that shared common variance, not explained by the discrete factors.

Exploratory structural equation modeling allows for incorporating exploratory factor analysis in structural equation models, thereby allowing for models wherein a simple structure does not fit the data, while still providing access to the usual SEM parameters (Asparouhov, & Muthén, 2009).

Fourth, researchers should also continue to investigate the relative influence of coworker relationships, as compared to leader relationships, for predicting employee outcomes. The results of this study suggest that though leader relationships are more important than coworker relationships for predicting engagement, coworker relationships were more important than leader relationships for predicting need for relatedness satisfaction. This research, combined with analysis of previous research revealing similar findings, suggests that more empirical investigation is needed to understand the boundary conditions of each relationship (coworker and leader) relative to the other. Likewise, incorporating other dyadic relationships (e.g., leader/subordinate relationship, from the leader's perspective; mentoring relationships; client relationships) may be a fruitful area for further investigating the relational context of engagement.

Lastly, in regards to fostering employee engagement, future research should investigate the assumptions and theoretical underpinnings of the dominant engagement theory (JD-R) in regards to factors that foster engagement. For example, this study was the first to examine an intrinsic perspective of relationships. Whereas the theoretical rationale for JD-R arguably focuses mainly on an instrumental perspective of relationships, the results of the current study suggest this focus may be too narrow.

## **Conclusion**

In the current work environment, where the social relationships between employees are more important than ever for both individual and organization outcomes, it becomes even more imperative to understand the relational context of employee engagement. The majority of extant research has examined the relational context of engagement by operationalizing relationships as social support, but the results of this study suggest there is equal, if not greater value, in operationalizing the quality of relationships, rather than merely the support value of such relationships. Additionally, this study offers initial empirical evidence suggesting that the quality of leader relationships, relative to coworker relationships, is a more robust predictor of employee engagement. Overall, this study provides initial empirical results upon which future studies can more fully explore the relational context of employee engagement.

Table 1

*Descriptive Statistics and Intercorrelations Among Main Variables and Control Variables (N=364)*

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10
1. Coworker Relationship Quality (composite)	3.38	0.59	(n/a)									
2. Coworker Social Support (composite)	3.21	0.67	0.53**	(n/a)								
3. Leader Relationship Quality	3.08	0.99	0.31**	0.23**	(0.89)							
4. Leader Social Support	3.43	1.05	0.14*	0.29**	0.70**	(0.94)						
5. Need for relatedness satisfaction	3.67	0.86	0.55**	0.37**	0.29**	0.20**	(0.86)					
6. Employee engagement	3.92	0.69	0.29**	0.18**	0.22**	0.19**	0.25**	(0.95)				
7. Social desirability	8.45	3.15	0.09	0.03	0.09	0.06	0.10	0.14**	(0.67)			
8. Positive affectivity	3.40	0.81	0.22**	0.13*	0.16**	0.15**	0.23**	0.61**	0.14**	(0.91)		
9. Negative affectivity	1.51	0.56	-0.13*	0.00	0.05	0.03	-0.10	-0.14*	-0.08	-0.05	(0.89)	
10. Generalized self-efficacy	4.20	0.55	0.24**	0.14**	0.11*	0.12*	0.27**	0.44**	0.12*	0.46**	-0.21**	(0.89)

*Note.* The alpha internal-consistency reliability coefficients appear in parentheses along the diagonal. \* $p < .05$ , \*\* $p < 0.01$ .

Table 2

*Fit Indices for Confirmatory Factor Analyses of Coworker Relationship Quality Scale (CRQ) Across Six Coworkers (N= 364)*

Model	$\chi^2$	<i>df</i>	CFI	AIC	RMSEA	90% CI for RMSEA
A: CRQ (Coworker 1) – 6 item	73.24	9	0.94	55.244	0.14	0.11 – 0.17
B: CRQ (Coworker 1) – 5 item	54.10	5	0.95	44.10	0.16	0.13 – 0.20
C: CRQ (Coworker 2) – 6 item	61.75	9	0.94	43.75	0.13	0.10 – 0.16
D: CRQ (Coworker 2) – 5 item	45.39	5	0.96	35.39	0.15	0.11 – 0.19
E: CRQ (Coworker 3) – 6 item	81.67	9	0.93	63.67	0.15	0.12 – 0.18
F: CRQ (Coworker 3) – 5 item	58.81	5	0.95	48.81	0.17	0.14 – 0.21
C: CRQ (Coworker 4) – 6 item	31.67	9	0.97	13.67	0.09	0.05 – 0.12
D: CRQ (Coworker 4) – 5 item	25.96	5	0.97	15.95	0.11	0.07 – 0.15
E: CRQ (Coworker 5) – 6 item	67.20	9	0.93	49.20	0.14	0.11 – 0.17
F: CRQ (Coworker 5) – 5 item	55.92	5	0.93	45.98	0.17	0.13 – 0.21
G: CRQ (Coworker 6) – 6 item	46.01	9	0.95	28.01	0.11	0.08 – 0.14
H: CRQ (Coworker 6) – 5 item	36.33	5	0.95	26.33	0.14	0.09 – 0.18

*Note.* CRQ = coworker relationship quality;  $\chi^2$  = Chi-square; *df* = degrees of freedom; CFI = comparative fit index; AIC = Akaike information criterion; RMSEA = root mean square error of approximation. 90% CI RMSEA = 90% confidence interval for RMSEA

Table 3

*Fit Indices for Confirmatory Factor Analyses of Coworker Support Scale Across Six Coworkers (N= 364)*

Model	$\chi^2$	<i>df</i>	CFI	AIC	RMSEA	90% CI for RMSEA
A: Coworker support (Coworker 1)	69.29	9	0.97	51.29	0.14	0.10 – 0.17
B: Coworker support (Coworker 2)	34.62	9	0.99	16.62	0.09	0.06 – 0.12
C: Coworker support (Coworker 3)	42.92	9	0.98	24.62	0.10	0.07 – 0.14
D: Coworker support (Coworker 4)	36.18	9	0.98	18.18	0.09	0.06 – 0.13
E: Coworker support (Coworker 5)	41.34	9	0.97	23.34	0.10	0.07 – 0.13
F: Coworker support (Coworker 6)	34.94	9	0.98	16.94	0.09	0.06 – 0.13

*Note.*  $\chi^2$  = Chi-square; *df* = degrees of freedom; CFI = comparative fit index; AIC = Akaike information criterion; RMSEA = root mean square error of approximation. 90% CI RMSEA = 90% confidence interval for RMSEA

Table 4

*Fit Indices for Measurement Models (N= 364)*

Model	$\chi^2$	<i>df</i>	CFI	AIC	RMSEA	90% CI for RMSEA	$\Delta \chi^2$
A: Leader relationship quality (6 item scale)	73.07	9	0.93	55.07	0.14	0.11–0.17	
B: Leader relationship quality (5 item scale)	48.13	5	0.96	38.13	0.15	0.11-0.19	
C: Leader social support as 1-factor	38.85	9	0.98	20.85	0.09	0.06-0.12	
D: Need for relatedness satisfaction as 1-factor	7.01	1	0.98	5.73	0.13	0.05-0.23	
E: Engagement as 1-factor	1399.19	135	0.63	1129.18	0.16	0.15-0.17	
F: Engagement as 3-factors	350.29	135	0.94	80.29	0.07	0.05-0.08	
G: Engagement as higher-order factor (with 3 lower-order factors)	337.69	133	0.94	71.69	0.07	0.06-0.07	12.6** (from F)
H: Positive affectivity as 1-factor (10 items)	174.40	35	0.90	104.40	0.11	0.09-0.13	
J: Positive affectivity as 1-factor (8 items)	64.92	20	0.97	24.92	0.07	0.05-0.10	
J: Generalized-self efficacy as 1-factor	55.95	20	0.94	15.95	0.07	0.05-0.09	
L: Overall measurement model (7 factors)	894.26	496	0.94	-27.74	0.05	0.05-0.06	

*Note.*  $\chi^2$  = Chi-square; *df* = degrees of freedom; CFI = comparative fit index; AIC = Akaike information criterion; RMSEA = root mean square error of approximation. 90% CI RMSEA = 90% confidence interval for RMSEA;  $\Delta \chi^2$  = chi squared difference test;

\*  $p < .05$ , \*\*  $p < .01$

Table 5

*Correlations of Final Variables (N=364)*

Variable	1	2	3	4	5	6	7
1. Coworker Relationship Quality (composite)	--						
2. Coworker Social Support (composite)	0.54**						
3. Leader Relationship Quality	0.30**	0.23**					
4. Leader Social Support	0.16**	0.29**	0.73**				
5. Need for relatedness satisfaction	0.56**	0.37**	0.28**	0.20**			
6. Employee engagement	0.28**	0.18**	0.22**	0.19**	0.25**		
7. Positive affectivity	0.23**	0.14*	0.17**	0.14**	0.24**	0.60**	
8. Generalized self-efficacy	0.24**	0.14**	0.09	0.12*	0.27**	0.44**	0.12*

*Note.* \* $p < .05$ , \*\* $p < 0.01$ .

Table 6

*Comparison of Fit Indices of Full Hypothesized Model and Alternative Models (N = 364)*

Model	$\chi^2$	<i>df</i>	CFI	AIC	RMSEA	90% CI for RMSEA	$\Delta \chi^2$
A: Full model	2062.18	1166	0.92	-269.81	0.05	0.04 – 0.05	
B: Revised full model	2057.08	1165	0.92	-272.92	0.05	0.04 – 0.05	5.10* (compared to model A)
C: Alternative model (step 1)	2283.84	1122	0.89	39.84	0.05	0.05 – 0.06	
D: Alternative model (step 2)	2175.43	1074	0.89	27.43	0.05	0.05 – 0.06	
E: Alternative model (step 3)	2277.46	1120	0.89	37.46	0.05	0.05 – 0.06	

*Note.*  $\chi^2$  = Chi-square; *df* = degrees of freedom; CFI = comparative fit index; AIC = Akaike information criterion; RMSEA = root

mean square error of approximation. 90% CI RMSEA = 90% confidence interval for RMSEA;  $\Delta \chi^2$  = chi-square difference test;

\*  $p < .05$ , \*\*  $p < .01$

Table 7

*Relative Weight Analysis for Predicting Employee Engagement (N = 364)*

Variables	Raw Weight	Rescaled (% $R^2$ )	95 % CI for Raw Weights
Coworker Relationship Quality	0.05	52.37	0.019 – 0.101
Leader Relationship Quality	0.02	22.03	0.002 – 0.048
Leader Support	0.02	14.95	0.004 – 0.053
Coworker Support	0.01	10.64	0.003 – 0.032

*Note.* Total  $R^2 = 0.10$ ; Raw weights sum to  $R^2$ ; Rescaled weights sum to 100%; CRQ = coworker relationship quality; LRQ = leader relationship quality.

Table 8

*Intercorrelations Among Coworker Ratings for Coworker Relationship Quality with Engagement and Need for Relatedness Satisfaction (N=335-364)*

Variable	1	2	3	4	5	6	7	8
1. Coworker Relationship Quality – Coworker 1	--							
2. Coworker Relationship Quality – Coworker 2	0.44**	--						
3. Coworker Relationship Quality – Coworker 3	0.43**	0.39**	--					
4. Coworker Relationship Quality – Coworker 4	0.08	0.04	0.13*	--				
5. Coworker Relationship Quality – Coworker 5	0.18**	0.08	0.16**	0.57**	--			
6. Coworker Relationship Quality – Coworker 6	0.15**	0.10	0.12*	0.37**	0.47**	--		
7. Coworker Relationship Quality (Composite)	0.65**	0.58**	0.64**	0.57**	0.65**	0.59**	--	
8. Employee Engagement	0.16**	0.20**	0.17**	0.18**	0.20**	0.16**	0.28**	--
9. Need for Relatedness Satisfaction	0.37**	0.32**	0.33**	0.30**	0.38**	0.35**	0.56**	0.25**

*Note.* Sample size for each correlation reported above varied, depending on how many coworkers were listed;  $N = 335 - 364$ ;

\* $p < .05$ , \*\* $p < 0.01$ .

Table 9

*Intercorrelations Among Coworker Ratings for Coworker Support with Engagement and Need for Relatedness Satisfaction (N=335-364)*

Variable	1	2	3	4	5	6	7	8
1. Coworker Support – Coworker 1	--							
2. Coworker Support – Coworker 2	0.41**	--						
3. Coworker Support – Coworker 3	0.41**	0.37**	--					
4. Coworker Support – Coworker 4	0.07	0.17*	0.14**	--				
5. Coworker Support – Coworker 5	0.16**	0.19**	0.18**	0.43**	--			
6. Coworker Support – Coworker 6	0.14**	0.14*	0.21**	0.38**	0.48**	--		
7. Coworker Support (Composite)	0.61**	0.63**	0.65**	0.59**	0.65**	0.64**	--	
8. Employee Engagement	0.13*	0.14**	0.05	0.15**	0.11*	0.10	0.28**	--
9. Need for Relatedness Satisfaction	0.28**	0.23**	0.20**	0.19**	0.26**	0.20**	0.56**	0.25**

*Note.* Sample size for each correlation reported above varied, depending on how many coworkers were listed; N= 335 – 364;

\* $p < .05$ , \*\* $p < 0.01$ .

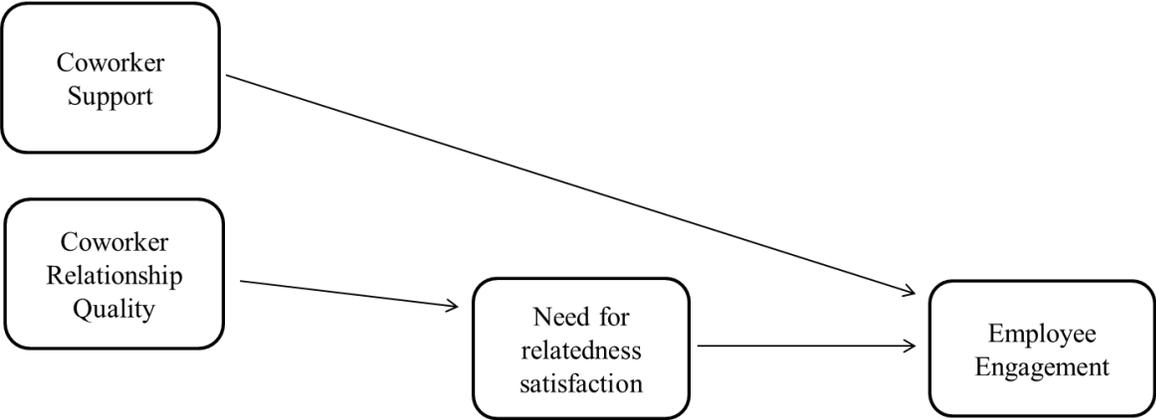
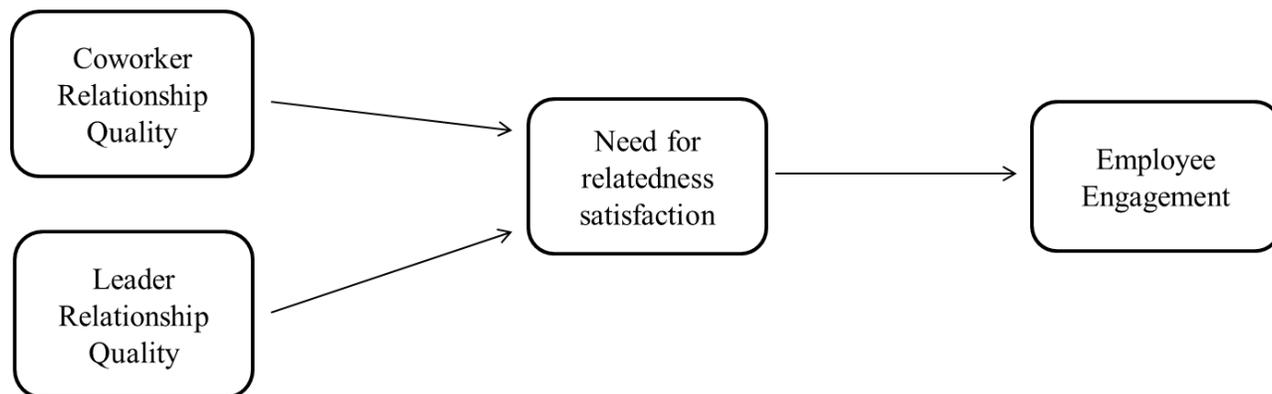
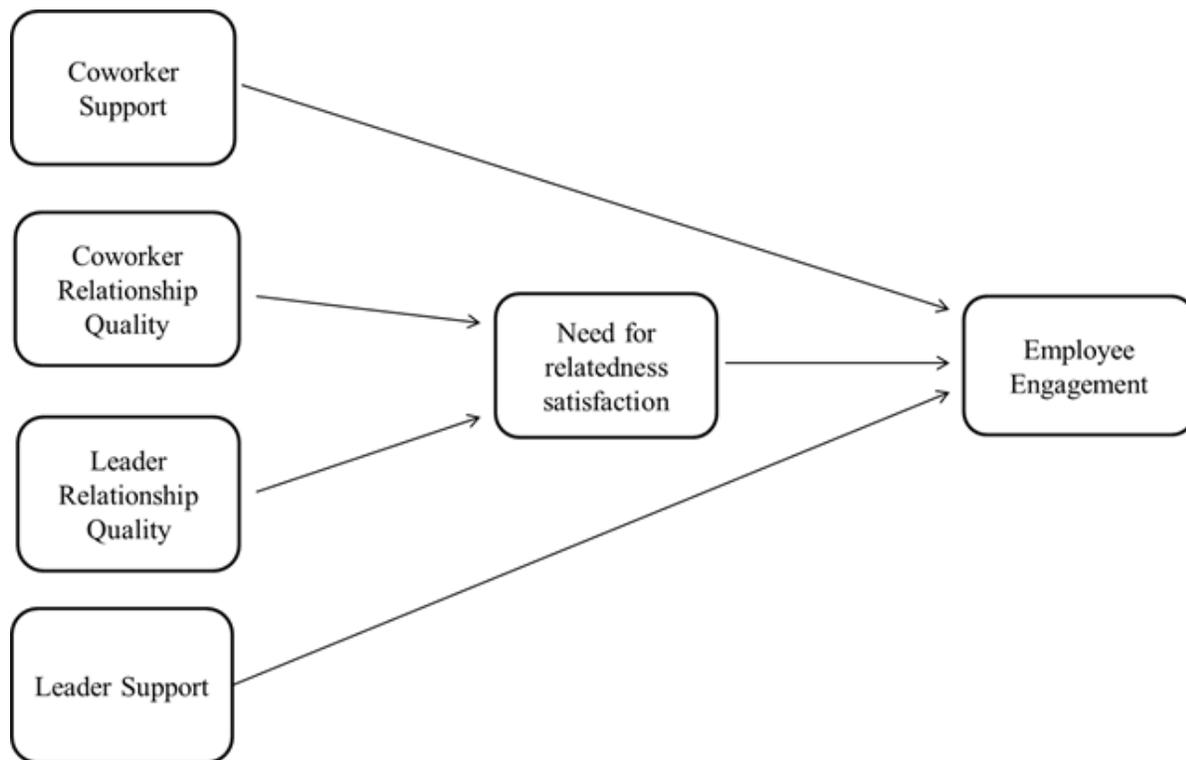


Figure 1. Coworker variables with need for relatedness satisfaction and employee engagement.



*Figure 2.* Relationship quality variables with need for relatedness satisfaction and employee engagement.



*Figure 3.* Full hypothesized model of the relational context of employee engagement.



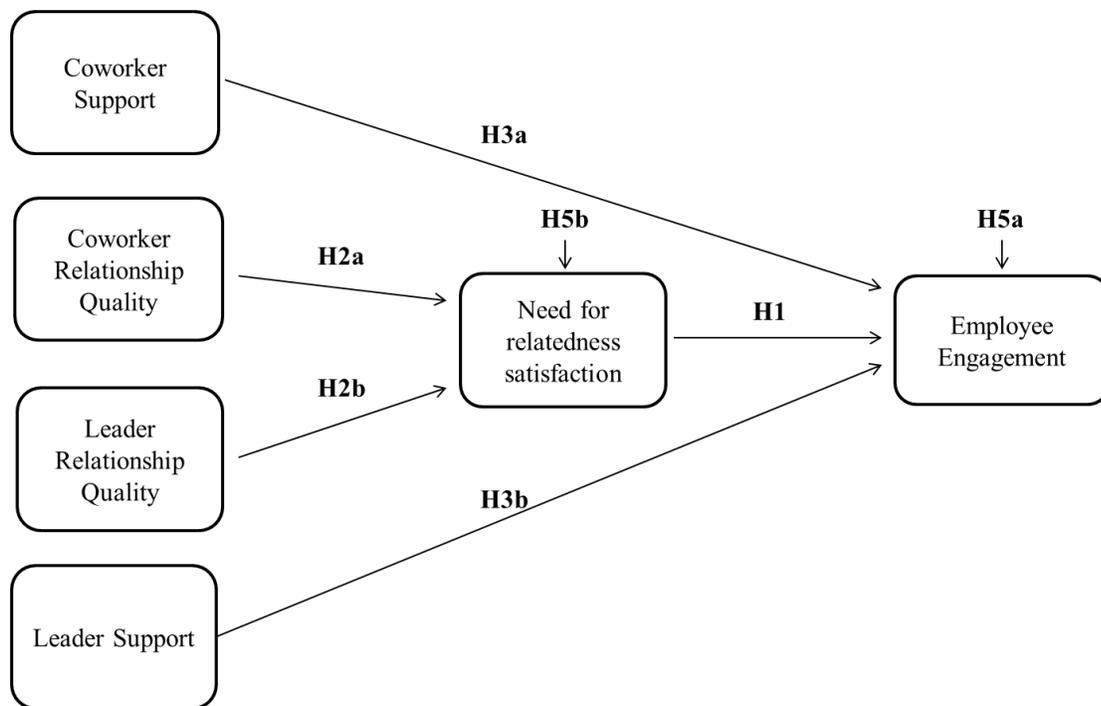


Figure 5. Full hypothesized model with hypotheses labeled.

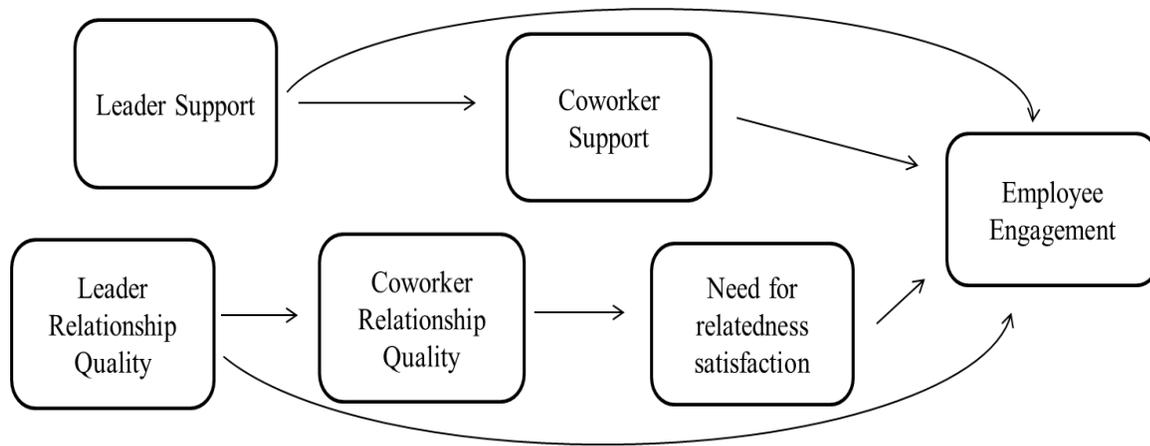


Figure 6. Alternative model.

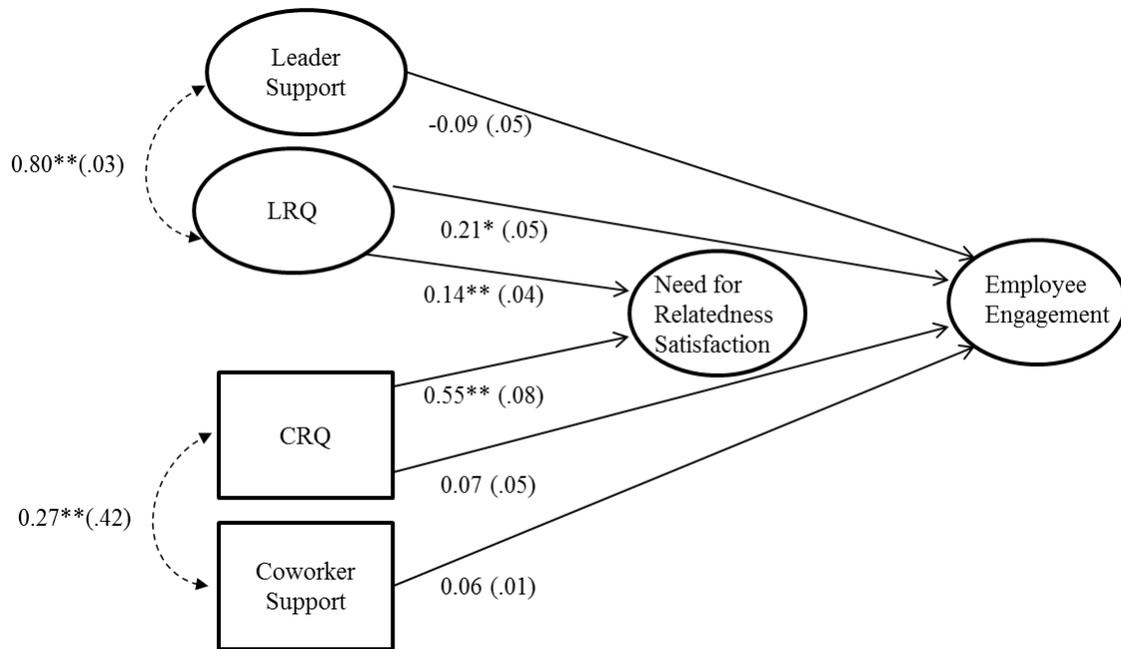


Figure 7. Structural Hypothesized Model with Standardized Direct Effect Paths

Note. LRQ = leader relationship quality; CRQ = coworker relationship quality; Solid lines represent hypothesized relationships; Dotted lines represent covariances; Standard errors in parentheses.  $*p < .05$ ,  $**p < .01$

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## APPENDIX

### **Coworker Relationship Quality (Friendship Prevalence; Nielsen, Jex & Adams, 2000)**

Please rate the extent to which you agree with each of the following statements about [insert alter]...

1 = strongly disagree; 2 = disagree; 3 = neither agree nor disagree; 4 = agree; 5 = strongly agree

1. I have formed a strong friendship with this person.
2. I socialize with this person outside the workplace.
3. I can confide in this person at work.
4. I feel I can trust this person a great deal.
5. Being able to see this person is one reason I look forward to my job.
6. I do not feel this person I work with is a true friend.

### **Coworker Support (Tews, Michael, & Ellingson, 2013)**

Please answer the following questions about [insert alter].

1 = strongly disagree; 2 = disagree; 3 = neither agree nor disagree; 4 = agree; 5 = strongly agree

1. This person assists me with heavy workloads.
2. This person goes out of his/her way to help me with work-related problems.
3. This person helps me when things get demanding.
4. This person helps me when I'm running behind my in work.
5. This person helps me with difficult assignments, even when I don't directly request assistance.
6. This person helps me get the resources I need to do my job.

### **Demographic Coworker Questions**

1. How long have you worked with this coworker (i.e., in general, not just in your current job)?
  - a. Less than 6 months
  - b. Between 6 months – 1 year
  - c. Between 1 – 5 years
  - d. Between 6 – 10 years
  - e. More than 10 years
2. Is your relationship with this coworker?
  - a. Mostly face-to-face (you interact with this person face-to-face more than 50% of the time)

- b. Mostly virtual (you interact with this person by electronic methods more than 50% of the time)
- c. A combination of face-to-face and virtual (equal amounts of face-to-face and virtual interactions)

**Leader Relationship Quality (Friendship Prevalence; Nielsen, Jex & Adams, 2000)**

Please rate the extent to which you agree with each of the following statements about your immediate supervisor. If you have more than one immediate supervisor, please answer all of the following questions in regards to the supervisor whom you interact with most frequently.

1 = strongly disagree; 2 = disagree; 3 = neither agree nor disagree; 4 = agree; 5 = strongly agree

- 1. I have formed a strong friendship with my supervisor.
- 2. I socialize with my supervisor outside the workplace.
- 3. I can confide in my supervisor at work.
- 4. I feel I can trust my supervisor a great deal.
- 5. Being able to see my supervisor is one reason I look forward to my job.
- 6. I do not feel my supervisor is a true friend.

**Leader Social Support (Tews, Michael, & Ellingson, 2013)**

Please answer the following questions about your supervisor.

1 = strongly disagree; 2 = disagree; 3 = neither agree nor disagree; 4 = agree; 5 = strongly agree

- 2. My supervisor assists me with heavy workloads.
- 7. My supervisor goes out of his/her way to help me with work-related problems.
- 8. My supervisor helps me when things get demanding.
- 9. My supervisor helps me when I'm running behind my in work.
- 10. My supervisor helps me with difficult assignments, even when I don't directly request assistance.
- 11. My supervisor helps me get the resources I need to do my job.

**Demographic Leader Questions**

- 1. How long have you worked with this supervisor?
  - a. Less than 6 months
  - b. Between 6 months but less than 1 year
  - c. Between 1 – 5 years
  - d. Between 6 – 10 years
  - e. More than 10 years

**Need for Relatedness Satisfaction (Sheldon, Elliot, Kim, & Kasser, 2001)**

Considering only the experiences you have at work, please rate the degree to which you agree with each of the following statements:

1 = strongly disagree; 2 = disagree; 3 = neither agree nor disagree; 4 = agree; 5 = strongly agree

1. I feel a sense of contact with people who care for me, and whom I care for.
2. I feel close and connected with other people who are important to me.
3. I feel a strong sense of intimacy with the people I spend time with.

### **Employee Engagement (Rich, LePine, & Crawford, 2010)**

Below are a number of statements regarding how you invest your energies at work. Read each statement carefully. Then, indicate your level of agreement with each statement using the following scale:

1 = strongly disagree; 2 = disagree; 3 = neither agree nor disagree; 4 = agree; 5 = strongly agree

1. I work with intensity on my job. (physical)
2. I exert my full effort to my job. (physical)
3. I devote a lot of energy to my job. (physical)
4. I try my hardest to perform well on my job. (physical)
5. I strive as hard as I can to complete my job. (physical)
6. I exert a lot of energy on my job. (physical)
7. I am enthusiastic about my job. (emotional)
8. I feel energetic about my job. (emotional)
9. I am interested in my job. (emotional)
10. I am proud of my job. (emotional)
11. I feel positive about my job. (emotional)
12. I am excited about my job. (emotional)
13. At work, my mind is focused on my job. (cognitive)
14. At work, I pay a lot of attention to my job. (cognitive)
15. At work, I concentrate on my job. (cognitive)
16. At work, I focus a great deal of attention on my job. (cognitive)
17. At work, I am absorbed in my job. (cognitive)
18. At work, I devote a lot of attention to my job. (cognitive)

### **Social Desirability (SDS-17R; Stober, 2001)**

Below you will find a list of statements. Please read each statement carefully and decide if that statement describes you or not. If it describes you, select "True"; if not, select "False."

1. I sometimes litter.
2. I always admit my mistakes openly and face the potential negative consequences.
3. In traffic I am always polite and considerate of others.
4. I always accept others' opinions, even when they don't agree with my own.
5. I take out my bad moods on others now and then.

6. There has been an occasion when I took advantage of someone else.
7. In conversations I always listen attentively and let others finish their sentences.
8. I never hesitate to help someone in case of emergency.
9. When I have made a promise, I keep it--no ifs, ands or buts.
10. I occasionally speak badly of others behind their back.
11. I would never live off other people.
12. I always stay friendly and courteous with other people, even when I am stressed out.
13. During arguments I always stay objective and matter-of-fact.
14. There has been at least one occasion when I failed to return an item that I borrowed.
15. I always eat a healthy diet.
16. Sometimes I only help because I expect something in return.

**Positive and Negative Affectivity (Positive and Negative Affect Schedule; Watson, Clark, & Tellegen, 1987)**

The following scale consists of a number of words that describe different feelings and emotions. Read each item and then mark the appropriate number in the space next to that word. Indicate to what extent you generally feel this way, that is, how you feel on the average. Use the following scale to record your answers.

1 = very slightly or not at all; 2 = a little; 3 = moderately; 4 = quite a bit; 5 = extremely

1. Interested
2. Distressed
3. Excited
4. Upset
5. Strong
6. Guilty
7. Scared
8. Hostile
9. Enthusiastic
10. Proud
11. Irritable
12. Alert
13. Ashamed
14. Inspired
15. Nervous
16. Determined
17. Attentive
18. Jittery
19. Active
20. Afraid

**Generalized Self-Efficacy (Chen, Gully, & Eden, 2001)**

The following statements reflect beliefs about work and accomplishing work tasks. Please indicate the degree to which you feel each statement reflects your beliefs about work.

1 = strongly disagree; 2 = disagree; 3 = neither agree nor disagree; 4 = agree; 5 = strongly agree

1. I will be able to achieve most of the goals that I have set for myself.
2. When facing difficult tasks, I am certain that I will accomplish them.
3. In general, I think that I can obtain outcomes that are important to me.
4. I believe I can succeed at most any endeavor to which I set my mind.
5. I will be able to successfully overcome many challenges.
6. I am confident that I can perform effectively on many different tasks.
7. Compared to other people, I can do most tasks very well.
8. Even when things are tough, I can perform quite well.

### **Demographic Variables**

1. In what year were you born? (years range from 1928-1996)
2. Gender (M/F)
3. Race
  - a. Hispanic or Latino
  - b. White
  - c. Black or African American
  - d. Native Hawaiian or other Pacific Islander
  - e. Asian
  - f. American Indian or Alaska Native
  - g. Two or more races
4. Approximate number of employees in your company:
  - a. 25 or less
  - b. 26-100
  - c. 101-500
  - d. 500 or more
  - e. Not sure
5. What industry best describes your company?
  - a. Agriculture, Forestry, Fishing and Hunting
  - b. Mining
  - c. Utilities
  - d. Construction
  - e. Manufacturing
  - f. Wholesale Trade
  - g. Retail Trade
  - h. Transportation and Warehousing

- i. Information
  - j. Finance and Insurance
  - k. Real Estate and Rental and Leasing
  - l. Professional, Scientific, and Technical Services
  - m. Management of Companies and Enterprises
  - n. Administrative and Support and Waste Management and Remediation Services
  - o. Education Services
  - p. Health Care and Social Assistance
  - q. Arts, Entertainment, and Recreation
  - r. Accommodation and Food Services
  - s. Other Services (except Public Administration)
  - t. Public Administration
  - u. Other
6. Which of the following best describes your level within your organization?
- a. Owner/Partner
  - b. Upper management
  - c. Mid-level management
  - d. First-line management
  - e. Non-management supervisor
  - f. Non-managerial with no supervisory responsibilities
  - g. Other
7. Are you...
- a. Part-time (at least 20 hrs/wk but less than 40 hrs/wk)
  - b. Full-time (at least 40 hrs/wk)
8. What is your tenure in years...
- a. With your company
  - b. In your current job
9. What is the highest degree or level of school you have completed? *If currently enrolled, highest degree received.*
- a. Some high school, no diploma
  - b. High school graduate, diploma or the equivalent (for example: GED)
  - c. Some college credit, no degree
  - d. Associate degree or trade/technical/vocational training
  - e. Bachelor's degree
  - f. Master's degree
  - g. Professional or Doctorate degree