Psychological Climate for Engagement and the Role of Leader Behavior Patterns in Fostering Employee Engagement and Performance Behaviors

Curtis Theodore Walker Jr., M.A.

University of Connecticut, 2011

Abstract

The current research highlighted the roles of psychological climate for engagement and leader behavior patterns as drivers of employee engagement. Additionally, results emphasized the function of leader behavior patterns in fostering engagement and managing task and contextual (i.e., non-work related) performance behaviors. Building on foundational research that substantiates a link between engagement and performance, the current research focused on motivational processes that precede individual-level engagement.

There were two primary objectives of this research project. The first was to model the process through which individual experiences of employee engagement transmit the influence of psychological climate perceptions of engagement and leader behavior patterns on task and contextual performance behaviors. The second was to define the nature of leader behavior patterns in fostering employee engagement among organizational members.

A multilevel design, the research model included self-report measures of individual and aggregate level variables. Psychological climate for engagement, employee attitudes about work, and task and contextual performance behaviors represented individual level variables. Aggregate level variables included collective assessments of workgroup members' perceptions of leader engagement and transformational and transactional leadership styles.

A social network analysis strategy and interviews with union representatives and the executive committee defined clusters of individuals who worked interdependently and shared common work goals (i.e., workgroups). A multilevel modeling procedure, hierarchical linear modeling, accounted for relationships between the aggregate and individual levels across organizational data.

Results indicate that employee engagement serves as a robust mediator of the effects of psychological climate for engagement on contextual performance behaviors directed at fellow employees. Psychological climate for engagement is also a chief, direct predictor of respondent reports of task performance. Leader behavior patterns, specifically, leader engagement and transformational leadership, serve as predictors of task performance. Results indicate transformational leadership influences reports of contextual performance behaviors directed at fellow employees, albeit, negatively. Employee engagement is a significant predictor of both forms of contextual performance (employee and organization-directed). Results suggest that the motivational process, through which engagement manifests itself, includes components of the social work environment. Discussions include implications of these results, suggestions for future research, and promising intervention strategies.

PSYCHOLOGICAL CLIMATE FOR ENGAGEMENT AND THE ROLE OF LEADER BEHAVIOR PATTERNS IN FOSTERING EMPLOYEE ENGAGEMENT AND PERFORMANCE BEHAVIORS

BY

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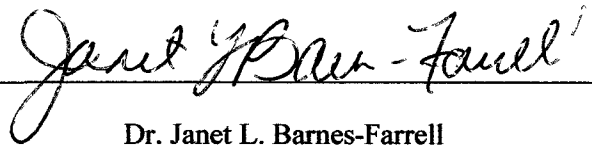
Major Advisor 

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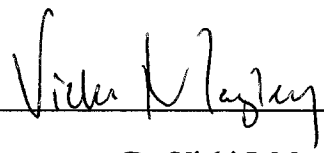
Associate Advisor 

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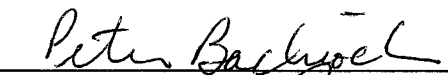
Associate Advisor 

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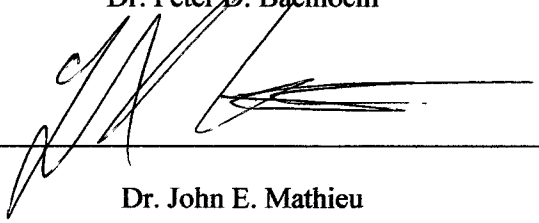
Associate Advisor 

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to come. Thank you, God for such a wonderful life mate. Chapter 3: Your voice does reach me. Your touch does soothe me. Your silent and raucous cheers do such a great job of pumping me up. You make me take breaks, have stretches, and eat meals, even when I'd rather not. Without you, I'd likely wither away and/or grow moss on my head from stagnation. Yes, I know, I would forget the natural things in life, and be consumed by what is right in front of me, if I didn't have you to steer my attention to bigger and better things. And that's how I'm here now. Acknowledging how I got over, how I got through, and how God made a way for me to see the end of this journey. Thank you.

In response to numerous challenges posed by an unpredictable global economy, organizations are searching for ways to remain viable with limited access to resources. One intervention strategy that has been effective in achieving optimal functioning is fostering positive employee motivations and performance behaviors. Organizations are increasingly acknowledging that employees are their greatest asset, contributing unique talents and skills in order to achieve organizational goals when their human and intellectual potential is leveraged. Furthermore, investments into human psychological capacities are vital to organizational growth and, in result, are seen as worthwhile ventures. Acknowledged as a top priority among business leaders in recent years (Avery, McKay, & Wilson, 2007; Trahant, 2009), fostering employee engagement in the workforce has been emphasized as one driver of sustainability. Organizational characteristics such as leadership and strategic human resource management have also been shown to positively reinforce employee motivations and well-being (Baptiste, 2008; Gilbreath & Benson, 2004). Employee engagement -- a persistent, positive, fulfilling, affective-motivational state of work related well-being -- has been associated with a number of beneficial outcomes (e.g., customer satisfaction, productivity, organizational citizenship behaviors; Harter, Schmidt, & Hayes, 2002; Salanova, Agut, & Piero, 2005; Schaufeli, Salanova, Gonzalez-Roma, & Bakker, 2002b; Schaufeli, Taris, & Bakker, 2006). Though engagement is not a panacea for all that ails today's organizations, research does show support for implementing engagement strategies to help organizations achieve effectiveness and provide opportunities for employees to experience personal and career development (Luthans & Peterson, 2002).

In order to carry out a successful employee engagement strategy it is first necessary to understand how factors such as organizational characteristics influence the engagement process. To sustain change at one organizational level it has to occur within and be supported by individuals at higher levels throughout the organization (Goldstein & Sorcher, 1974). Organizational change efforts, therefore, should include assessments at multiple levels of an organizational hierarchy (e.g., assessing leader engagement). Research currently provides

guidance for establishing more definitive antecedents of engagement and the processes that augment it (Saks, 2006). Also, where previous research referred to engagement as an individual perception of work well-being, recent interpretations expand its scope to encompass psychological perceptions of its value in the work context among interdependent workgroup members (i.e., 'climate' perceptions; Harter, Schmidt, & Killham, 2003; Salanova, Agut, & Peiró, 2005; Salanova, Llorens, Cifre, Martinez, & Schaufeli, 2003). Nonetheless, whereas creative means to interpret, measure, and implement engagement are flourishing in the business realm, scholarly inquiry is lagging (Macey & Schneider, 2008). These gaps in research indicate a need for additional empirical support to inform engagement development strategies. One objective of the present research project is to model the process through which individual experiences of employee engagement might transmit the influence of psychological climate perceptions of engagement and leader behavior patterns on task and contextual performance behaviors. A second objective is to define the nature of leader behavior patterns in fostering employee engagement among organizational members.

At the core of employee engagement is the notion of 'unlocking the hidden potential' of each employee so they are best equipped to effectively address the challenges of both today's and tomorrow's jobs (Gebauer & Lowman, 2008). The focal point of engagement is centered on developing positive characteristics that encourage continuous improvement and elevate the standard of performance to greater heights of achievement. Engaged employees are able to generate, accumulate, and use personal and job resources that non-engaged employees do not (Haudan & McLean, 2002; Macey & Schneider, 2008). Engaged employees are more likely to be high performers who exceed performance expectations and adapt in the face of difficulty and impending organizational change (Trahant, 2009). Simply by looking in any recent reputable business publication one could find examples of how companies with engaged employees outperform their competitors (e.g., Haudan & McLean, 2002; Welbourne, 2007). For example, Watson Wyatt conducted the 2008-2009 WorkUSA survey which indicated that allocating

resources to enhance engagement experiences can increase organizational performance (Trahant, 2009). Results of the WorkUSA survey suggested that by augmenting employee engagement levels, companies can expect to reap the benefits of significant financial performance and productivity improvements. Practical evidence has long spoken to the potential of creating positive work environments in order to affect change in employee behavior and help employees address demands of challenging work scenarios (Harter, Schmidt, & Hayes, 2002; Swindall, 2007). Consequently, greater attention has focused on deriving substantial benefits by increasing positive attitudes rather than minimizing the frequency of negative experiences (Bakker, Schaufeli, Leiter, & Taris, 2008; Saks, 2006).

In support of the emphasis on positive work experiences, recent health and organizational behavior (OB) research has shifted toward the promotion of positive psychology and positive organizational scholarship. Positive psychology involves developing research theories, models and intervention strategies that encourage positive worker experiences, individual traits, and institutions (Bakker & Schaufeli, 2008; Seligman & Csikszentmihalyi, 2000). This is a departure from research conducted within the last two decades that has placed dysfunctional syndromes (e.g., burnout), health impairment (e.g., stress-strain relationship) and deterioration (e.g., disengagement and withdrawal) research models at the forefront of occupational health and organizational research (Demerouti, Bakker, Nachreiner, & Schaufeli, 2001). Positive psychology constructs such as subjective well-being (Diener, 2000), intrinsic motivation (Ryan & Deci, 2000), and optimism (Peterson, 2000) have attracted attention in applied settings because practitioners identify their potential to maximize employee performance while reducing costs associated with turnover. Positive organizational scholarship (POS) represents a theoretically driven framework in OB research that emphasizes the affirming role of the organizational context in influencing thriving among employees (Cameron, 2008; Cameron & Caza, 2004). The POS perspective highlights contextual and environmental conditions that promote human excellence and exemplary organizational performance (Cameron, 2008) and can serve as a foundational

model for intervention strategies. A burgeoning interest in positive psychology might help encourage greater acceptance of engagement as well as generate interest toward establishing viable theories and models that define its scope. Consequently, a deeper understanding of the process of engagement, through scholarly examination, can inform practical efforts taken to enhance employee well-being and organizational effectiveness.

As stated previously, there are several interpretations of engagement in the landscape of applied research and organizational change programs. For example, different strategies exist to evaluate engagement; so many, in fact, that assessment tools are often crafted to reflect the specific job characteristics and organizational contexts that are most relevant to a particular company. As a result, when the objective is to increase the number of employees who are engaged in their work roles, there are numerous approaches from which to choose. Empirical support for engagement, however, is lacking in relation to the level of interest that exists in applied settings. The sheer number of unique engagement models that share little continuity across organizational settings may contribute to this trend. Consequently, scholars have used several research models and scientific theories in order to better substantiate the extent to which engagement is applicable in general work settings. Recent research conducted to determine the breadth of the nomological network of engagement communicates three primary areas of inquiry. The first area of inquiry defines and measures the dimensions of engagement in relation to other notable work constructs such as job involvement, organizational commitment, and burnout (e.g., Harter, 2008). The second establishes outcomes of engagement that are relevant to specific contexts; for example, business-unit level outcomes such as productivity and employee retention (Harter, Schmidt, & Hayes, 2002; Harter, Schmidt, & Keyes, 2002; Harter, Schmidt, & Killham, 2003). The third, identifies potential drivers of engagement; for example, environmental work conditions and individual difference variables (coworker and supervisory support, organizational climate, self-efficacy; Hirschfeld, Thomas, & McNatt, 2008; May, Gilson, & Harter, 2004). The objective of the current research study is to focus on the last of these three areas by drawing

attention to two subsets of potential drivers of individual experiences of engagement that should translate to enhanced performance behaviors. Specifically, the aim is to examine the roles of perceptions of a climate for engagement and leader behavior patterns in fostering the engagement process.

Research conceptualizations of engagement

There are two primary research streams of engagement, which employ different conceptualizations to account for its role in influencing well-being. Kahn (1990), who used descriptive theory techniques grounded in behaviors, experiences, and perceptions, originally articulated the first approach. In his seminal research, Kahn (1990; 1992) proposed a model of engagement that centered on experiences of well-being and 'psychological presence' in the workplace. Kahn (1990) conceptualized engagement as a total immersion of oneself (physically, cognitively, and emotionally) in one's work roles. Kahn described engagement as an experiential state, which enabled employees to draw deeply on their personal selves in role performances in order to address the challenges inherent in their work roles (Kahn, 1992). "To be fully there", as stated by Kahn, meant that

> the organizational member's true self was being harnessed to their work roles and their reserves of energy were being used effectively in order to achieve personal and professional goals (Kahn, 1992, p.321).

In this state of engagement, people could employ their personal energies in role behaviors (self-employment) and express their true selves within the work role (self-expression; Kahn, 1990). Kahn (1990) conducted interviews with summer camp counselors and employees of an architecture firm that examined experiences of engagement at work. Based on the results of these interviews, Kahn (1990) established that certain conditions (meaningfulness, safety, and availability) prompted the manifestation of engagement. According to the framework of the job characteristics model (Hackman & Oldham, 1980), meaningfulness represents the value that is placed on work goals in relation to an individual's own ideals and standards (May, Gilson, & Harter, 2004). Safety reflects the freedom to show and employ the self without fear of

diminishing one's self-image, status or career (Kahn, 1990). Lastly, availability reflects an individual's belief in the accessibility of valued resources (emotional, physical and cognitive; Kahn, 1990). Together, these three psychological conditions influence the degree to which an individual expressed engagement in his/her work role (May, Gilson, & Harter, 2004). In Kahn's model, the state of engagement is the primary component that enhances well-being in work experiences.

The second research movement focuses on a likely relationship between engagement and two negative outcomes, burnout and disengagement. Burnout is the dysfunctional syndrome prompted by chronic exposure to job stressors, which some researchers suggest is diametrically opposed to engagement (Maslach & Leiter, 2008). Burnout is the depletion of resources, both personal and job related, in the presence of mounting job demands. Measures of burnout have used various tools that consist of a constellation of dimensions, which at the core, describe a state of reduced emotional and physical energy. The dimensions most often referred to in burnout research are emotional exhaustion, depersonalization (cynicism) and reduced personal accomplishments (inefficacy; Maslach Burnout Inventory; Maslach & Jackson, 1984), physical fatigue and cognitive weariness (Shirom-Melamed Burnout Measure; Shirom, 1989; 2003), and exhaustion and disengagement (Oldenburg Burnout Inventory; Demerouti et al., 2001; Shirom, 2005). The most widely used form of measurement, the Maslach Burnout Inventory, assesses engagement by reversing the valence of burnout (Maslach, Schaufeli, & Leiter, 2001). According to Maslach's conceptualization of burnout, the experience of engagement hinges on the presence or absence of feelings of burnout.

Similar to burnout, disengagement describes a negative state of well-being, in which individuals respond to their work roles through withdrawal and distancing behaviors (Demerouti et al., 2001). Whereas engagement represents integration with one's work roles, disengagement characterizes the devaluation of attachment to work (Kahn, 1990; Saks, 2006). Disengagement, being more than simply the absence of positive characteristics associated with engagement, is the

presence of negative factors that promote dysfunctional consequences. An employee who is disengaged becomes uncoupled from the work role, withdrawing both cognitively and emotionally. He or she becomes alienated and approaches their work role with a sense of automaticity reflected in the robotic fashion in which they complete work tasks (Hochschild, 1983; Luthans & Peterson, 2002). In addition to expressing unhappiness, disengaged employees can act out their frustration through behaviors that undermine the achievements of their engaged counterparts (Bakker, Demerouti, & Verbeke, 2004; Bates, 2004; Johnson, 2004; Kowalski, 2003).

Although researchers have identified a relationship between engagement and its negative correlates, burnout and disengagement, they are not direct opposites. Non-engagement, instead, characterizes the state at which engagement is nonexistent. Non-engaged employees do not contribute or seek to add value to their work environments and exhibit low levels of engaged behaviors. Non-engagement, therefore, denotes the opposite orientation of engagement, or a state of inactivity. Conversely, burnout and disengagement both describe forms of activity, each a negative state of well-being (Macey & Schneider, 2008).

Researchers have conducted extensive empirical research in order to decipher the relationships among engagement, non-engagement, disengagement and burnout (Demerouti, Bakker, Vardakou, & Kantas, 2003; Demerouti, Verbeke, & Bakker, 2005; Gonzalez-Roma, Schaufeli, Bakker, & Lloret, 2006; Halbesleben & Demerouti, 2005; Langelaan, Bakker, van Doornen, & Schaufeli, 2006). Separate research models of engagement consistently posit both disengagement and burnout as negatively related to engagement. Models that measure engagement as the direct opposite of burnout are, however, inappropriate because they attribute the same mechanisms to the presence of the negative states of burnout and disengagement to the absence of the positive state of engagement (Bakker & Schaufeli, 2008; Tetrick, 2002). Making the assumption without conceptualizing one state as empirically distinct from the other is a deficient strategy for construct measurement (Russell & Carroll, 1999; Tetrick, 2002). Therefore,

neither burnout nor disengagement represents the absence of engagement, but the presence of negative emotions that are associated with an abundance of job related stress factors and a lack of job support functions.

Another measurement tool, the Utrecht Work Engagement Scale, assesses engagement in its own right. However, it addresses burnout as a negative, yet not perfect, antithesis of engagement (Schaufeli & Bakker, 2004). Schaufeli and colleagues defined engagement as a positive, fulfilling, work-related state of mind that is typified by three factors: vigor (expending high levels of energy, effort, and mental resiliency), dedication (sense of significance, enthusiasm, pride, and challenge) and absorption (full concentration and engrossment in one's work; Schaufeli & Bakker, 2004). Proponents of the link between engagement and burnout have used the Job-Demands Resources model (JD-R), a comprehensive framework often applied to ascertain the role of resources in the process of engagement (Demerouti et al., 2001). Employing the JD-R model, researchers have established that engagement and burnout are related through the presence of job demands or absence of job resources. This relationship is evident through two distinct processes. The first is a health impairment process where burnout experiences mediate the effects of job demands on negative health outcomes. The second is a motivational process where engagement experiences mediate the effects of job resources on positive organizational outcomes and organizational commitment (Bakker & Schaufeli, 2008; Maslach, Schaufeli, & Leiter, 2001; Schaufeli & Bakker, 2004; Schaufeli, Bakker, & Salanova, 2006). In the JD-R model job resources are aspects of work (i.e., physical, psychological, social or organizational) that help one achieve work goals, reduce job demands and associated costs, and stimulate personal growth, learning, and development (Bakker & Demerouti, 2007; Bakker, Schaufeli, Leiter, & Taris, 2008; Schaufeli & Bakker, 2004). For example, interpersonal and social resources such as coworker and supervisory support and organizational resources such as job security and opportunities for professional development influence experiences of disengagement and feelings of personal efficacy (e.g., Demerouti et al., 2001). The motivational process

exhibited through the JD-R model provides additional support for the role of climate perceptions of engagement as a resource in promoting employee engagement. The current research study focuses on the function of interpersonal resources in this process of engagement.

Fostering individual perceptions of employee engagement

Climate perceptions in a work setting refer employee perceptions of support, prioritization, and value of organizational policies, practices, and procedures that are both formal and informal as communicated by organizational leaders (Reichers & Schneider, 1990; Schneider, 1990). Research on workplace climate, in recent years, has focused on modeling the processes through which perceptions of the work environment influence individual, group, and organizational behavior (e.g., Carr, Schmidt, Ford, & DeShon, 2003). Research centered on investigating psychosocial constructs in work settings show promise in establishing connections with employee performance, customer satisfaction, and loyalty. Recent examples in empirical research include safety climate (Zohar, 2002); service climate (Salanova, Agut, & Peiró, 2005) and involvement climate (Richardson & Vandenberg, 2005). These same lines of research also substantiate that perceptions of the work environment exist along different levels of specificity according to the target or referent of interest (e.g., individual, collective, group, or organization; Chan, 1998; Chen & Bliese, 2002). The choice among levels of specificity requires, in addition to other factors (e.g., interdependence), determining whether a perception is directed inwardly (i.e., the individual, alone, is the referent) or outwardly (the collective, group, or organization, including the individual, is the referent; Morgeson & Hofmann, 1999; Tse, Dasborough, & Ashkanasy, 2008). Perceptions of the work environment "originate within individuals" (Tse et al., 2008, p.191), yet, through increased interaction, communication, and exposure to similar work conditions, perceptions can become similar enough to converge and emerge with characteristics that are shared and interdependent (e.g., workgroup or organizational; Griffin & Mathieu, 1997; Kozlowski & Doherty, 1989; Ostroff & Bowen, 2000; Richardson & Vandenberg, 2005). Climate researchers distinguish between perceptions that converge to reflect a group-level

perception and those that do not converge (Glick, 1985; Griffin, Mathieu, & Jacobs, 2001; Griffin & Neal, 2000). Although both forms of perception focus outwardly, the former designates collective or shared workgroup perceptions, whereas the latter designates individual perceptions, which can differ among individuals within a group.

Current research identifies a constellation of potential drivers of employee engagement (Burke & Cooper, 2008; Maslach & Leiter, 2008). Reports suggest that, in addition to aspects of the job itself that foster positive, fulfilling attachments to one's work role (e.g., job autonomy), the most prominent drivers of engagement were relationships with other employees (Saks, 2006). Similar to other forms of climate that highlight the motivating potential of an emergent link among individuals, climate for engagement includes environmental conditions that promote the state of engagement and related engagement behaviors. Consequently, perceptions of contextual factors that support engagement can serve as a resource for encouraging individual perceptions. Therefore,

Hypothesis 1: *Psychological climate for engagement will be positively associated with individual employee engagement.*

Indirect effect of climate for engagement on performance behaviors

Although previous research suggests that an association between climate and individual perceptions exists (e.g., Zohar & Luria, 2003), there is also support for a relationship between both forms of perception and behaviors in the workplace, albeit as a primary driver or otherwise. Carr and colleagues (2003) suggested that organizational members first perceive and interpret their environment through workplace climate and then through individual perceptions, take action through a behavioral response. For example, in the field of safety research, safety climate perceptions precede individual perceptions of safety making employee perceptions a direct antecedent to safety performance behaviors (Zohar, 2002; Zohar & Luria, 2004). Thus, the effect of climate perceptions of engagement on behaviors is a distal effect, conveyed through a proximal

effect, in this case, individual perceptions. Although climate perceptions influence behaviors, individual perceptions have an immediate effect on performance behaviors.

Empirical research has demonstrated this link between employee engagement and performance behaviors repeatedly (Bakker & Bal, 2010; Bakker & Demerouti, 2007; Giervald & Bakker, 2005; Harter, Schmidt, & Hayes, 2002). Organizational researchers who have examined performance behaviors in the workplace have suggested that overall job performance encompasses at least two broad behavioral domains; task and contextual performance (Rotundo & Sackett, 2002; Sackett, 2002; Viswesvaran & Ones, 2000). The taxonomy of task performance behaviors includes various aspects of performing and completing tasks that are specific to a work role and contribute to the organization's technical core and effectiveness (e.g., job-specific task proficiency, written and oral communication, and demonstrating effort; Campbell, McCloy, Oppler, & Sager, 1993; Rotundo & Sackett, 2002). Research on contextual performance often includes a subset of interrelated behaviors that are labeled as organizational citizenship (e.g., altruism and civic virtue; Organ & Ryan, 1995; Smith, Organ, & Near, 1983), pro-social behaviors (Brief & Motowidlo, 1986; Moorman & Blakely, 1995), or extra-role behaviors (Borman & Motowidlo, 1997; Katz, 1964). These behaviors often describe interpersonal helping, sharing information, and speaking in support of and extending extra efforts to meet organizational objectives (e.g., Moorman & Blakely, 1995). Behaviors can be directed at either individuals (i.e., immediately benefiting other individuals) or the organization (i.e., benefiting the organization as a whole; Somech & Drach-Zahavy, 2004). The common thread among each of the separate designations of these positive behaviors is in how they are described as discretionary behaviors that, taken together, enhance organizational functioning and effectiveness (Rotundo & Sackett, 2002; Sackett, 2002).

Recent research has demonstrated the relationships between employee engagement and the separate domains of overall job performance. Harter and colleagues (2002) conducted a meta-analysis on the relationship between employee engagement and business unit level

outcomes and found that engagement was positively associated with productivity, profit, and customer satisfaction. Giervald and Bakker (2005) found a positive relationship between engagement and in-role and extra-role performance in secretaries. Additionally, engaged secretaries were given more responsibility over work tasks such as personnel pre-selection and website maintenance. Bakker, Demerouti, and Verbeke (2004) found that work colleagues of engaged employees gave them higher ratings on both in-role and extra-role performance. Bakker and Demerouti (2007) proposed a direct relationship between employee engagement and different dimensions of overall job performance including in-role and extra-role performance in their JD-R model of engagement. Empirical research supports this proposal, finding that engagement triggers the production of more job and personal resources, which can increase the potential to enhance one's future performance and proactive behavior (Saks, 2006; Sonnentag, 2003).

Engagement is associated with active participation in one's work roles. The level of energy and personal meaning that engaged employees derive from enacting their work role can consistently induce positive work habits. Active engagement, therefore, promotes useful work (e.g., productivity) and discretionary behaviors (e.g., contextual behaviors) that support the optimal functioning of the organization. When engagement is low, an emotional connection to work diminishes and negative attitudes toward one's work role can limit the expression of discretionary behaviors and positive work habits (Bennett & Robinson, 2000; Demerouti et al., 2001; Martinko, Gundlach, & Douglas, 2002). Enhanced engagement, therefore, should be a catalyst for productive behaviors.

Hypothesis 2a-c: *Individual employee engagement will be positively associated with (a) task performance behaviors, (b) employee-directed contextual performance behaviors, and (c) organization-directed contextual performance behaviors.*

Climate perceptions can influence the expectations and acceptance of behaviors among workgroup members (Blader & Tyler, 2009; Campbell, Dunnette, Lawler, & Weick, 1970; Erhart & Naumann, 2004; Tyler & Blader, 2003). Given the distal influence of climate perceptions on

behaviors, the indirect effect of climate for engagement on individual performance behaviors will be transmitted through individual perceptions of employee engagement. Therefore,

Hypothesis 3a-c: *The effect of psychological climate for engagement on (a) task performance behaviors, (b) employee-directed contextual performance behaviors, and (c) organization-directed contextual performance behaviors will be mediated by individual employee engagement.*

Leader behavior patterns as a social influence on engagement

Climate perceptions refer to a number of different conditions (e.g., on-boarding procedures) and resources (e.g., access to relevant information) present in the environment. Perceptions about a single target (e.g., business client or supervisor) can also support engagement experiences. Bakker and colleagues (2007) have consistently found support for the role of supervisory support as a predictor of individual employee engagement (Bakker & Demerouti, 2007; Bakker, Hakanen, Demerouti, & Xanthopoulou, 2007; Burke & Cooper, 2008; Saks, 2006). Two theoretical rationales, social exchange theory (Blau, 1964; Saks, 2006) and social learning theory (Bandura, 1977) add credence to these recurring relationships. Social exchange theory (SET) suggests that individuals develop socio-emotional resources such as trust, loyalty, and tangible benefits through active participation in work relationships. One prominent work relationship exists between organization members and their respective leaders. In exchange for personal engagement in one's work and contribution to goal attainment, organization leaders offer additional valued economic and socio-emotional resources. This interaction, which takes place frequently, has a substantial impact on the emergence of social exchange dynamics, thus establishing the basis for accepted workplace behaviors (Blau, 1964; Rupp & Cropanzano, 2002; Saks, 2006). Through this reciprocal interdependence, leaders influence individual perceptions of the work environment (Blader & Tyler, 2009; Masterson, Lewis, Goldman, & Taylor, 2000; Tyler & Blader, 2003). Social exchange theory models this influence as a socially based mechanism

and provides a foundation on which this dynamic interaction between individuals can converge to represent a group level construct (Cropanzano & Mitchell, 2005; Saks, 2006).

Social exchange theory describes what factors promote the exchange process, whereas social learning theory identifies how these social factors function to drive workplace behaviors. Social learning theory (SLT; Bandura, 1977, 1997) suggests that leaders affect employee perceptions through their behavior patterns (Kozlowski & Doherty, 1989; Podsakoff, Todor, Grover, & Huber, 1984; Taggar & Seijts, 2003). Opportunities to observe leader behaviors provide followers with information about which behaviors are valued and prioritized by the leader. Successful followers model the behaviors of leaders who exhibit effective patterns of behavior that warrant successful outcomes (Bandura, 1997, 2001). Social models with the greatest influence exhibit "competence and expertise, are of high status, and have control over valued resources that are desired by the observer" (Goldstein & Sorcher, 1974, p. 28). Individuals who demonstrate these characteristics are often in leadership positions. As a function of work related privileges (e.g., decision-making authority) allotted to their role, leaders can support or inhibit workgroup member behaviors through their personal behavioral tendencies. Employees assess whether this pattern of behaviors is consistent depending on the degree to which the behaviors converge over time and in different work situations (Dragoni, 2005). For example, leaders who express enthusiasm and interest in achieving their personal goals as well as in helping the group achieve its joint goal would be exhibiting a consistent pattern of behavior. Therefore, this practice-as-pattern approach is often used to describe leadership as a group level construct (e.g., Zohar, 2000).

George (2000) found that leaders affect the development of shared motivation and affective response through their unique influence. Richardson and Vendenberg (2005) likewise found that leaders directly influenced perceptions of workgroup climate for involvement. Social interaction plays a critical role in the process of engagement and given the influence that leaders assert on workgroup processes, leaders should influence follower perceptions of the value of

engagement by displaying engagement in their own work roles. Through leader engagement, the motivational and behavioral patterns associated with success are reinforced within organizational sub-units. By engaging in one's work role, the leader sets the standard among the group and establishes that followers "should do as I do". Observing a leader engage in behaviors aligned with organizational goals can direct followers to participate in similar engagement strategies. Therefore,

Hypothesis 4: *Leader engagement will be positively associated with individual employee engagement.*

Models of leadership styles

Other than exhibiting engagement within his or her work role, leaders also encourage follower behavior through different styles of leadership. Numerous research models exist that characterize the role of general leader behavior patterns, such as leadership styles, in influencing follower behaviors (Avolio, 2007; Avolio & Bass, 2002; Dansereau, Graen, & Haga, 1975; Graen & Uhl-Bien, 1995; Vroom, 2000; Vroom & Jago, 2007). Full-range leadership (FRL), specifically, is a broad conceptualization of leadership that advocates that all workgroup members can observe a set of general leader behavior patterns exhibited by individuals in a supervisory capacity (Avolio, Bass, & Jung, 1999; Shamir, Zakay, Breinin & Popper, 2000). Leaders often display their behavioral patterns to the entire group; therefore, employees would likely observe similar behaviors when exposed to that leader (Bass, 1985, 1990; Erhart & Naumann, 2004; Yukl, 1994). Leaders are active facilitators of workgroup climate perceptions via their own behavioral patterns, yet they can also influence workgroup processes by encouraging followers to "do as I say", through their leadership style (Dragoni, 2005; Naumann & Bennett, 2000).

Though there are a number of conceptual models that describe the scope of leadership styles (Bass, 1990; Conger & Kanungo, 1987; House, 1977; Shamir, House, & Arthur, 1993; Yukl, 1989), two models that have received notable attention in organizational research are the transformational and transactional leadership styles (Den Hartog, Van Muijenm & Koopman,

1997; Podsakoff, MacKenzie, Moorman, & Fetter, 1990). These two leadership styles provide the basis for the full-range leadership model (FRLM). As a comprehensive model of leadership, the FRLM has emerged as the standard form of assessment in leadership research and development (Bass, 1990; 1997). As proposed by Bass and colleagues, four sub-facets of guidance, which leaders provide to elevate follower motivation, enhance performance and innovation, and establish a clear link between workgroup and organizational objectives, characterize transformational leadership. Leaders provide *individualized consideration* when they pay close attention to the needs, growth, and strength potentials of their followers while providing learning opportunities to support their development. Leaders provide *idealized influence* by developing mutual respect and trust among their followers. The leader is consistent in living out their values and executing ethical behavior which encourages positive role modeling. Leaders provide *inspirational motivation* by providing meaning and challenge to their followers' work. Lastly, leaders provide *intellectual stimulation* by creating a work environment where followers feel safe from public criticism or ridicule and encouraged to be innovative and creative by questioning assumptions.

Through its motivating potential, transformational leadership encourages dedication, creativity, and high energy, which are associated with the state of engagement (Bakker & Schaufeli, 2008). Transformational leadership motivates through means that are conducive to perceptions of engagement and, thus, its impact should magnify the relationship between leader and employee engagement. Hence,

Hypothesis 5: *Transformational leadership style will moderate the relationship between leader and individual employee engagement.*

Transactional leadership is proposed as a global leadership dimension that consists of *constructive* (i.e., contingent reward), *corrective* (i.e., management-by-exception (MEA) active and passive; direct or indirect feedback, often focused on mistakes, errors and failures) and *laissez-faire* (e.g., lack of leadership) sub-facets (Bass, Avolio, Jung, & Berson, 2003).

Transactional contingent reinforcement espouses the principles of exchange, emphasizes clear expectations and appropriate recognition for goal attainment. Through this form of transactional leadership, the follower agrees with, accepts, and complies with the leader in exchange for praise, rewards, and resources or the avoidance of punishment through disciplinary actions (Bass et al., 2003; Podsakoff, Todor, & Skov, 1982).

Although the motivational means to promote behavior may differ from transformational leadership, research has suggested that transactional leadership styles positively influence motivation (Bass, 1990; Kane & Tremble, 2000; Masi & Cooke, 2000). Consequently, shared perceptions of one's leader providing consistency, predictability, and clarity can evoke positive motivational processes such as engagement. Therefore,

Hypothesis 6: *Transactional leadership style will be positively associated with individual employee engagement.*

Indirect effect of leader behavior patterns on performance behaviors

Leadership, through its influence and motivating potential, can establish the necessary conditions that encourage engagement in the work environment. Yet, the processes through which employees interpret leader behavior actions, via individual perceptions, have the most direct impact on actual performance. Consequently, leader behavior patterns that foster employee engagement should also promote performance behaviors, though indirectly. Different leadership styles focus on managing behaviors by establishing expectations of adequate or exceptional performance. Accordingly, the range of leadership behaviors a leader exhibits may function differently in concert with motivational mechanisms (i.e., engagement) in predicting performance behaviors. Transformational leadership style focuses on achieving exceptional performance, which is congruent with the experience of engagement. Consequently, the interactive effect of transformational leadership and leader engagement should influence individual performance behaviors through the intervening effect of engagement.

Hence,

Hypothesis 7a-c: *Individual employee engagement will mediate the effect of the interactive relationship between leader engagement and transformational leadership on (a) task performance behaviors, (b) employee directed contextual performance behaviors, and (c) organization directed contextual behaviors.*

Transactional leadership manages expectations, allocates rewards, and provides feedback regarding expected performance behaviors (Bass, 1998). For this reason, transactional leadership should promote task-related performance behaviors that result in obtaining financial rewards or recognition. Where employee engagement likely serves as an intervening variable that transmits the effects of transactional leadership on task performance, the same mediating sequence is not likely to occur for contextual performance behaviors. Transactional leadership should not influence performance behaviors that are discretionary and are not associated with rewards or resources provided by the leader directly. Instead, an indirect relationship, one in which there is no initial direct relationship between transactional leadership and contextual performance behaviors, should persist (Mathieu & Taylor, 2007). In this case, two separate relationships should be present. One positive association between transactional leadership and employee engagement, and another, separate but also positive association between employee engagement and contextual performance behaviors. Hence,

Hypothesis 8a-c: *Individual employee engagement will mediate the effect of transactional leadership on (a) task performance behaviors. Transactional leadership will indirectly influence (b) employee directed contextual performance behaviors, and (c) organization directed contextual behaviors, through employee engagement.*

The hypotheses proposed in the current research project highlight two mediated processes. In the first, employee engagement serves as an intervening mechanism that transmits the effects of psychological climate on the performance outcomes (task performance, employee directed-, and organization directed-contextual performance behaviors). Perceptions of

psychological conditions in the work context that encourage engagement in one's work role enhance personal experiences of engagement. In the second, employee engagement transmits the effects of leader behavior patterns to affect performance outcomes. Observing leader behavior patterns that espouse engagement, establish vision, and communicate feedback foster engagement in followers and demonstrate a process of learning and modeling between leader and follower. I carried out a field study to test the proposed study hypotheses. Refer to Figures 1-1, 1-2, and 1-3 for illustrations of study hypotheses and the key relationships investigated in this study. The purpose of these illustrations is to detail relationships among research concepts, not to suggest a model that establishes causation.

Method

Participants

Organizational Characteristics

Data were obtained from the first phase of the Civility Among Healthcare Professional (CAHP) project, a longitudinal organizational training and intervention program that focused on developing a work environment that promoted employee engagement, mutual respect, support, and general civility. The CAHP project is a collaborative, organizational change effort developed by a university research team, and an organizational executive team and union members of the statewide corrections system. Data for this study were drawn from the baseline survey that was administered prior to organizational training efforts.

In accordance with the strategic goals of the host organization to provide efficient healthcare delivery through teamwork and collaboration, interaction among healthcare providers, staff members, and the administration occurred daily. This daily routine of organizational operations required employees to rely on interpersonal relationships and interactions with peers and supervisors to provide patient care. Additionally, characteristics of the organization such as a broad span of professional expertise, overlapping social and professional networks, and a clear

performance reporting structure provided support for this organization as a location for testing the proposed hypotheses. Although there was considerable overlap of professional roles throughout the organization, identifiable, integrative organizational units (i.e., workgroups) existed within the health center that included members of different professional disciplines, professional backgrounds, and organizational titles. These workgroups consisted of employees who worked interdependently, shared common work goals, and reported to the same clinical supervisor (Anderson & West, 1998; Kozlowski & Bell, 2003).

Participant Characteristics

Participants were employees of a major division of a state funded university health center that provided healthcare services to the inmate population of statewide correctional facilities. Participants were healthcare providers and professional staff members (e.g., physicians, dentists, nursing staff, clerical associates, mental health practitioners, health service administrators, and executive leadership staff) who provided specialized medical, mental health, dental, and administrative services.

Sample Size and Response Rate

The initial response rate was approximately 32% of the total population of employees (n = 264 survey respondents out of 820) of the host organization. In two cases, participants returned multiple surveys. I removed these cases and did not include them in any research analyses. Additionally, I removed three people from the remaining sample (n = 262) because of incomplete responses or missing information which yielded a sample of 259 employees. Based on general information observed through organizational records, characteristics of the total sample were representative of the host population. Refer to Appendix 1-2 for additional information regarding demographic questions included in the organizational survey.

This initial sample (n = 259), was 73% female and 27% male. The majority of participants were Caucasian (69%), Black/African American (9%), and Hispanic/Latino (8%). Nearly 80% of respondents were between 34-60 years of age, reported working with colleagues

of the same age or younger (76%), and reported having obtained a college or advanced graduate degree related to the medical field (73%). The majority of respondents reported having a female supervisor (64%) and working primarily in a health discipline (medical/dental, mental health, clerical, or other) of mostly women (76%). A majority of respondents did not report having official supervisory duties in their work roles (68%). On average, respondents had held their current position for approximately seven years and 50% of respondents reported at least 6 years of employment by the host organization. Respondents reported working during each of the three employment shifts, morning (71%), evening (23%), and night (4%). The sample represented perspectives from all but two facilities across the host population (19 out of 21). Refer to Table 1-1 and Table 1-2 for information regarding general respondent characteristics.

Procedure

Advertising and Administering Organizational Surveys

The university research team for CAHP used a three-stage, participative strategy to advertise the civility-training project prior to administering the baseline research survey. Throughout the process, several people who represented the diverse perspectives of personnel volunteered their participation in informal focus group discussions and personal interviews. In the first stage, we met with the executive culture group and executive director of the target organization to communicate the long-term objectives of the baseline organizational survey. In the second stage, we contacted delegates of the local labor union for health care workers and we conducted focus group interviews and discussions with three union delegates over a period of four months. In addition to meeting with the union delegates, we also procured the support of mid-level management, (e.g., health service administrators) who supervised nineteen facilities. We incorporated the information obtained from these meetings into the development of the survey. Finally, in the third stage, we communicated a series of advertisement notices to all employees in three ways. One method of communication included a publication in the organizational newsletter. A second method included a series of electronic mail messages sent

through the organizational intranet. A third method included individual visits to each of the nineteen facilities in the various locations around the state. At this time, the research team provided a brief overview presentation of the research and intervention project. We responded to any questions or concerns regarding participating in the baseline survey and the succeeding civility training program and distributed surveys to attending personnel. We left extra paper-and-pencil survey packets for personnel who did not attend the presentation meetings. At five facilities, there were several work shift schedules (e.g., morning-shift, evening-shift, and night-shift). At these facilities, we conducted multiple presentations of the overview.

Collecting Organizational Survey Data

We used the online data collection and analysis program, eListen, to design survey questions and retrieve participant responses (www.scantron.com, eListen, Scantron Corporation, CA, USA). Participants completed surveys either via a paper-and-pencil format or online. Both versions of the survey included an information sheet with a description of participant rights and contact information for the principal investigator and research team. Additionally, paper-and-pencil survey packets included instructions for completing and returning the survey and an envelope addressed to the project principal investigator. The window of participation was approximately nine weeks, after which point, we closed the online survey link and discontinued efforts to retrieve additional surveys.

Data Aggregation Procedures

Aggregation to the group level requires justification in terms of meeting aggregation criteria (Klein, Dansereau, & Hall, 1994). I aggregated collective perceptions of leader behavior patterns (i.e., assessments of leader engagement, transformational and transactional leadership styles) by assessing the homogeneity of perceptions among workgroup members. I used criteria suggested in previous research which consists of r(wg), one-way analysis of variance (James, Demaree, & Wolf, 1984, 1993), intraclass correlation (ICC[1]), and reliability at the aggregate level or reliability of the mean (ICC[2]; James, 1982; James et al., 1993). Homogeneity statistics

reflect the amount of consensus among workgroup members. Justification for data aggregation is driven by conventional values which suggest that adequate within group agreement is established when the (r(wg)) values are equal to or greater than 0.70 (James et al., 1984). Results of one-way ANOVAs substantiate between group variance. The proportion of variance explained by workgroup membership can be assessed using intraclass correlation coefficients (ICC[1] and ICC[2]; Klein et al., 2000). The ratio of between-group variance to total variance is calculated using ICC[1]. A median value of 0.12 is often recommended in organizational research (James, 1982). ICC[2] values equal to or greater than 0.70 suggest adequate mean rater reliability of the aggregated data (Ostroff & Schmitt, 1993; Lindell, Brandt, & Whitney, 1999; Richardson & Vandenberg, 2005). I reference these indices when describing aggregate measures used to examine the research model. Refer to Table 2 for results of the data aggregation analyses of each aggregate level measure of the research model.

Measures

To establish congruency among the measurement scales, several of the response scales included in the survey were modified to reflect a 7-point Likert-type response scale. All of the modified measurement scales that use a disagree-agree format were presented to employees and supervisors as 7-point scales ranging from "Strongly disagree" to "Strongly agree". I note below when I did not use this scale. Refer to Appendices 1-3 and 1-4 for additional information regarding item descriptions from each measure mentioned below.

Leader engagement. Leader engagement was assessed using aggregated workgroup member perceptions of the supervisor's engagement in his/her work role. I measured leader engagement using a scale of items adapted from the short questionnaire version of the Utretcht Work Engagement Scale (UWES, Schaufeli, Bakker, & Salanova, 2006). Workgroup member perceptions of leader engagement (i.e., Supervisor Work Engagement Scale, SWES) consisted of three items. The measurement scale of leader engagement assessed the frequency of the occurrence of these perceptions ranging from 'never' – 0 to 'always/everyday' – 6. A sample

item of the three item SWES measure included 'Our supervisor is immersed in his/her work' (coefficient alpha=0.91 (individual level); average coefficient alpha=0.88 (aggregate level, g=23)). Within group agreement results were r_{wg}=0.72. Results of a one-way ANOVA yielded significant variation between groups, F(34,133)=1.525, MS_B=3.27, MS_W=2.14, $p<0.05$. Intraclass correlation coefficients were ICC(1)=0.09 and ICC(2)=0.34. These values indicate that differences in leader engagement scores were accounted for by group membership and the mean values were adequately reliable, respectively.

Individual employee engagement. Individual employee engagement was assessed using a scale of six items adapted from the short questionnaire version of the Utretcht Work Engagement Scale (UWES, Schaufeli, Bakker, & Salanova, 2006). I assessed perceptions of individual employee engagement at the individual level. Respondents indicated the frequency of the occurrence of personal perceptions of engagement (i.e., Individual Work Engagement Scale, IWES). There was commonality between the two measures of engagement, SWES and IWES. One of the three items on the SWES was also included on the IWES. The other two items on the SWES did not appear on the IWES. I tailored the additional items to reflect aspects of engagement that workgroup members could readily identify as observers. A sample item of the six item IWES measure included 'I find the work I do full of meaning and purpose' (coefficient alpha=0.86 (initial sample, n=251); coefficient alpha=0.86 (grouped sub-sample, n=177)).

The UWES has received the most attention of all engagement scales through empirical research and construct development. As a measure of the engagement construct, the UWES exemplifies the core elements of the experience of engagement, namely, energy, identification, and attachment toward one's work role. The UWES measure has been cross-validated using professional and student samples in a number of national locations (e.g., Salanova, Agut, & Peiró, 2005). The UWES has adequately displayed various forms of validity (e.g., construct) across numerous studies of psychometric analysis and has been shown to account for variance in organizational outcomes beyond the effects of job involvement, intrinsic motivation, job

satisfaction and organizational commitment (Bakker, Schaufeli, Leiter, & Taris, 2008). Results of studies using the UWES have also been replicated across various occupational groups and geographic locations (e.g., Spain, South Africa, and Finland; Schaufeli & Bakker, 2006; Schaufeli, Martinez, Pinto, Salanova, & Bakker, 2002a).

Psychological climate for engagement. Psychological climate for engagement was assessed using several adapted items from two published measures that are readily available. The two measures consisted of the Development Dimensions International (DDI) E3 Employee Engagement Survey originally designed by the DDI research group (DDI, 2003) and the Envisia Learning Engagement N12 Index (Nowack, 2005). The E3 is a 17-item measure that assesses employee perceptions of their work in terms of the psychological conditions that best encourage experiences of engagement; alignment, development, empowerment, teamwork and recognition within their work environment. The N12 is a 12-item measure that assesses employee perceptions of work and psychological conditions that provide resources in support of performance excellence and development. Items adapted from these two scales have responses that ranged from 'strongly disagree' – 1 to 'strongly agree' – 7. Dimensions of the E3 and N12 align closely with the contextual conditions proposed by Kahn (1990): meaningfulness, availability, psychological safety. The E3 and N12 were designed to accurately capture employees' perceptions of the behaviors and practices that the organization acknowledges are related to the tactical, day-to-day means used to achieve strategic goals.

The referent for items assessing psychological climate for engagement was the workgroup. Respondents indicated agreement with statements about working in an environment that reinforced psychological conditions in support of engagement (i.e., Psychological Climate for Engagement Scale, PCES). Workgroup members reported their personal perceptions of a climate for engagement. A sample item of the four item PCES measure included 'We are assigned tasks that allow us to use our best skills' (coefficient alpha=0.91 (initial sample, n=250); coefficient alpha=0.91 (grouped sub-sample, n=179)). Climate for engagement did not meet the criteria for

aggregation at the aggregate level. Within group agreement results were r_{wg}=0.66, which is below the recommended value of 0.70 (James et al., 1984). Results of a one-way ANOVA did not yield significant variation between groups, F(34,146)=1.21, MS_B=3.21, MS_W=2.66, p>0.05. Intraclass correlation coefficients were ICC(1)=0.04 and ICC(2)=0.17. Results of the preliminary analyses did not support the notion that workgroup members shared their perceptions of a climate for engagement. Therefore, I interpreted the construct as an individual level, personal perception of the work environment (i.e., psychological climate) as opposed to an aggregate level, shared perception.

Leadership styles. The full-range leadership model provides the most comprehensive conceptualization of leadership styles and is typically operationalized through the Multifactor Leadership Questionnaire (36-item MLQ-5x short form; Avolio, Bass, & Jung, 1999). Designers of the MLQ suggest assessing other raters' (e.g., followers) perceptions of a target leader's leadership style instead of self-reported perceptions when the goal is to approximate the perception of leadership (e.g., Bass, 1990). Therefore, workgroup members provided responses on the frequency of observed leader behaviors. Responses ranged from 'not at all' – 1 to 'frequently, if not always' – 5. I assessed transactional and transformational leadership styles in order to represent the relevant facets of the full-range leadership model using a subset of adapted items from two measures; the 22-item Transformational Leadership Behavior Inventory (TLBI) and the 5-item Contingent Reward Behavior (CRB) scale (Podsakoff, MacKenzie, Moorman, & Fetter, 1990; Podsakoff, Ahearne, MacKenzie, 1997). The adapted items assessed the frequency of leader behaviors: providing a vision, and offering respect, thought stimulation, and attention under extreme circumstances. I used the two scales developed by Podsakoff and colleagues primarily because they are readily available and largely reflect the full spectrum of leadership facets found in the MLQ. I personally developed an item to assess transactional leadership styles where content found in the TLBI and CRB measures did not represent management-by-exception (passive) leadership styles. A sample item of the five-item transformational leadership styles

measure included 'Our supervisor stimulates us to think about old problems in new ways' (coefficient alpha=0.94 (individual level); average coefficient alpha=0.92 (aggregate level, g=24)). Within group agreement results were r_{wg}=0.84. Results of a one-way ANOVA yielded significant variation between groups, F(34,131)=1.90, MS_B=2.87, MS_W=1.51, $p<0.05$. Intraclass correlation coefficients were ICC(1)=0.15 and ICC(2)=0.47. These values indicate that differences in transformational leadership style scores were accounted for by group membership and the mean values were adequately reliable, respectively. I used a single item measure to assess transactional leadership styles; 'Our supervisor reacts or responds to performance only under extreme circumstances'. Although I aggregated group member perceptions to assess transactional leadership style, measurement characteristics of the single item are the same at the individual and aggregate levels. Results of a one-way ANOVA yielded significant variation between groups, F(34,131)=1.46, $p<0.05$. Intraclass correlation coefficients were ICC(1)=0.08 and ICC(2)=0.32. These values indicate that differences in transactional leadership style scores were accounted for by group membership and the mean values were adequately reliable, respectively.

Controls

Interaction with Leader. I used a single item measure to assess the frequency of interaction between the employee and his or her leader or supervisor during work hours. The Likert-type response scale ranged from 'once or twice in the past six months' – 1 to 'several times daily' – 5. The item statement was, 'At work, I interact with my supervisor'.

Individual Level Outcomes

Individual Task Performance outcome. Task performance was assessed using self-reported perceptions of individual task performance as the individual believes it is viewed by the respondent's leader or supervisor. A sample item included, 'What does your supervisor (i.e., not you) think of the quality of your work?' (coefficient alpha=0.92 (initial sample, n=251); coefficient alpha=0.92 (grouped sub-sample, n=182)).

Individual Contextual Performance. Contextual performance was assessed through self-reports of the extent to which individuals have directed contextual behaviors at fellow workgroup members and to the organization, over the past six months. I adapted two items from the Williams and Anderson (1991) 21-item measure. Responses ranged from 'strongly disagree' – 1 to 'strongly agree' – 7. A sample item of the employee-focused contextual performance measure included 'I take a personal interest in the well-being of others (e.g., help new employees)' (coefficient alpha=0.72 (the initial sample, n=255); coefficient alpha=0.65 (grouped sub-sample, n=181)). I used a single item measure to assess organization-focused contextual performance behaviors: 'My attendance at work is above the norm (organization)'.

Other Study Measures

Additional employee perceptions of general attitudes, attitudes about work, and perceptions of workgroup processes were assessed using established measures for perceived organizational support, affective organizational commitment, job satisfaction, job role involvement, proactive personality, dispositional pessimism, disengagement, workgroup cohesion, and workgroup performance processes. Previous research across organizational contexts has identified these general and work attitudes as potential covariates of the engagement process (Schaufeli & Bakker, 2004; Maslach & Leiter, 2008; Harter, 2008; Macey & Schneider, 2008). The purpose of including these related concepts was to provide a foundation on which to establish construct validation, to remove redundant information (i.e., data reduction purposes), and to examine the extent to which similar conceptual constructs account for variance in the performance outcomes proposed in the research model. The measurement scale for each of the following measures assessed the extent of agreement with statements with a standard Likert-type response scale ranging from 'strongly disagree' – 1 to 'strongly agree' – 7. Refer to Appendices 1-5 and 1-6 for additional information regarding item descriptions from each measure mentioned below.

Perceived Organizational Support. Perceived organizational support was assessed with a four-item measure developed by Eisenberger, Huntington, Hutchinson, and Sowa (1986). A sample item of the four item measure included '*The organization* really cares about my well-being' (coefficient alpha=0.97).

Affective Organizational Commitment. Affective organizational commitment was assessed with a three-item measure developed by Meyer, Allen, and Smith (1993). A sample item of the four item measure included 'I feel a strong sense of "belonging" to *the organization*' (coefficient alpha=0.92).

Job Satisfaction. Job satisfaction was assessed with a single item measure developed by Cammann, Fichman, Jenkins, and Klesh (1983). The single item was 'All in all, I am satisfied with my job'.

Job Role Involvement. Job role involvement was assessed with a three-item measure developed by Paullay, Alliger, and Stone-Romero (1994). A sample item of the three-item measure included 'The major satisfaction in my life comes from my job' (coefficient alpha=0.62).

Proactive Personality. Proactive personality was assessed with a four-item measure developed by Bateman and Crant (1993). A sample item included 'No matter what the odds, if I believe in something I will make it happen' (coefficient alpha=0.88).

Dispositional Pessimism. Dispositional pessimism was assessed with a three-item measure developed by Scheier, Carver, and Bridges (1994). A sample item included 'If something can go wrong for me, it will' (coefficient alpha=0.85).

Disengagement. Disengagement was assessed with a two-item measure developed by Demerouti, Bakker, Vardakou, and Kantas (2003). A sample item included 'I cannot imagine another occupation for myself (recoded)' (coefficient alpha=0.68).

Workgroup Cohesion. Workgroup cohesion was assessed with a four-item measure developed for the Defense Equal Opportunity Organizational Climate Survey and tested for measure reliability

and validity properties by university researchers (Walsh, Matthews, Tuller, Parks, & McDonald, 2010). A sample item included 'We work well together as a team' (coefficient alpha=0.93).

Workgroup Performance Processes. Workgroup performance processes were assessed with a four-item measure developed for this data collection effort. The measurement scale assessed the extent of agreement with statements with a standard Likert-type response scale ranging from 'not at all' – 1 to 'to a very great extent' – 5. A sample item included '(*We*) Regularly monitor how well we are meeting our discipline goals' (coefficient alpha=0.89).

Results

Data Analysis

Preliminary Analyses

Item means, standard deviations, intercorrelations, and coefficient alphas for variables in the research model are provided in Table 3-1. Refer to Tables 3-2 through 3-4 for information regarding intercorrelations and coefficient alphas for all study variables. Refer to Table 3-5 for information regarding number of items in each scale, mean values, and standard deviations for all study variables.

I screened all survey data for univariate and multivariate outliers using tests of homoscedasticity and normality. I generated normal probability plots to test for linear distribution and normality. I used bivariate scatterplots to examine all distributions of the study variables for linearity. Relationships among study variables were in the expected direction.

Missing data for all study variables were less than four percent of the total data points. If a respondent did not provide a response to a statement reflecting a multiple item construct, I replaced missing values with the average value of the responses the respondent provided on that construct. If the participant did not provide a response to any of the items on a multiple item construct, I did not calculate a score for that particular construct. I followed this procedure to compute variable scale scores and scale reliabilities.

Demographic Differences among Survey Respondents: Initial Sample

Results of a series of t-tests and analysis of variance tests to examine whether there were differences in participant responses according to demographic characteristics of survey respondents such as participant gender, gender of supervisor, racial group, gender composition, age composition, primary facility, work shift, and full-time equivalent status did not show significant group differences.

Results of an analysis of variance test yielded significant differences in responses on reports of self reported supervisor perception of job performance ($F(5,235)=3.11$, $p<0.05$) according to the highest level of education. Job performance self reported scores were highest among respondents who had completed graduate or professional degree programs ($M=4.08$; $SD=0.67$) and lower among respondents with some college, graduate, or professional school experience ($M=3.74$; $SD=0.74$).

There were differences among respondent reports of transformational leadership, individual employee engagement, and psychological climate for engagement depending on reported health care discipline. Transformational leadership style ($F(3,226)=5.58$, $p<0.01$) scores were highest among respondents in the clerical discipline (i.e., participants who were not involved in direct patient care ($M=3.43$; $SD=1.21$)) and lowest among respondents from the medical and dental disciplines ($M=2.85$; $SD=1.28$). Individual employee engagement ($F(3,252)=2.79$, $p<0.05$) scores were highest among respondents in the mental health discipline ($M=5.32$; $SD=1.01$) and lowest among respondents in the medical and dental disciplines ($M=4.86$; $SD=1.26$). Psychological climate for engagement ($F(3,248)=3.58$, $p<0.05$) scores were lowest among respondents in the medical and dental disciplines ($M=3.69$; $SD=1.53$) and highest among respondents in the mental health and clerical disciplines ($M=4.16$; $SD=1.70$).

Explanation of Grouping Process and Strategy for Defining Organizational Workgroups

Previous research has advocated using multiple forms of information (i.e., a triangulation process) to identify group membership and boundaries between groups in organizational settings

(Berson, Avolio, & Kahai, 2002). Characteristics of the organizational structure (e.g., individual participants were nested within work groups) and the association among aggregate and individual level variables required examining a sub-sample of the initial sample. This grouped sub-sample (n =184) reflected links among individual participants, and indicated work group membership (distinct work groups with a minimum of two members). I identified workgroups (g=35; n=184) throughout the organization by using a multi-step, multi-source grouping process. The first step of this identification process included interviewing volunteer union representatives, executive staff members, and other organizational personnel. I conducted the interviews over the course of several months over the phone and in person. I also scheduled site visits to tour the majority of the work facilities in order to meet with personnel and to discuss the relevance of working relationships among the organizational employees. I gathered detailed information regarding the organizational structure and job titles, and the physical layout of each facility. In the second step, I reviewed a series of organizational structure charts that included information about relationships among employees such as disciplines (e.g., medical, mental health, dental), employment status (e.g., full-time, part-time, per diem), work shifts (e.g., day, evening, night), and organizational job titles (e.g., health service administrator, nursing supervisor, supervising psychologist) across each work site. I cross-referenced this information with a human resources (HR) department employee roster that included similar employee information. In the final step, I analyzed participant survey responses to questions specific to workgroup experiences using a social networking tool, UCINET (Borgatti, Everett, & Freeman, 2002). UCINET is a statistical analysis program often used to analyze relational components among elements, in this case, individuals and groups.

In a three-step process, I converted participant survey responses into a format that served as input for the UCINET program. First, I merged data from each survey version into a final dataset. Second, I combined personnel information from the HR records with demographic information from the survey to identify survey participants. Third, I used this information to organize a series of square matrices (Kolaczyk, 2009) that represented whom participants

endorsed as members of their personal workgroups at their primary facility. Each case-by-case square matrix included an exhaustive list of employees at a particular facility (Note: for each facility represented in the survey I prompted respondents to provide names that were missing from the employee lists; these names were later added to the facility employee roster in the final dataset). I organized each employee name (i.e. ego – personal endorsements of each survey respondent) twice in a list format, once in the rows and once in the columns. The presence or absence of endorsement between an ego and a corresponding workgroup member (i.e., alter – person endorsed by a survey respondent) is represented by '1' or '0', respectively. Using UCINET, and a visualization assistance program, NetDraw, I generated pictures of each participant's 'ego network'. The 'ego network' highlighted reciprocal links between employees (i.e., egos and alters) and constituted work relationships among work colleagues that corresponded with our definition of a 'workgroup'. Refer to Figure 4 for an example illustration of a social network analysis of a work facility. Refer to Figure 5 for an example illustration of an ego network of a member of that work facility.

Workgroup Inclusion and Placement Criteria

I considered three primary factors when making decisions about respondent inclusion and placement into organizational workgroups. Workgroups consisted of respondents who met each of these three conditions. In the first, I reviewed the reciprocal links in each respondent's ego network illustrated in NetDraw through social networking analyses. These links among survey respondents served as the basis for establishing workgroups and were the first condition for inclusion. According to the second factor, workgroup members needed to share a common supervising manager. I reviewed the organizational charts to identify the reporting structure of each work facility. Respondents who shared a common supervising manager and endorsed each other as members their workgroup were clustered together. The final factor for inclusion and placement was the exchange of pertinent patient information. There were several cases where respondents endorsed other social peers who reported to the same supervisor, but would not likely

exchange patient information (e.g., worked non-overlapping shifts or would interact socially as opposed to professionally). I did not include reciprocal links that indicated social relationships when forming workgroups. Based on this process, I formed 35 organizational workgroups where respondent reciprocal links met all three criteria.

Demographic Differences among Survey Respondents: Grouped Sub-sample

The grouped sub-sample (n=184), used for purposes of hypothesis testing, was 74% female and 26% male. A majority of participants were Caucasian (68%), Black/African American (10%), and Hispanic/Latino (8%). Eighty percent of respondents were between 34-60 years of age, reported working with colleagues of the same age or younger (78%), and reported having obtained a college or advanced graduate degree related to the medical field (74%). A majority of respondents reported having a female supervisor (64%) and working primarily in a health discipline (medical/dental, mental health, clerical, or other) of mostly women (78%). A majority of respondents did not report having official supervisory duties in their work roles (72%). On average, respondents held their current position for approximately eight years and 54% of respondents reported at least 6 years of employment by the host organization. Respondents reported working during each of the three employment shifts, morning (67%), evening (27%), and night (5%). The subset sample represented perspectives from all but two of the facilities across the host population (19 out of 21). The response rate was approximately 22% of the total population of employees (184 out of 820) of the host organization (see Tables 1-1 and 1-2).

Results of a series of t-tests and analysis of variance tests to examine whether there were differences in participant responses according to demographic characteristics of respondents in the grouped sub-sample such as participant gender, gender of supervisor, age group, highest level of education, racial group, and gender and age composition did not show significant group differences.

Results of a t-test analysis yielded significant differences according to supervisory responsibilities in responses on reports of transformational leadership ($t(160)=-3.00$, $p<0.01$). Transformational leadership scores were lower among respondents who reported supervisory responsibilities (M=2.36; SD=1.35) than all other respondents (M=3.11; SD=1.31).

A Priori Power Analysis

I used the program Optimal Design, to conduct an a priori power analysis (Raudenbush, 1997). The analysis examined a treatment effect at Level 2 for clustered randomized trials of person-level outcomes. Results of the a priori power analysis suggested that a sample size of 30-40 workgroups would yield power of 0.70 (correlation coefficient; $\rho=0.05$) with a medium effect size ($\delta=0.20$). The grouped sub-sample (g=35, n=184) used to examine the study hypotheses met these criteria. Refer to Figure 6 for additional information regarding results of this a priori power analysis.

Exploratory Factor Analysis – General Attitudes and Attitudes about Work

To reduce redundancies in items and psychological concepts to support construct validation, I conducted a series of exploratory factor analyses using the initial sample (n=259). This exploratory process served two specific purposes. The first purpose was to establish, among items from both similar and disparate psychological constructs, those that best represented the underlying constructs within the research model. The second purpose was to inform the subsequent step of construct validation, confirming the fit between the data and the factor structure of the research model measures (i.e., confirmatory factor analysis). I used principal axis factoring extraction with varimax rotation for each construct (Tabachnick & Fidell, 2001). I conducted an initial exploratory factor analysis that included related organizational and personal constructs. I considered the scree plot, eigenvalues, and item loadings to decide the factor structure. After the initial exploratory analyses, I eliminated items that loaded onto more than one factor or did not appear to represent the factor structure. I used the final factor solution to examine relationships among variables in the research model.

I conducted a series of exploratory factor analyses with principal axis factoring and varimax rotation to establish the unique factor structure of similar conceptual constructs and to examine relationships among constructs measured in the research project (see Tables 4-1 through 4-5). I used the following constructs that assessed general attitudes and attitudes about work; perceived organizational support (4-item measure), affective organizational commitment (3-item measure), job satisfaction (1-item measure), employee engagement (10-item measure), job role disengagement (2-items), proactive personality (4-item measure), dispositional pessimism (3-item measure), and job role involvement (3-item measure). Results yielded a 5-factor solution (n=247; 69% variance explained; eigenvalues greater than 1.00). A single factor represented items that assessed job satisfaction, affective organizational commitment, and perceived organizational support (Factor 1, eigenvalue=10.4; 35% variance explained). A second factor represented items that assessed employee engagement (Factor 2, eigenvalue=4.1; 14% variance explained). Items that assessed proactive personality (Factor 3, eigenvalue=2.3; 8% variance explained), job role involvement (Factor 4, eigenvalue=2.1; 7% variance explained), and dispositional pessimism (Factor 5, eigenvalue=1.3; 4% variance explained) constituted separate factors, respectively. The two items that assessed disengagement loaded onto the fourth factor, which was most representative of job role involvement.

I conducted a second series of exploratory factor analyses with principal axis factoring and varimax rotation for constructs that assessed workgroup cohesion (4-item measure), workgroup performance processes (4-item measure; transformed to a seven point scale), and a climate for engagement (11-item measure). An initial 3-factor solution (n=238; 71% variance explained; eigenvalues greater than 1.00) suggested items that assessed psychological climate for engagement loaded on two separate factors. The first factor represented seven of the items from the psychological climate for engagement scale as well as the four items that assessed workgroup cohesion (eigenvalue=10.4, 55% variance explained). The remaining four items of the original eleven-item psychological climate for engagement scale constituted a separate factor

(eigenvalue=1.7, 9% variance explained). The final factor represented items that assessed workgroup performance processes (eigenvalue=1.4, 7% variance explained). The seven items that loaded onto more than one factor were removed and the exploratory factor analysis was run again. Results yielded a 3-factor solution (n=241; 80% variance explained) with four items distinctly loaded to the representative factors workgroup cohesion (eigenvalue=6.8; 57% variance explained), psychological climate for engagement (eigenvalue=1.5; 12% variance explained), and workgroup performance processes (eigenvalue=1.3; 11% variance explained; see Table 4-6).

I conducted a third series of exploratory factor analyses with principal axis factoring and varimax rotation for the leader behavior pattern variables; leader engagement, transformational leadership and transactional leadership styles. Results yielded a 3-factor solution (n=236; 84% variance explained, see Table 4-7). Four items represented transformational leadership (eigenvalue=5.2; 57% variance explained; loadings ranged from 0.76-0.88), three items represented leader engagement (eigenvalue=1.4; 15% variance explained; loadings ranged from 0.78-0.85), and a single item represented transactional leadership (eigenvalue=1.0; 11% variance explained; loading of 0.52). The single transactional leadership style item represented the management-by-exception (passive) form of transactional leadership and was distinct from other characteristics of leader behavior patterns.

Last, I conducted a series of exploratory factor analyses with principal axis factoring and varimax rotation for the outcome performance variables; task performance, employee directed contextual performance and organization directed contextual performance behaviors. Initial results indicated items that assessed task performance represented a single factor solution (n=251; 82% variance explained; eigenvalue greater than 1.00). The single factor included four items (loadings ranged from 0.76-0.92). Initial results indicated items that assessed employee directed contextual behaviors represented a single factor solution (n=255; 78% variance explained; eigenvalue greater than 1.00). The single factor included four items (loadings ranged were both 0.75). Results of initial exploratory (n=256; 57% variance explained; eigenvalue=1.14) and

reliability analyses (coefficient alpha=0.25) suggested that only one of the two items used to assess organization directed contextual behaviors represents the contextual performance outcome (see Table 4-8). I chose this item because of a positive and significant relationship with other variables in the research model, such as engagement ($r=0.16$, $p<0.01$), psychological climate for engagement ($r=0.15$, $p<0.05$), and employee directed contextual performance ($r=0.15$, $p<0.05$).

Confirmatory Factor Analysis

Using results from exploratory factor analyses, I examined the underlying structure of general attitudes and attitudes about work through a series of three confirmatory factor analyses (CFA) with maximum likelihood estimation using a structural equation modeling program, AMOS (Arbuckle & Wothke, 1999). AMOS allows for the examination of a hypothesized set of relationships simultaneously, while accounting for measurement errors among the sample statistics in approximating population parameters. The purpose of the confirmatory factor analyses was twofold. The first purpose was to test the extent to which constructs represented in the research model are conceptually different from similar constructs. The second was to assess the extent to which data fit the proposed model of relationships among these constructs. In the first CFA, I included the following constructs; perceived organizational support (4-item measure), affective organizational commitment (3-item measure), employee engagement (8-item revised measure), disengagement (2-items), proactive personality (4-item measure), dispositional pessimism (3-item measure), and job role involvement (3-item measure; see Figure 7-1). To achieve an identified model and to minimize the number of items in the analysis, I did not include the item that assessed job satisfaction because the item loaded onto the same factor that represented perceived organizational support and affective organizational commitment. Overall fit of the model to the data was determined by absolute and relative model fit statistics, which included chi-square (χ^2), root mean square error of approximation (RMSEA), the total fit index (TLI), comparative fit index (CFI), and incremental fit index (IFI, (Bentler, 1990). Overall comparative fit indices of the final measurement model suggested good model fit [n=259;

$\chi 2(303)=470.6$, RMSEA=0.05, $p>0.05$; IFI=0.96; TLI=0.95; CFI=0.96]. Refer to Table 5-1 for detailed information about the factor structure of the final measurement model and interrelationships among general work attitudes and attitudes about work.

The second CFA included constructs that assessed employee perceptions of workgroup cohesion (4-item measure), workgroup performance processes (4-item measure), and psychological climate for engagement (4-item revised measure; see Figure 7-2). Overall comparative fit indices of the final measurement model suggested good model fit [n=259; $\chi 2(51)=140.4$, RMSEA=0.08, $p<0.05$; IFI=0.96; TLI=0.94; CFI=0.96]. Refer to Table 5-2 for detailed information about the factor structure of the final measurement model and interrelationships among employee perceptions of workgroup characteristics and processes.

The third CFA included constructs that assessed task performance (i.e., self-reported supervisor perceptions of job performance, 4-item measure) and employee directed contextual performance behaviors (2-item measure; see Figure 7-3). To achieve minimization and to arrive at an identified model, I did not include the item that assessed organization directed contextual performance. Overall comparative fit indices of the final measurement model suggested good model fit [n=259; $\chi 2(8)=32.2$, RMSEA=0.11, $p<0.05$; IFI=0.97; TLI=0.93; CFI=0.97]. Refer to Table 5-3 for detailed information about the factor structure of the final measurement model and interrelationships among employee perceptions of task performance and employee directed contextual performance behaviors.

Final Measures of Research Model

Results of exploratory and confirmatory factor analyses yielded a clear conclusion. The constructs assessed for purposes of hypothesis testing could be distinguished from similar constructs yet retained an appropriate degree of association. All items from measures that assessed general attitudes and attitudes about work were used for exploratory and confirmatory factor analyses purposes only and were not included in analyses for hypothesis testing. Refer to Table 5-1 for detailed information about items that assessed general attitudes and attitudes about

work. Below are listed results of the final multiple factor solution and measures that established the factor structure of constructs in the research model. Refer to Tables 4-2, 4-6, 4-7, and 4-8 for information regarding the specific items that constituted the final measures used in the research model for hypothesis testing.

Leader Engagement. The three-item measure for leader engagement loaded onto a single factor and yielded an eigenvalue of 2.53 that accounted for 84% of the variance. Item loadings ranged from 0.83 – 0.92.

Transformational Leadership Styles. The five-item measure for transformational leadership styles loaded onto a single factor and yielded an eigenvalue of 3.95 that accounted for 79% of the variance. Item loadings ranged from 0.81 – 0.93.

Transactional Leadership Styles. The original four-item measure for transactional leadership styles reduced to a single item due to double loadings and an initial lack of convergence to a single factor.

Individual Employee Engagement. The original ten-item measure for individual employee engagement reduced to eight-items due to an initial lack of convergence to a single factor. Final scale results yielded an eigenvalue of 4.78 that accounted for 60% of the variance. Item loadings ranged from 0.64 – 0.89.

Psychological Climate for Engagement. The original 11-item measure for psychological climate for engagement reduced to four items due to double loadings and an initial lack of convergence to a single factor. Final scale results yielded an eigenvalue of 2.84 that accounted for 78% of the variance. Item loadings ranged from 0.74 – 0.90.

Hypothesis Testing of Hypotheses 1-3

As a pre-condition for conducting hypothesis testing, I confirmed that mediation analyses were appropriate for examining Hypotheses 1-3 using multiple steps. In the first step, I conducted a series of indirect effects mediation analyses using an SPSS macro developed by Preacher and Hayes (2008) to examine the intervening role of employee engagement, as it serves

to transmit the effects of psychological climate for engagement to performance outcomes (task performance, employee directed contextual performance behaviors, and organization directed performance behaviors). The SPSS macro estimates coefficients that represent statistical associations between an initial predictor and a mediator variable (path a'), between a mediator and an outcome variable (path b'), and between an initial predictor and an outcome variable, controlling for the effect of the mediator variable (path c'). The SPSS macro generates bootstrap confidence intervals through a re-sampling procedure that which minimizes the impact of measured covariates (i.e., interaction with leader) through bias-correction and acceleration (see Tables 6-1 and 6-2). Kenny and colleagues (2003) recommended conducting a random coefficients model when testing lower level mediation relationships to examine the statistical significance of random effects and to ascertain whether both paths *a* and *b* vary at the aggregate level or by aggregate level variables. Given these suggestions made by Kenny and colleagues (2003), I examined the covariance between paths *a* and *b* to determine if there was significant covariance among the residuals, and if both paths were random and significant ($p<0.05$). No cases were found where covariances of paths *a* and *b* were both random and significant.

In the second step, I accounted for cluster effects due to group membership by examining three contextual conditions at the aggregate level (i.e., leader engagement, transformational and transactional leadership styles) that may affect the nature of these mediated paths. In the third step, I examined the extent to which the selected individual and aggregate level variables explained between-group variance in overall mean values (i.e., intercepts) and relationships among individual level variables and the performance outcomes (i.e., slopes).

Hypothesis Testing of Hypotheses 1-3: Lower Level Mediation Analyses

The focus of hypothesis testing of Hypotheses 1 through 3 was on direct and mediated relationships among individual level variables. Indirect effects mediation analysis test results provided initial support for the mediating role of employee engagement in transmitting the effects of psychological climate for engagement on contextual performance outcomes (employee-

directed contextual performance behaviors, t-test statistic = 0.42, SE=0.04, p>0.05, Z=3.86, p<0.001). There is, however, a lack of support for a mediated relationship between psychological climate perceptions and task performance (task performance behaviors, t-test statistic = 4.16, SE=0.04, p<0.01; Z=-0.25, p>0.05). Results instead suggest a direct, unmediated relationship, between psychological climate perceptions and task performance [β =0.41, p<0.05]. I tested all proposed mediated paths to examine the strength of associations, even if pre-condition steps suggested that certain paths among study variables were not mediated.

Results of data aggregation procedures (i.e., one-way ANOVAs, within group agreement (r_{wg}), and intraclass correlations [ICC(1) and ICC(2)]) indicated that individuals are clustered or nested within groups that are associated with a particular leader. Consequently, participant responses within groups are more similar to one another than to participant responses in other groups (Hofmann et al., 2000). Aggregated follower perceptions of leader behavior patterns are, therefore, interdependent because of common exposure to contextual factors. Analytical approaches that do not account for non-independence (e.g., ordinary least squares) tend to produce negative biases in standard errors and can generate inflated results (Kenny, Mannetti, Pierro, Livi, & Kashy, 2002). For these reasons, I examined the relationships among psychological climate for engagement, individual perceptions of engagement, and the three performance outcomes using a series of random coefficient models with full maximum likelihood estimation, developed in a multilevel modeling program, HLM v6.0. Hierarchical linear modeling (HLM) consists of a series of hierarchical regression equations that generate estimates of fixed and random effects that describe the degree to which clustered data (i.e., data partitioned into distinct groups) fit a proposed model. The HLM approach examines multilevel data simultaneously while accounting for separate sources of variance. Full maximum likelihood estimation establishes the likelihood of the observed data given the chosen parameter values, based on point estimates of the fixed effects of the model (Snijders & Bosker, 1999; Raudenbush, Bryk, Cheong, & Congdon, 2004). Hierarchical linear modeling circumvents limitations posed

by aggregation and disaggregation biases associated with multilevel data and supports the examination of interactions between variables at different levels of analysis (Hofmann et al., 2000; Griffin, 2001; Hox, 2002, Bickel, 2007; West, Welch, Galecki, 2007).

To test the influence of leader behavior patterns on the engagement process, I examined separate equations for each performance outcome using the following three-step iterative process. First, I used grand mean centering for each variable at the individual and aggregate levels in each of the research analyses. This approach establishes the overall mean across individuals (i.e., grand mean; Hofmann & Gavin, 1998; Enders & Tofighi, 2007) as the point of reference. Grand mean centering is an appropriate approach to test hypotheses in the current research model for two reasons. First, structural characteristics of the host organization (i.e., social and professional interaction extends across boundaries of group membership and all groups represented the same host organization) provide support for this approach (Raudenbush & Bryk, 2002; Mathieu & Taylor, 2007). Second, the focus of comparison was among individuals throughout the organization, instead of between individuals within separate groups, which is achieved through group-mean centering (e.g., centering within cluster, Hofmann & Gavin, 1998; Enders & Tofigi, 2007; Zhang, Zyphur, & Preacher, 2009). Using a multi-level variance partitioning calculator developed by Mathieu (2008), I calculated pseudo- R_1^2, the *percentage of level-1 residual variance accounted for by predictors in the research model* relative to the null model (R_1^2, Kreft & de Leeuw, 1998; Singer, 1998). I reported unstandardized regression coefficients, which limit bias in the parameter estimates and in the value of standard errors (Bickel, 2007).

To test Hypotheses 1, 2, and 3, I examined a series of random coefficient models, grouped into nine iterations; three for each aggregate level predictor (leader engagement, transformational leadership styles, and transactional leadership styles) and three for each performance outcome (task performance, employee-directed contextual performance, and organization-directed contextual performance). The purpose of examining these random coefficient models was to investigate the changes in value of level one and aggregate level

coefficients across the separate steps to surmise potential contributors of overall mean values of the performance outcomes and sources of variance in means across groups. I followed a three-step process, using procedures suggested by Baron and Kenny (1986), and Mathieu and Taylor (2007). In Step 1, I tested the direct effect of the initial predictor on the mediator variable by regressing employee engagement on psychological climate for engagement. In Step 2, I tested the direct effect of the mediator variable on the performance outcome by regressing each of the three performance outcomes on psychological climate for engagement. In Step 3, I tested two effects, first, the direct effect of the initial predictor on the performance outcome variable and second, the indirect effect of the mediator variable on the performance outcome. For each step, I included an aggregate level predictor variable and I allowed the intercept (i.e., overall mean) and level one variable slopes (i.e., effect of predictor on selected outcome) to vary. I did not alter any of the effects to assess changes in model fit or differences in variance accounted for by including or removing fixed effects.

A summary of the interpretation of key results provides clarity in determining when study hypotheses are supported. A significant coefficient of psychological climate for engagement in predicting employee engagement in the initial equation (γ_{10}) tested in Step 1 provides support for a positive association between the two variables. A smaller or less significant coefficient of the initial predictor variable, psychological climate for engagement, in Step 3, relative to Step 2 provides support for the mediating role of employee engagement. A significant coefficient of either level one predictor (γ_{10}, γ_{20}) or an aggregate level predictor (γ_{01}) in the intercept-as-outcome equation indicates a main effect. A significant coefficient of an aggregate level predictor in the slopes-as-outcomes equation (γ_{11}, γ_{21}) indicates a cross-level interaction. Significant between-group variance terms in the intercept-as-outcome equation (τ_{00}) indicate there is considerable variance in the outcome not explained by the model as tested. Significant between-group variance terms in the slopes-as-outcomes equation (τ_{10}, τ_{20}) indicate there is substantial variance in the level one variable slopes not accounted for by the model as tested. Refer to Table 7 for

information on the general equation format for Hypotheses 1 through 3. Refer to Tables 8-1 through 8-9 for detailed information regarding results of Hypotheses 1 through 3.

In support of Hypothesis 1, results suggest a positive and significant relationship between psychological climate for engagement and employee engagement across all three iterations [Leader engagement, γ_{10}=0.32, SE=0.08, p<0.01; Transformational Leadership, γ_{10}=0.29, SE=0.06, p<0.01; and Transactional Leadership, γ_{10}=0.29, SE=0.06, p<0.01]. Results did not provide support for Hypothesis 2a, as the association between employee engagement and task performance was non-significant across all aggregate level predictors [Leader engagement, γ_{10}=0.01, SE=0.06, p>0.05; Transformational Leadership, γ_{10}=0.001, SE=0.06, p>0.05; and Transactional Leadership, γ_{10}=-0.005, SE=0.06, p>0.05]. In support of Hypothesis 2b, results suggest a positive and significant relationship between employee engagement and employee-directed contextual performance behaviors across all three iterations [Leader engagement, γ_{10}=0.28, SE=0.10, p<0.01; Transformational Leadership, γ_{10}=0.33, SE=0.07, p<0.01; and Transactional Leadership, γ_{10}=0.31, SE=0.07, p<0.01]. Results suggest partial support for Hypothesis 2c, as a positive and significant relationship between employee engagement and organization-directed contextual performance was found when examining transactional leadership as an aggregate level predictor [Transactional Leadership, γ_{10}=0.22, SE=0.10, p<0.01]. The coefficients for employee engagement in predicting organization-directed contextual performance did not reach significance when examining leader engagement [γ_{10}=0.23, SE=0.14, p>0.05] or transformational leadership [γ_{10}=0.19, SE=0.10, p<0.10] as aggregate level predictors.

Hypothesis testing of Hypotheses 3a, 3b, and 3c required examining whether a change in the value of coefficients from Step 2 to Step 3 was significant, after accounting for the direct effect of the mediator variable in the relationship between the initial predictor and the outcome variable. Results did not provide support for Hypothesis 3a, as the association between employee engagement and task performance was non-significant across all aggregate level predictors. Coefficient values of psychological climate for engagement did not change from Step 2 to Step 3,

[Leader engagement, (Step 2) γ_{10}=0.16, SE=0.04, p<0.01 and (Step 3) γ_{10}=0.05, SE=0.05, p<0.05; Transformational Leadership, (Step 2) γ_{10}=0.16, SE=0.03, p<0.01 and (Step 3) γ_{10}=0.13, SE=0.04, p<0.01; and Transactional Leadership, (Step 2) γ_{10}=0.19, SE=0.03, p<0.01 and (Step 3) γ_{10}=0.17, SE=0.04, p<0.01]. Results of indirect effects mediation analyses indicated a direct relationship between psychological climate for engagement and task performance, unmediated by employee engagement. These findings highlight the direct association between climate perceptions and task performance behaviors and reinforce preliminary results of indirect effects mediation analyses.

Results provided consistent support for Hypothesis 3b. Results suggested full and partial mediation of the relationship between psychological climate for engagement and employee-directed contextual performance behaviors. Coefficient values of psychological climate for engagement changed significantly from Step 2 to Step 3, [Leader engagement, (Step 2) γ_{10}=0.17, SE=0.05, p<0.01 and (Step 3) γ_{10}=0.06, SE=0.07, p>0.05 (Full Mediation); Transformational Leadership, (Step 2) γ_{10}=0.16, SE=0.05, p<0.01 and (Step 3) γ_{10}=0.02, SE=0.04, p>0.05 (Full Mediation); and Transactional Leadership, (Step 2) γ_{10}=0.13, SE=0.05, p<0.01 and (Step 3) γ_{10}=0.002, SE=0.04, p>0.05 (Full Mediation)].

Results provided some support for Hypothesis 3c, suggesting a partially mediated relationship between psychological climate for engagement and organization-directed contextual performance when examining transformational leadership as an aggregate level predictor [Transformational Leadership, (Step 2) γ_{10}=0.16, SE=0.07, p<0.05 and (Step 3) γ_{10}=0.11, SE=0.08, p>0.05 (Full Mediation)]. Results of analyses that examined aggregate level predictors of leader engagement and transactional leadership, however, did not provide support for a mediated relationship [Leader engagement, (Step 2) γ_{10}=0.17, SE=0.10, p>0.05 and (Step 3) γ_{10}=0.06, SE=0.12, p>0.05; and Transactional Leadership, (Step 2) γ_{10}=0.13, SE=0.07, p<0.10 and (Step 3) γ_{10}=0.06, SE=0.07, p>0.05]. Findings support results of the indirect effects mediation analyses for the relationship between psychological climate for engagement and

organization-directed contextual performance (see Tabled 6-1 and 6-2). Consistent results of Hypothesis 3b across all three aggregate level predictors, however, demonstrate the intervening function of employee engagement in predicting employee-directed contextual performance behaviors.

The effect of employee engagement as a mediator of the relationship between psychological climate for engagement and the performance outcomes varied as a function of the aggregate level predictor examined. Investigating the function of aggregate level predictors as potential drivers of the overall mean value (γ_{00}, γ_{01}) or contributors to the relationships among individual level variables in four steps provides insight into the bases for these differences. First, investigating Hypothesis 1 further, none of the aggregate level coefficients (γ_{01}, γ_{11}) or the between-group variance terms (τ_{00}, τ_{10}) reached significance across all nine iterations. The relationship between psychological climate for engagement and employee engagement did not vary by the aggregate level predictors. Second, results of Step 2, indicate that a significant amount of variance in employee-directed contextual performance and organization-directed contextual performance behaviors is not explained by the current model as tested. There is a significant between-group variance component of the intercept [employee-directed contextual performance; τ_{00}=0.09 (transformational leadership); τ_{00}=0.09 (transactional leadership); organization-directed contextual performance; τ_{00}=0.23 (leader engagement); τ_{00}=0.28 (transformational leadership); τ_{00}=0.29 (transactional leadership)]. Variance components of organization-directed contextual performance were also significant in Step 3. These results indicate that additional individual level or contextual variables might account for remaining variance in the performance outcome variable [organization-directed contextual performance τ_{00}=0.18 (transformational leadership); τ_{00}=0.20 (transactional leadership)]. Alternatively, the variance components of employee-directed contextual performance became non-significant in Step 3, which indicates that variance in the outcome was accounted for by the model, as tested.

Third, results of Step 3, suggest that the aggregate level predictor, transformational leadership (γ_{01}=0.24, SE=0.08, p<0.01), is a significant predictor of task performance. Transformational leadership is also a significant predictor of employee directed contextual performance behaviors, albeit, minimizing reports of participation in helping behaviors aimed at assisting work colleagues (γ_{01}=-0.21, SE=0.09, p<0.05). Lastly, a significant coefficient of an aggregate level predictor in the slope-as-outcome equation indicates a cross-level interaction. Results indicate a negative cross level interaction between employee engagement and the aggregate level predictor, transactional leadership (γ_{11}=-0.30, SE=0.14, p<0.05), in predicting organization-directed contextual performance behaviors. In this case, transactional leadership, specifically, appears to restrain the relationship between engagement and organization-directed contextual performance.

Hypothesis Testing of Hypotheses 4-8

The focus of the hypothesis testing of Hypotheses 4 through 8 was on the direct, mediated, and indirect effects of leader behavior patterns on individual level variables and outcomes (i.e., 2-1-1; Bryk & Raudenbush, 1992; Hofmann & Gavin, 1998; Hofmann, Griffin, & Gavin, 2000). To test the influence of leader behavior patterns on employee engagement and the performance outcomes, I developed a final model using the following two-step iterative process. First, I estimated a null model to calculate the intraclass correlation coefficient (ICC) to derive the proportion of variation explained by workgroup membership in each of the three performance behaviors (Raudenbush & Bryk, 2002). Resulting ICC values ranged from 1-10%, employee engagement (1%), task performance (11%), contextual performance (employee, 6%), and contextual performance (organization, 7%). These results indicated that workgroup membership accounted for a moderate degree of variation in employee engagement and the three performance behaviors. Second, I examined the degree to which leadership characteristics a) predict employee engagement and performance behaviors, and b) account for variation in the mean intercepts and slopes among workgroups. I used grand mean centering for each variable at the individual and

aggregate levels in each of the research analyses. Similar to the approach used to test Hypotheses 1, 2, and 3, the grand mean establishes the overall mean across individuals as the point of reference. Just as in testing Hypotheses 1 through 3, the focus of comparison was among individuals throughout the organization, instead of between individuals within separate groups. I calculated the *percentage of level-1 residual variance accounted for by predictors in the research model* relative to the null model (pseudo- R_1^2) and reported unstandardized regression coefficients (Kreft & de Leeuw, 1998; Mathieu, 2008; Singer, 1998). Refer to Table 9 for information on the general equation format for Hypotheses 4 through 8. Refer to Tables 10-1 through 10-3 for detailed information regarding results of Hypotheses 4 through 8.

Results of the multilevel modeling process did not support relationships between the aggregate level variables leader engagement, transformational leadership styles, and transactional leadership styles, and the individual level variable, employee engagement. Specifically, results did not provide adequate support for the link between leader engagement and employee engagement, proposed in Hypotheses 4, 5, 7a, 7b, and 7c. Reports of leader engagement were positive but did not have substantial impact on reports of employee engagement (γ=0.10, SE=0.13, p>.05). Although not initially proposed in study hypotheses, reports of transformational leadership (γ=0.26, SE=0.13, p<0.05) had positive and substantial impact on reports of engagement. Additionally, reports of transactional leadership did not significantly affect employee engagement (γ=-0.02, SE=0.14, p>0.05), which indicated a lack of support for the direct relationships proposed in Hypotheses 6, 8a, 8b, and 8c. In sum, these findings suggest that collective perceptions of one's leader engagement and transactional leadership styles may not influence employee engagement as hypothesized. There was support, however, for direct relationships between leader engagement (γ=0.24, SE=0.08, p<0.01), transformational leadership (γ=0.29, SE=0.08, p<0.01) and the outcome variable, task performance. These relationships, however, became less prominent when I examined the interactive effect of transformative leadership behaviors in conjunction with the positive qualities of leader engagement on reports of

task performance behaviors (γ=-0.02, SE=0.06, $p>0.05$). Although the direct effects of transformational leadership and leader engagement were each significant, the strength of the interactive relationship does not provide adequate support for Hypothesis 7a.

Overall, the strength of links between leadership characteristics and each of the three forms of performance indicated that collective perceptions of leadership influence individual reports of performance behaviors but employee engagement might not. Employee engagement was not a primary driver of reports of task performance, whereas both leader engagement and transformational leadership were. Engagement, however, was a consistent primary driver of both forms of contextual performance behaviors; hence, results provided only partial support for Hypotheses 7b, and 7c.

Negative associations between leadership characteristics and performance behaviors may indicate how leader behaviors constrain employee initiative enacted through helping behaviors. Partial support of Hypothesis 7b suggested that employees may associate influencing and stimulating characteristics of a transformative style as a catalyst of self-focused as opposed to collective work behaviors (transformational leadership, γ=-0.23, SE=0.09, $p<0.05$). Furthermore, positive associations between leadership characteristics and performance behaviors suggest that collective perceptions encourage behaviors that positively affect overall productivity as well as the health of the work environment. The effects of leader behavior patterns also accounted for incremental variance beyond the positive impact of frequent interaction with one's leader when predicting task performance behaviors (γ=0.13, SE=0.05, $p<0.05$). These results provide additional support for the role of collective perceptions leader behavior patterns in driving individual performance ratings.

Regarding transactional leadership, findings suggested the influence of leaders espousing exchange of task performance for reward or recognition might discourage helping behaviors. Although the relationship between transactional leadership and contextual performance behaviors directed at the organization was substantial, it was not significant (γ=0.17, SE=0.17, $p>0.05$).

Transactional leadership was not a primary driver of any of the other outcome variables, which does not provide support for Hypotheses 8a, 8b, or 8c.

Discussion

Research findings of the current study serve to bolster the link between perceptions of leadership, one's work context, and performance behaviors that support overall organizational functioning. Additionally, results across hypotheses reinforce the pattern where reports of contextual conditions that support engagement (i.e., psychological climate for engagement and leader behavior patterns) are potential drivers of task performance behaviors. Introducing collective perceptions of leadership characteristics as a source of variation explained, in part, the degree to which perceptions of engagement affect performance behaviors. These patterns of relationships among perceptions of engagement and performance behaviors highlight two related themes. First, perceptions of engagement driven by contextual factors and those directed at the individual are strongly associated, yet their link to different sets of performance behaviors indicates their differentiation. Second, this distinction portrays an outline that aligns perceptions of resources and information within a workgroup context that promotes task performance with task performance ratings, albeit self-report. Furthermore, engaged employees, who reported an enhanced motivation to enact their work role, were also motivated to demonstrate performance behaviors that support overall organizational functioning. Similarly, behaviors within a workgroup context that promote beneficial interpersonal interactions, transparency, and accountability are enhanced through leadership characteristics that espouse dedication, absorption, and vigor toward one's job role.

Results of study analyses provided support for the hypothesized relationships among psychological climate for engagement, individual employee engagement, and the three performance behavior outcomes. Specifically, results suggested support for an intervening role of experiences of employee engagement in connecting psychological climate for engagement to contextual performance behaviors. Individuals who reported perceptions of psychological

conditions present in the work environment that support a climate of engagement were more engaged in their personal work roles (Hypothesis 1). This association supports a foundation on which climate perceptions can help develop individual perceptions, which in turn, encourage behavioral responses (e.g., Carr et al., 2003). Results illustrate this process of engagement through the strength of association between employee engagement and both forms of contextual performance behaviors (Hypotheses 2b, 2c, 3b, and 3c). Employee engagement served as an intervening mechanism through which climate perceptions positively influence volitional behavioral responses (i.e., employee-directed contextual behaviors). Employee engagement has a diminished role, however, when predicting organization-directed contextual performance. Additionally, in contrast to employee-directed contextual behaviors, employee engagement did not serve as a driver of task-related performance behaviors. Both preliminary analyses (i.e., indirect mediation analyses) and results of hypothesis testing indicated a lack of support for a direct relationship but instead framed climate perceptions as a primary driver of task performance behaviors (Hypotheses 2a & 3a).

These findings also support the potential for engagement to transfer from one individual to another in a shared, common domain through a 'crossover process' (Westman, 2001, 2002; Bakker, Demerouti, & Schaufeli, 2005; Bakker, Emmerik, & Euwema, 2006). In the work environment from which the sample was drawn, factors such as reciprocation, reporting to a common supervising manager, and exchange of pertinent work-related information constituted an environment that would support collective perceptions. Nonetheless, there was not adequate support for a collective perception of climate for engagement. Psychological climate for engagement, instead, was a more appropriate articulation of the concept of observing policies, practices, and procedures that support employee dedication, energy, and absorption in one's work role. As social learning theorists (e.g., Bandura, 1997) and engagement researchers have proposed (e.g., Bakker et al., 2005) the crossover phenomenon manifests itself under circumstances of close interaction among individuals. Research on the crossover process also

posits an interactive relationship between individual and collective attitudes, one enhancing the other (Westman, 2001; Bakker et al., 2005). The process model proposed in the current study suggests but does not confirm a causal direction between climate and individual perceptions of engagement. It is conceivable that attitudes actually establish the tone or environmental conditions observed by employees to substantiate climate perceptions. This proposition, alternatively, suggests reverse causation or possibly a feedback loop, to account for results at the individual level. For this reason, only a field experiment conducted with manipulation, phases of repeated assessment, and appropriate measures of control that establish a stronger causal relationship between climate and individual perceptions, and performance behaviors would provide adequate basis for a causal direction.

Research consistently has identified the role of positive leadership behavior patterns in cultivating various workgroup processes in support of performance excellence and professional development. Climate research, in particular, espouses this view in describing leaders as 'meaning managers' and 'climate engineers' (Kozlowski & Doherty, 1989; Rentsch, 1990; Naumann & Bennett, 2000). Whereas initial hypotheses positioned employee engagement as an intermediary, transmitting the impact of climate perceptions of leader behavior patterns to individual behaviors, employee engagement did not serve that function. Contrary to predictions, positing leaders as role models who establish the standard of behavior by encouraging followers to perform their behavior patterns (i.e., 'do as I do'), collective reports of leader engagement did not influence personal experiences of engagement to any significant degree (Hypothesis 4). Collective perceptions of leadership styles that leaders exhibit did not inspire engagement, either (Hypotheses 5 and 6). Consequently, the interactive relationship between leader engagement and transformational leadership style did not affect individual reports of employee engagement, in effect, diminishing the function of leader behavior patterns in prompting follower engagement. Additionally, whereas employee engagement retained significance in predicting contextual performance behaviors, leader engagement, transformational (Hypotheses 7b and 7c), and

transactional leadership styles (Hypotheses 8b and 8c) did not positively relate to either form of contextual behavior. The interactive relationship between leader engagement and transformational leadership styles actually reduced the occurrence of organization-directed contextual behaviors (Hypothesis 7c). Leader engagement and transformational leadership styles at the aggregate level, however, were primary drivers of reports of task performance behaviors, albeit, not through employee engagement, but directly (Hypothesis 7a). Alternatively, transactional leadership style was not a primary driver of task performance (Hypothesis 8a).

Leaders who exemplify engagement in their personal work role and encourage workgroup members to reach heights of achievement that extend beyond expectations can serve as effective catalysts for positive behavioral responses if not employee engagement development strategies. Although leader engagement and transformational leadership behaviors did not establish a precedence on which followers modeled their own engagement, both forms of leader behavior patterns strongly encouraged task performance. Numerous other contextual and personal factors may, in fact, direct climate perceptions of engagement and personal experiences of engagement examined in this study. These results provide an initial step in establishing a link between leader engagement, an established social-contextual factor, and employee engagement. Whereas the interactive relationship between transformative leadership styles and leader engagement did not promote performance behaviors, the confluence of leader behavior patterns may invoke other beneficial responses, yet to be determined. This research study focused on those links, specifically, and provided a foundation for future research to build on.

Recent research commentaries have recommended that engagement researchers consider advancing the current state of engagement by exploring integrative research agendas that identify potential drivers of engagement and define the role of leaders in influencing follower engagement (Bakker, Albrecht, & Leiter, 2011). Results of the current study provide substance to the dialogue in two ways. First, results confirm a consistent link between employee engagement and psychological perceptions of contextual resources in support of engagement. These results

support early research on the impact of climate perceptions (Brown & Leigh, 1996) and recent research that highlights the ability of climate perceptions to drive beneficial work experiences (Salanova, Agut, & Peiro, 2005). Second, the attention focused on the role of leadership in promoting an engagement process, within a group-based research model, contributes to the extent to which findings can be integrated into practical application and encourage continued scientific inquiry. Although, results suggest leader behavior patterns play a muted role in influencing engagement experiences, collective perceptions of leader behaviors were consistent drivers of individual performance ratings. The full-range leadership model has received significant attention and empirical support across numerous organizational contexts (e.g., Avolio, 2007). Recent alternative models of leadership have introduced other configurations of leadership that may have equivalent impact on follower behaviors. For example, empowering leadership describes the role of leaders in encouraging and enabling employees to identify opportunities to lead themselves (Srivastava, Bartol, & Locke, 2006). This form of self-leadership (Manz & Sims, 1987) differs from the laissez-faire style of leadership described in the full-range leadership model because the leader actively provides autonomy, decision latitude, and control in order to build confidence and competence in one's followers. Results of the current suggest that examining empowering leadership, instead of the more traditional transformational and transactional leadership styles, may be appropriate in similar work contexts. Respondents were highly educated professionals to whom professional identity is a coveted personal attribute. These characteristics of the sample may reduce the importance of transformative and transactional leadership styles that promote close interpersonal interaction (e.g., intellectual stimulation) and exchange process monitoring (e.g., management-by-exception) to drive positive work outcomes.

A strength of the current research is worthy of note. I used several pieces of information, from different sources, to define groups within the host organization. The separate forms provided some redundant information, yet, in total, they revealed information that was relevant to

concerns of both the workgroup and the organization as a whole. These multiple efforts to define workgroups included focus group interviews, observation of physical work environment, and investigation of supplemental information such as employee roster and participant responses to social networking questions on the organizational survey. These efforts also enhance the likelihood that workgroups defined in the research model reflect the compositions that maintain direct influence over individual attitudes, perceptions, and experiences within the work environment. Access to these functional and real workgroups strengthens links between the aggregate level and individual level outcomes. A substantial contribution of the current research project is the examination of the role climate perceptions of leadership play in driving individual behaviors.

General Study Limitations

The current research study was a correlational survey project, in which responses were collected at a single time point. Participants provided self-reports regarding work attitudes, performance behaviors, perception of leader behavior characteristics, and endorsement of workgroup members. Respondents were a subjective source of information regarding perceptions of attitudes and behaviors at the individual level as well as the aggregate level. For this reason, mono-method bias, a product of relying on a single source for survey data, may inflate relationships among variables of interest. Using aggregate measures of leader behavior characteristics may attenuate the impact of inflation among similarly related concepts (e.g., percept-percept inflation; Crampton & Wagner, 1994) in correlational studies, however, the concern is not completely eliminated. Associating objective measures of task performance, multiple perspectives of climate perceptions, and leader perceptions of his or her leadership characteristics and engagement, with participant responses would provide additional substantive support for the relationships highlighted in the proposed research model.

Currently, there are not conventional norms that provide suggestions regarding the adequate sample size or group size for hypothesis testing when using a multilevel model

(Preacher, Zyphur, & Zhang, 2010). Researchers have recommended obtaining a minimum sample size of, '20 groups with 30 observations per group' (Bickel, 2007, pp. 272-274; Heck & Thomas, 1999), albeit anecdotally. There is, however, support for an emphasis on increasing the number of groups surveyed as opposed to the number of individuals in each group (Zhang, Zyphur, & Preacher, 2009). Efforts to examine statistical power, a priori, suggested that the grouped sub-sample was of sufficient size to test the hypothesized relationships, even though these estimates run contrary to the recommendations mentioned above. Nonetheless, limitations associated with inadequate statistical power lead to the inability to observe significant effects between the aggregate and individual levels, increased Type I and Type II error rates, and erroneous conclusive interpretations (Bickel, 2007; Heck & Thomas, 1999; Hox, 2002). Although sample size may be considered a potential constraint, results of the current study are bolstered by two important supporting factors. First, the use of social networking analyses provided a substantiated, definitive distinction for group membership among survey respondents. Second, consistent results across multiple forms of statistical analysis including individual and aggregate level constructs suggest a robustness of the links within the engagement process proposed through hypothesis testing.

Future Research

Researchers who have examined multiple relationships within a multilevel model have employed tools such as multilevel confirmatory factor analyses (Muthen, 1994) or structural equation modeling (Vandenberg & Lance, 2000) in order to test the structure of individual and aggregate-level measures simultaneously (Chen, Mathieu, & Bliese, 2004). An alternative to a piecemeal approach, this form of modeling can account for measurement errors, while also establishing various types of validity (e.g., content, construct; Chen et al., 2004). Examining whether these relationships within this research model are robust, through a comprehensive modeling effort, can be a potential direction of future research. Replicating significant relationships in this research study across multiple work environments with larger individual

sample and group sample sizes would provide additional support for generalizing these findings to other work contexts.

Climate researchers can choose among an assortment of methods to combine individual responses to develop compositions of teams and groups and substantiate climate perceptions within organizational settings (e.g., additive, direct consensus, referent-shift, dispersion, and process models; Chan, 1998; Chen, Bliese, & Mathieu, 2005). In the current research study, I employed the referent-shift method to develop survey items and to conceptualize workgroup compositions within the host organization. This method facilitates a link between individual and aggregate level concepts, while maintaining their distinct frames of reference where agreement among group members can be established. The dispersion model is another method that substantiates climate perceptions, but instead accounts for within-group variance, or 'climate strength' (Chan, 1998), as opposed to agreement among group members. Results of the current study suggest that responses to items assessing climate for engagement did not converge to a collective, aggregate concept of agreement. Consequently, investigating the extent to which perceptions disperse among workgroup members could also describe the concept of climate at an aggregate level. In turn, the variance captured through the model of dispersion could account for differences in attitudinal (e.g., employee engagement) and behavioral (task and contextual performance behaviors) outcomes at the individual level. Future research could maintain the function of climate for engagement as a driver of employee attitudes and behaviors in the form of an aggregate level concept that represents group perceptions, albeit the extent to which within-group dispersion predicts variance in employee outcomes.

Considering the established climate research mentioned previously that suggests the role of supervisors and leaders as 'climate engineers' (Carr et al., 2003; Naumann & Bennett, 2000; Rentsch, 1990), leader engagement and leadership styles could have served as antecedents to climate perceptions (Zohar & Luria, 2010). Given the influence leaders have over the communication of information, access to resources, and the design of work roles, it is perceivable

that leader behavior patterns could directly affect perceptions of workplace climate. Some researchers have made this claim, distinguishing leadership in dyadic relationships from leadership as perceived by the group as whole by communicating the influence leaders have over climate perceptions (Shamir, House, & Arthur, 1993; Shamir, Zakay, Breinin, & Popper, 1998; Korek, Felfe, Zaepernick-Rothe, 2010). Climate researchers, however, suggest that perceptions of policies, procedures, and practices encouraged in the workplace are influenced by factors representing numerous dimensions, such as social interactions, workplace norms, and organizational structure, in addition to leader behaviors (Schulte, Ostroff, Shmulyian, & Kinicki, 2009). The current study hypotheses were derived based on the potential for leader behavior patterns to directly influence individual perceptions and behaviors, which are supported by research across numerous contexts (Podsakoff, MacKenzie, Moorman, & Fetter, 1990; Vroom, 2000; Avolio, Gardner, Walumbwa, Luthans, & May, 2004; Froman, 2010). Although current research is establishing the foundation for the potential of leader characteristics to impact climate perceptions, the association has made, primarily, in specific contexts (e.g., safety climate; Zohar & Luria, 2010; McGonagle & Kath, 2010; Credo, Armenakis, Field, & Young, 2010). Examining the impact of leader behavior patterns on psychological climate perceptions could make a significant contribution to our understanding of antecedents of climate perceptions and broaden our knowledge of processes influenced by leader characteristics.

Additionally, investigating the extent to which the relationships remain salient and positive in other organizational settings can substantiate the general implications suggested by study results. Lastly, identifying the impact of individual (e.g., individual difference variables) and contextual (e.g., physical structure) factors that may encourage or inhibit the expression of engagement could help strengthen the link between the specific variables of interest examined in the current research.

Conclusion

Results of the current study provide credence and additional support for the role of full-range leadership in fostering positive performance behaviors. A significant contribution of this research study to the current literature is the examination of specific interpersonal factors that work to encourage the experience of engagement among workgroup members. Individual employee engagement did not assume the role originally hypothesized in transmitting perceptions of leader behavior characteristics into performance. Nonetheless, engagement did serve as an intermediary in the association between psychological climate for engagement and contextual performance behaviors. Employee engagement was of less import as conditions in support of a climate for engagement positively influenced task performance behaviors among employees of the host organization. In sum, these results will continue to educate employee development efforts and persuade further inquiry into the role of leadership and relevance of climate perceptions in developing and maintaining engagement.

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Figure 1-1. Research Model Hypotheses 1-3:

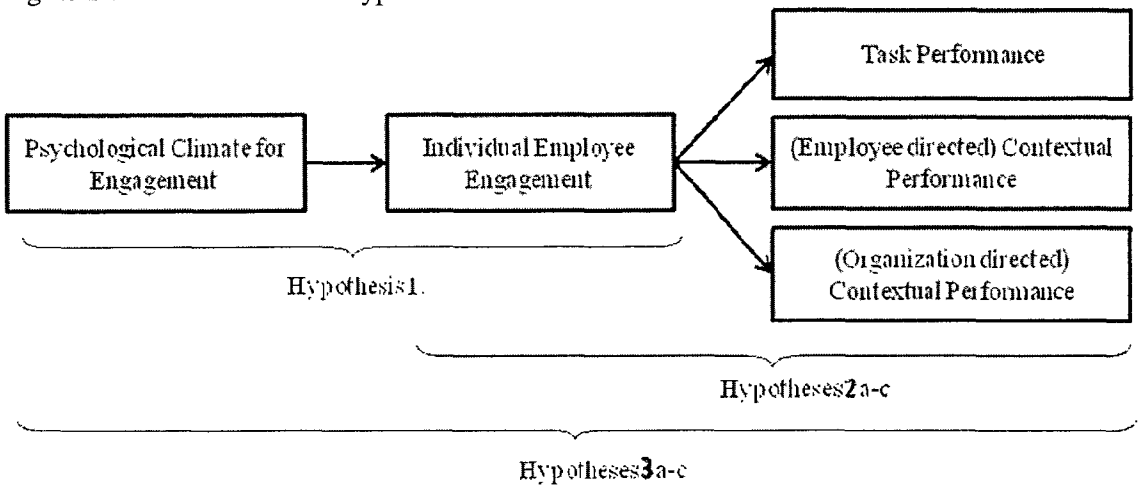


Figure 1-2. Research Model Hypotheses 4-6:

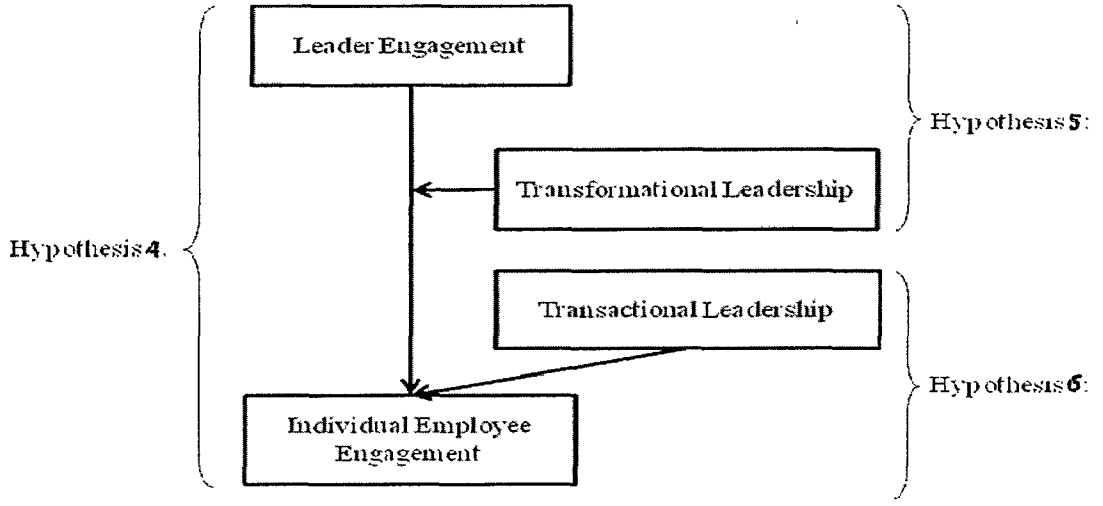


Figure 1-3. Research Model Hypotheses 7-8:

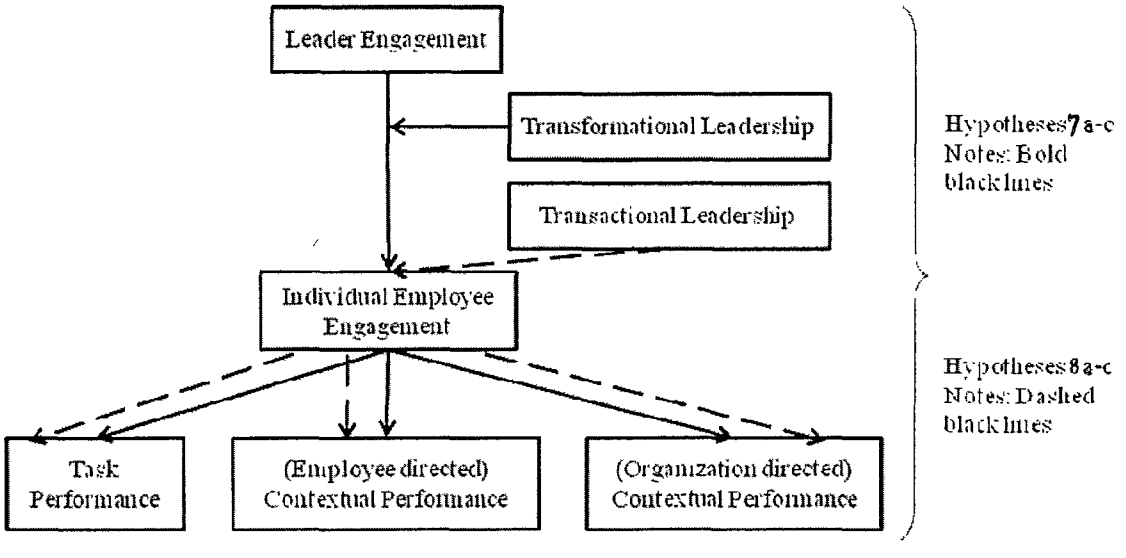
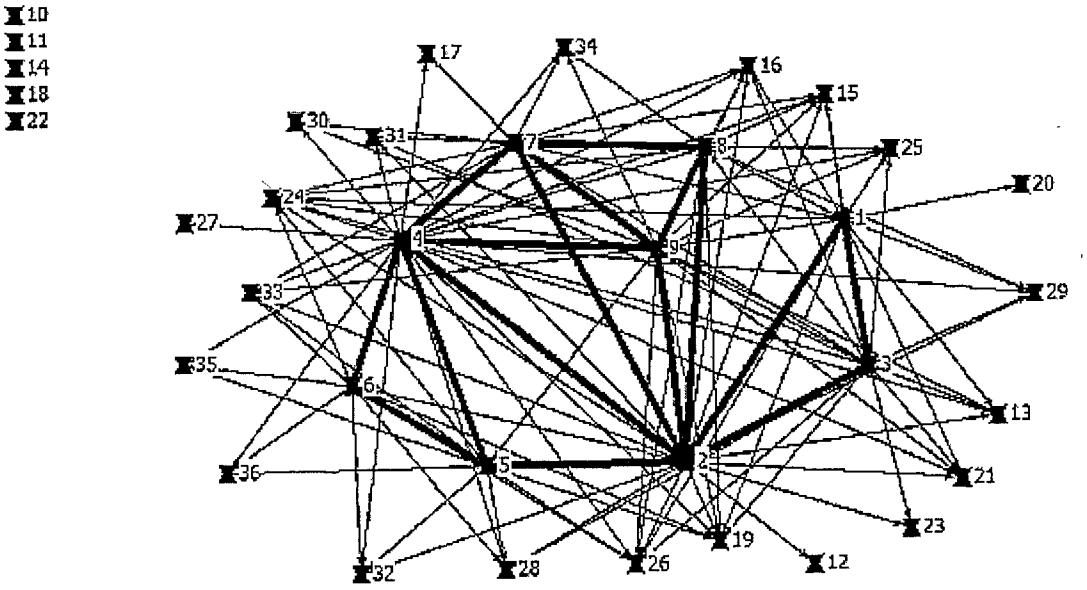
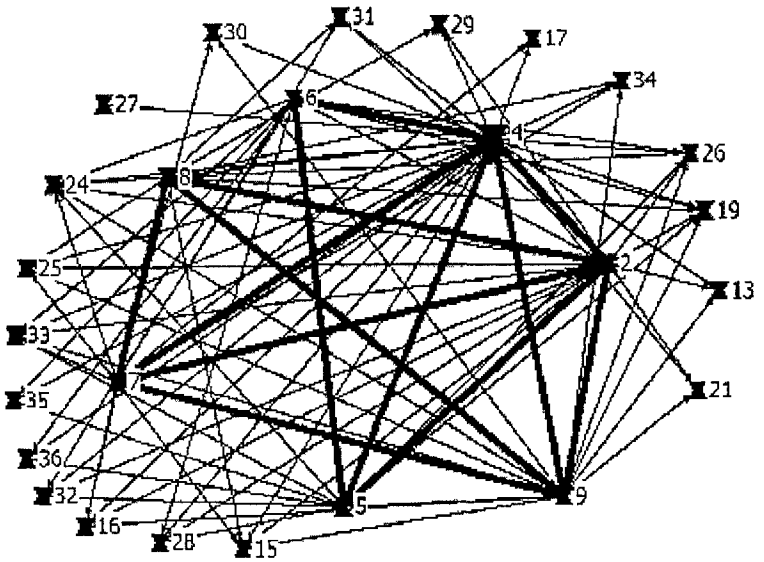


Figure 2-1. Social Network Analysis Example Illustration: Work Facility



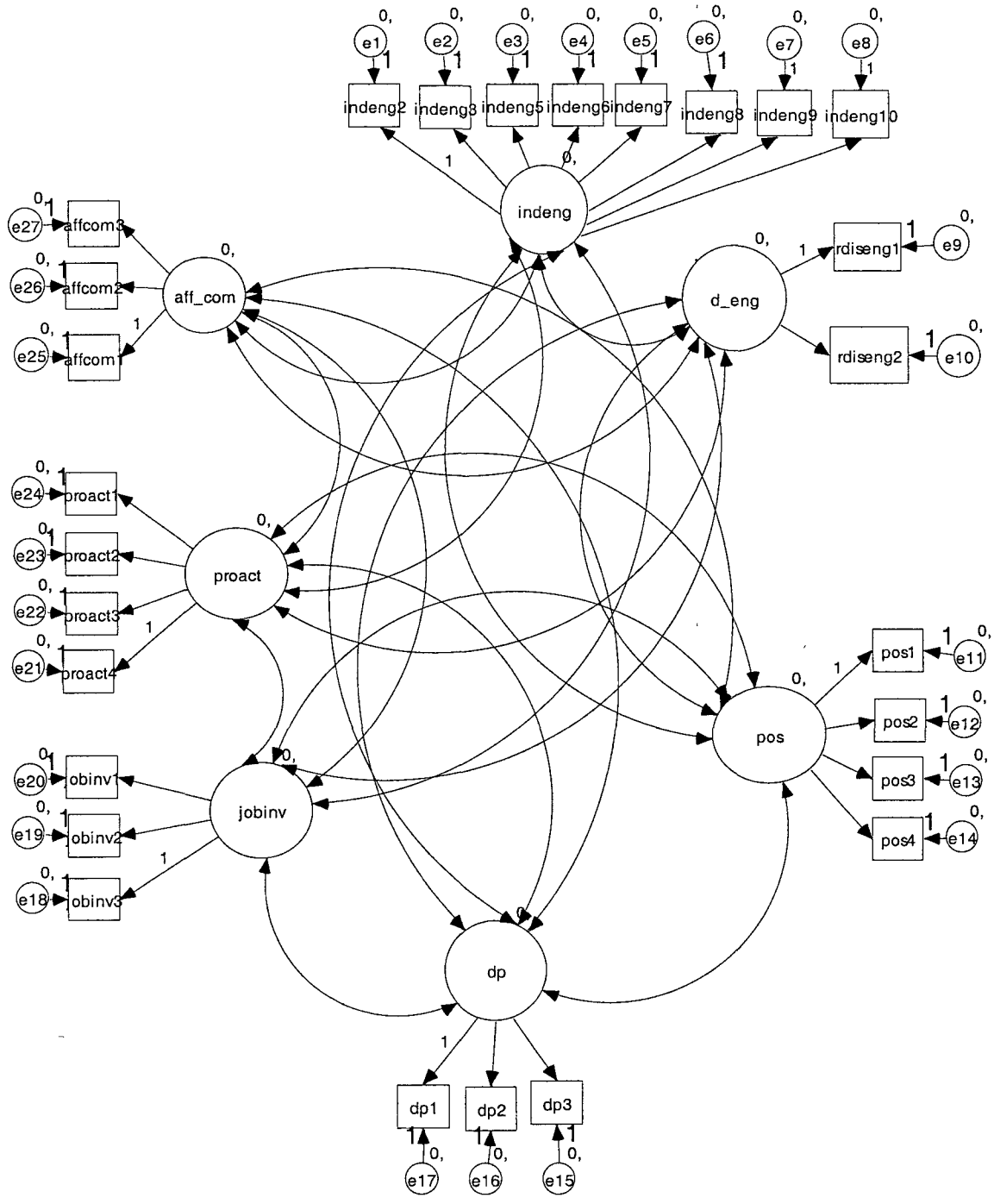
Notes: All employee names were assigned a number. Employees who participated in the baseline survey were assigned a lower number and employees who did not participate were assigned a higher number. In this example, numbers 1 through 9 correspond to respondents of the survey and number 10 through 36 correspond to employees who did not participate. A bold, black line represents a reciprocal endorsement between two respondents. This reciprocal link indicates that each respondent endorsed the other as a workgroup member. A faint, black line represents a single endorsement that is not shared, but is in one direction. Numbers in the top left corner represent employees who were not endorsed by any respondent of the baseline survey.

Figure 2-2. Social Network Analysis Example Illustration: Ego Network



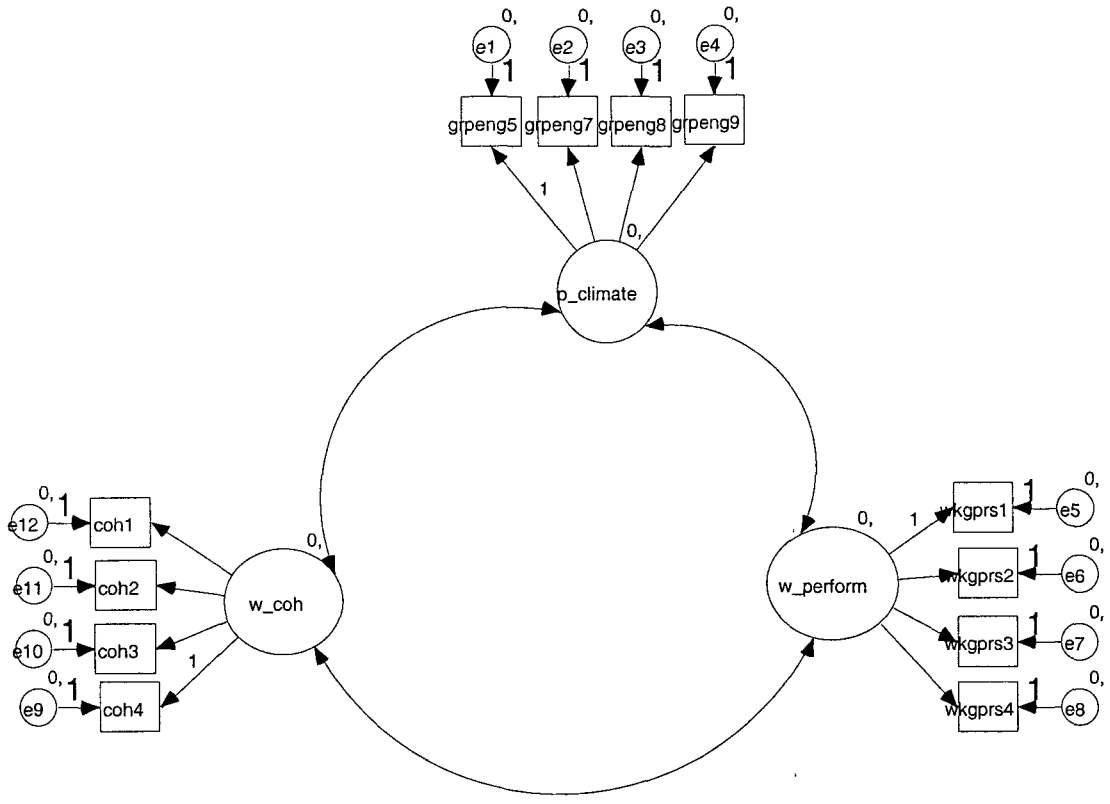
Notes: A bold, black line represents a reciprocal link between the 'ego' (the ego '4' is denoted by the large black figure), and each workgroup member whom he or she endorsed. A faint, black line represents a single endorsement that is not shared, but is in one direction.

Figure 3-1. Confirmatory Factor Analysis: Measurement Model – General Attitudes and Attitudes about Work



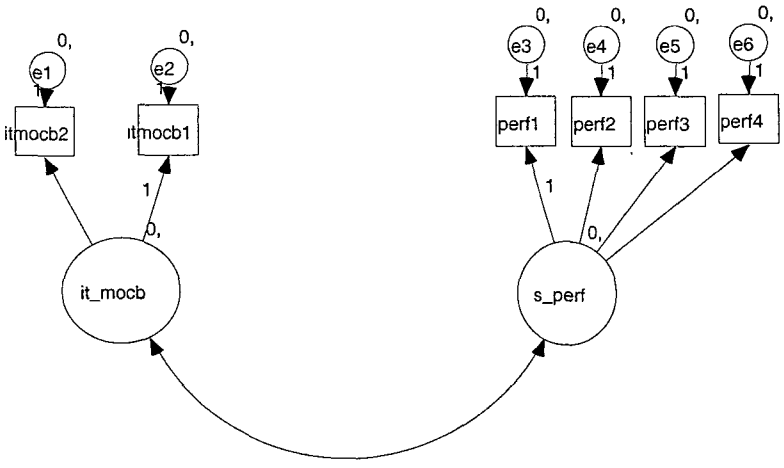
Notes: INDENG – Employee Engagement (INDENG); AFF_COM – Affective Organizational Commitment (AFFCOM); PROACT – Proactive Personality (PROACT); JOBINV – Job Role Involvement (JOBINV); DP – Dispositional Pessimism (DP); POS – Perceived Organizational Support (POS); D_ENG – Disengagement (RDISENG)

Figure 3-2. Confirmatory Factor Analysis: Measurement Model – Employee Perceptions of Workgroup Characteristics and Processes



Notes: W_COH – Workgroup Cohesion (COH); P_CLIMATE – Psychological Climate for Engagement (GRPENG); W_PERFORM – Workgroup Performance Processes (WKGPRS)

Figure 3-3. Confirmatory Factor Analysis: Measurement Model – Task Performance and Employee Directed Contextual Performance Behaviors



Notes: IT_MOCB – Employee directed contextual performance behaviors (ITMOCB); S_PERF – Self-reported supervisor perceptions of job performance (PERF)

Figure 4: Power Analysis: Optimal Design

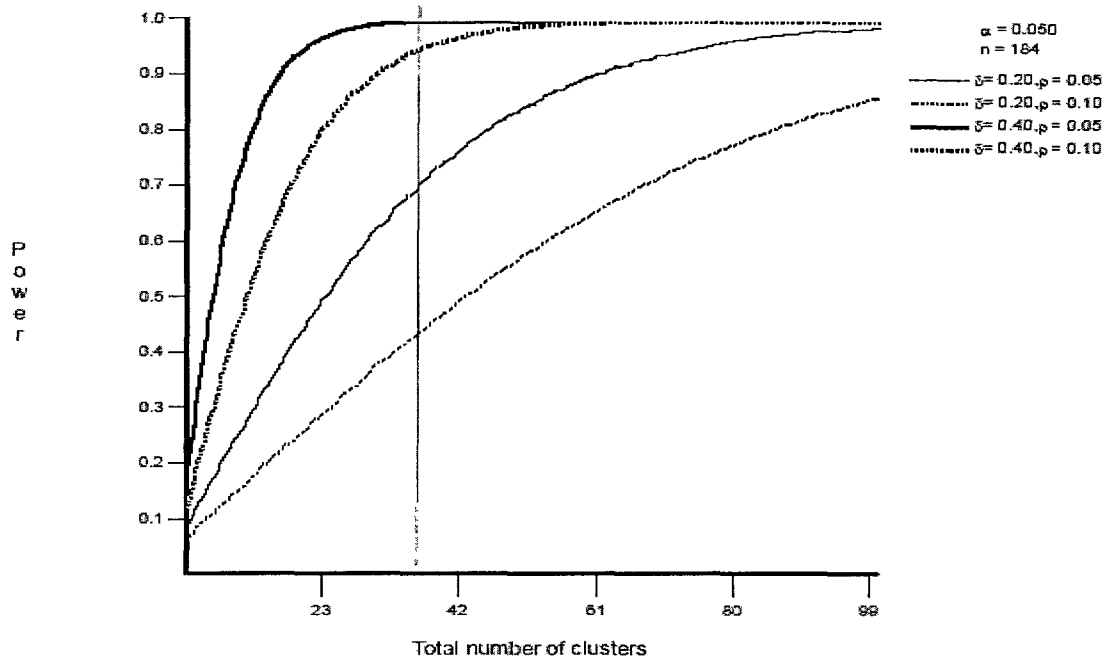


Table 1-1. General Respondent Characteristics for Initial Sample and Grouped Sub-sample

Respondent Characteristics	*Initial Sample (n_S=259)*	*Grouped Sub-Sample (n_R=184)*
Gender	**Total n = 249 (96%)**	**Total n = 181 (98%)**
Men	68 (27%)	47 (26%)
Women	181 (73%)	134 (74%)
Racial Background	**Total n = 240 (93%)**	**Total n = 178 (97%)**
Black/African American	22 (9%)	18 (10%)
Asian	5 (2%)	3 (2%)
Caucasian	166 (69%)	121 (68%)
Hispanic/Latino	18 (8%)	14 (8%)
Native-American	8 (3%)	7 (4%)
Multi-racial	8 (3%)	5 (3%)
Other	13 (5%)	10 (6%)
Discipline	**Total n = 257 (99%)**	**Total n = 183 (99%)**
Medical/Dental	131 (51%)	85 (46%)
Mental Health	80 (31%)	65 (35%)
Clerical (not involved in direct patient care)	29 (11%)	22 (12%)
Other	17 (7%)	11 (6%)
Primary Work Shift	**Total n = 259 (100%)**	**Total n = 184 (100%)**
Morning (1st shift)	183 (71%)	123 (67%)
Evening (2nd shift)	60 (23%)	50 (27%)
Night (3rd shift)	11 (4%)	10 (5%)
Other	5 (2%)	1 (1)
Age Group	**Total n = 244 (94%)**	**Total n = 178 (97%)**
18-24 years old	5 (2%)	3 (2%)
25-33 years old	22 (9%)	17 (10%)
34-42 years old	52 (21%)	42 (24%)
43-51 years old	74 (30%)	52 (29%)
52-60 years old	69 (28%)	48 (27%)
61-69 years old	20 (8%)	16 (9%)
70 years and older	2 (1%)	0
Highest level of education	**Total n = 242 (93%)**	**Total n = 174 (95%)**
High school diploma or GED	7 (3%)	5 (3%)
Some college	24 (10%)	16 (9%)
Diploma or certificate program	26 (11%)	18 (10%)
Graduated from college	75 (31%)	56 (32%)
Some graduate/professional school	8 (3%)	5 (3%)
Completed graduate/professional degree	102 (42%)	74 (43%)

Table 1-2. General Respondent Characteristics for Initial Sample and Grouped Sub-sample

Respondent Characteristics	*Initial Sample* (n_S=259)	*Grouped Sub-Sample* (n_R=184)
Gender of primary on-site supervisor	**Total n = 247 (95%)**	**Total n = 180 (98%)**
Men	90 (36%)	65 (36%)
Women	157 (64%)	115 (64%)
Do you supervise others?	**Total n = 247 (95%)**	**Total n = 179 (97%)**
Yes	78 (32%)	51 (29%)
No	169 (68%)	128 (71%)
Gender composition of (respondent) discipline	**Total n = 245 (95%)**	**Total n = 179 (97%)**
Mostly men	13 (5%)	7 (4%)
Mostly women	187 (76%)	139 (78%)
As women as men	45 (18%)	33 (18%)
Majority age of (respondent) discipline	**Total n = 247 (95%)**	**Total n = 181 (98%)**
Younger than (respondent)	102 (41%)	74 (41%)
Older than (respondent)	58 (24%)	40 (22%)
About the same age as me	87 (35%)	67 (37%)
Years employed at (host organization)	**Total n = 235 (91%)**	**Total n = 176 (96%)**
Five years or less	109 (46%)	81 (46%)
Six to Nine years	40 (17%)	36 (21%)
Ten to Nineteen years	81 (34%)	56 (32%)
Twenty years and more	5 (2%)	1 (1%)
Years employed in current position	**Total n = 235 (91%)**	**Total n = 176 (96%)**
Five years or less	117 (50%)	88 (50%)
Six to Nine years	38 (16%)	33 (19%)
Ten to Nineteen years	68 (29%)	50 (28%)
Twenty years and more	12 (5%)	5 (3%)

Table 2. Summary of Coefficient Alphas, Within Group Agreement (r_{wg}), and Intraclass Correlation (ICC(1); ICC(2)) values for Aggregate Level Employee Perceptions

Aggregate Level Employee Perceptions	Individual Level Coefficient Alpha	Aggregate Level Coefficient Alpha	r_{wg} Min	r_{wg} Mean	r_{wg} Median	r_{wg} Max	F	ICC(1)	ICC(2)
Leader Engagement	0.91	0.88	0.01	0.72	0.89	1.00	1.52*	0.09	0.34
Transformational Leadership	0.94	0.92	0.01	0.84	0.91	1.00	1.90***	0.15	0.47
Transactional Leadership	-	-	-	-	-	-	1.46**	0.08	0.32
Psychological Climate for Engagement (Individual Level Employee Perception)	0.91	0.91	0.01	0.66	0.78	1.00	1.21	0.04	0.17

Notes: ICCs reflect the proportion of between-team variance in each outcome. Workgroups with atleast 2 members; no dyads (some with supervisors (n=16), some without (n=19)=n_T=35). One-way ANOVA results for Aggregation Analysis; ($n_j \geq 2$ members; n_g=35; n_T=184)]
* $p < .05$., two-tailed. ** $p < .01$., two-tailed. *** $p < .001$., two-tailed.

Table 3-1. Correlation Table. Item Means, Standard Deviations, Intercorrelations, and Coefficient Alphas of Variables in Research Model

	Items	M	SD	1	2	3	4	5	6	7	8	9
1.Interaction with Leader	1	3.6	1.2	*N/A*								
2.Employee Engagement	8	5.3	1.2	-0.01	*0.86*							
3.Psychological Climate for Engagement	4	3.8	1.7	0.24**	0.38**	*0.91*						
4.Leader Engagement	3	5.7	1.5	0.26**	0.12	0.35**	*0.91(0.88)*	**0.61***	**0.36**			
5.Transformational Leadership	5	3.0	1.3	0.41**	0.26**	0.63**	0.56**	*0.94(0.92)*	**-0.03**			
6.Transactional Leadership	1	2.8	1.3	0.02	0.02	-0.02	-0.11	-0.04	*N/A*			
7.Task Performance	4	3.9	0.8	0.25**	0.10	0.39**	0.29**	0.38**	0.01	*0.92*		
8.Contextual Behaviors (Employee)	2	6.0	0.9	0.00	0.41**	0.18*	0.08	0.01	-0.06	0.18*	*0.72*	
9.Contextual Behaviors (Organization)	1	5.6	1.5	0.09	0.15*	0.18*	0.07	0.16*	0.01	0.23**	0.10	*N/A*

Notes: * $p<0.05$, ** $p<0.01$. Listwise deletion n=174. M – denotes item means, SD – denotes standard deviation of items. The values in the diagonal represent coefficient alphas of the respective measures at the individual level. Coefficient values listed in parentheses denote aggregate coefficient alphas. An (N/A) indicates a single-item measure. The values below the diagonal represent zero-order correlation values among variables at the individual level. Values in **bold** above the diagonal represent correlation values among variables at the aggregate level (Listwise deletion $n_g=16$).

Table 3-2. Correlation Table. Intercorrelations and Coefficient Alphas of all Research Study Variables

	1	2	3	4	5	6	7	8	9
1. Interaction with Supervisor	*N/A*								
2. Proactive Personality	0.02	*0.88*							
3. Dispositional Pessimism	-0.07	-0.22**	*0.85*						
4. Job Role Involvement	0.08	0.13	-0.09	*0.62*					
5. Perceived Organizational Support	0.08	-0.10	-0.10	0.28**	*0.97*				
6. Affective Organizational Commitment	0.12	0.07	-0.11	0.45**	0.73**	*0.92*			
7. Job Satisfaction	0.16*	-0.01	-0.19*	0.24**	0.53**	0.58**	*N/A*		
8. Disengagement	-0.11	-0.08	0.29**	-0.45**	-0.36**	-0.45**	-0.48**	*0.68*	
9. Employee Engagement	-.003	0.33**	-0.30**	0.42**	0.27**	0.48**	0.39**	-0.52**	*0.86*

Notes: * $p<0.05$, ** $p<0.01$. Listwise deletion n=172. The values in the diagonal represent coefficient alphas of the respective measures at the individual level. Coefficient values listed in parentheses denote aggregate coefficient alphas. An (*N/A*) indicates a single-item measure. The values below the diagonal represent zero-order correlation values among variables at the individual level.

Table 3-3. Correlation Table. Intercorrelations and Coefficient Alphas of all Research Study Variables

	1	2	3	4	5	6	7	8	9
10. Psychological Climate for Engagement	0.23**	0.13	-0.22**	0.19*	0.57**	0.56**	0.50**	-0.41**	0.38**
11. Workgroup Cohesion	0.07	0.02	-0.11	0.07	0.25**	0.21**	0.20**	-0.17*	0.13
12. Workgroup Performance Processes	0.14	-0.05	-0.15	0.15*	0.36**	0.35**	0.26**	-0.22**	0.23**
13. Leader Engagement	0.25**	.00	-0.22**	0.06	0.35**	0.32**	0.41**	-0.22**	0.13
14. Transformational Leadership	0.40**	0.05	-0.17*	0.14	0.60**	0.50**	0.54**	-0.39**	0.26**
15. Transactional Leadership	0.03	0.004	0.04	0.10	0.01	0.01	-0.02	-0.03	0.02
16. Task Performance Behaviors	0.25**	0.19*	-0.23**	0.04	0.22**	0.17*	0.13	-0.13	0.10
17. Contextual Behaviors (Employee)	0.01	0.23**	-0.23**	0.18*	-0.01	0.12	-0.01	-0.18*	0.41**
18. Contextual Behaviors (Organization)	0.09	0.05	-0.06	0.10	0.14	0.17*	0.16*	-0.27**	0.15*

Notes: * $p<0.05$, ** $p<0.01$. Listwise deletion n=172. 1. Interaction with Supervisor; 2. Proactive Personality; 3. Dispositional Pessimism; 4. Job Role Involvement; 5. Perceived Organizational Support; 6. Affective Organizational Commitment; 7. Job Satisfaction; 8. Disengagement; 9. Employee Engagement

Table 3-4. Correlation Table. Intercorrelations and Coefficient Alphas of all Research Study Variables

	10	11	12	13	14	15	16	17	18
10. Psychological Climate for Engagement	*0.91*								
11. Workgroup Cohesion	0.55**	*0.93*							
12. Workgroup Performance Processes	0.57**	0.54**	*0.89*						
13. Leader Engagement	0.34**	0.15*	0.16*	*0.91 (0.88)*					
14. Transformational Leadership	0.63**	0.29**	0.28**	0.55**	*0.94 (0.92)*	**0.61***	**0.36**		
15. Transactional Leadership	-0.02	-0.08	0.02	-0.10	-0.04	*N/A*	**-0.03**		
16. Task Performance Behaviors	0.39**	0.24**	0.27**	0.28**	0.37**	0.01	*0.92*		
17. Contextual Behaviors (Employee)	0.19*	0.09	0.17*	0.09	0.02	-0.06	0.18*	*0.72*	
18. Contextual Behaviors (Organization)	0.18*	0.09	0.11	0.08	0.16*	-0.004	0.21**	0.10	*N/A*

Notes: * $p<0.05$, ** $p<0.01$. Listwise deletion n=172. The values in the diagonal represent coefficient alphas of the respective measures at the individual level. Coefficient values listed in parentheses denote aggregate coefficient alphas. An (*N/A*) indicates a single-item measure. The values below the diagonal represent zero-order correlation values among variables at the individual level. Values in **bold** above the diagonal represent correlation values among variables at the aggregate level (Listwise deletion $n_g=16$).

Table 3-5. Correlation Table. Items, Means, and Standard Deviations of all Research Variables

	Number of Items in Scale	Mean	Standard Deviation
1. Interaction with Supervisor	1	3.58	1.20
2. Proactive Personality	4	5.06	1.15
3. Dispositional Pessimism	3	2.10	1.09
4. Job Role Involvement	3	2.88	1.35
5. Perceived Organizational Support	4	3.03	1.58
6. Affective Organizational Commitment	3	3.15	1.70
7. Job Satisfaction	1	4.84	1.83
8. Disengagement	2	3.94	1.65
9. Employee Engagement	8	5.29	1.25
10. Psychological Climate for Engagement	4	3.82	1.66
11. Workgroup Cohesion	4	4.73	1.54
12. Workgroup Performance Processes	4	2.73	0.94
13. Leader Engagement	3	5.77	1.45
14. Transformational Leadership	5	3.02	1.34
15. Transactional Leadership	1	2.82	1.33
16. Task Performance Behaviors	4	3.88	0.80
17. Contextual Behaviors (Employee)	2	6.04	0.96
18. Contextual Behaviors (Organization)	1	5.59	1.51

Table 4-1. Results of Principal Axis Factor Analyses. Individual Level Employee Perceptions of Work and Personal Attributes: 5-Factor Solution

Principal Axis Factoring (varimax rotation): n=247; KMO (df=325) = 0.89, p<.001; 68% variance explained														
Item Detail		Final Multiple Factor Solution							Single Factor Solution			α	
Individual Level Employee Perceptions		1	2	3	4	5	% var.	E	1	% var.	E	α_I	α_R
POS1	CMHC really cares about my well-being	0.94							0.94				
POS2	CMHC cares about my general satisfaction at work	0.93							0.96				
POS3	CMHC is willing to extend itself in order to help me perform my job to the best of my ability	0.89							0.91	91%	3.65	0.97	0.96
POS4	CMHC shows a great deal of concern for me	0.92					32%	8.30	0.94				
ACOM1	I feel a strong sense of "belonging" to CMHC	0.74							0.90				
ACOM2	I feel "emotionally attached" to CMHC	0.70							0.94	86%	2.57	0.92	0.91
ACOM3	I talk up CMHC to others as a great organization to work for	0.69							0.82				
JSAT	All in all, I am satisfied with my job	0.49							-	-	-	-	-

Notes: E-Eigenvalue; α_I-coefficient alpha for initial sample, n=259; α_R-coefficient alpha for grouped sub-sample, n=184;
POS – Perceived Organizational Support; ACOM – Affective Organizational Commitment; JSAT – Job Satisfaction

Table 4-2. Results of Principal Axis Factor Analyses. Individual Level Employee Perceptions of Work and Personal Attributes: 5-Factor Solution

Principal Axis Factoring (varimax rotation): n=247; KMO (df=325) = 0.89, p<.001; 68% variance explained													
Item Detail		Final Multiple Factor Solution							Single Factor Solution			α	
Individual Level Employee Perceptions		1	2	3	4	5	% var.	E	1	% var.	E	α_I	α_R
ENG1	I find the work that I do full of meaning and purpose		0.61						0.77				
ENG2	Time flies when I'm working		0.69						0.70				
ENG3	I feel happy when I am working intensely		0.62						0.74				
ENG4	I am proud of the work that I do		0.70				14%	4.1	0.70	60%	4.78	0.90	0.90
ENG5	I am immersed in my work		0.72						0.65				
ENG6	I get carried away when I'm working and lose all track of time		0.63						0.64				
ENG7	I am enthusiastic about my job		0.73						0.89				
ENG8	At my job, I feel very energetic		0.61						0.78				

Notes: E-Eigenvalue; α_I-coefficient alpha for initial sample, n=259; α_R-coefficient alpha for grouped sub-sample, n=184;
ENG – Employee Engagement

Table 4-3. Results of Principal Axis Factor Analyses. Individual Level Employee Perceptions of Work and Personal Attributes: 5-Factor Solution

Principal Axis Factoring (varimax rotation): n=247; KMO (df=325) = 0.89, p<.001; 68% variance explained														
Item Detail		Final Multiple Factor Solution							Single Factor Solution			α		
Individual Level Employee Perceptions		1	2	3	4	5	% var.	E	1	% var.	E	α_I	α_R	
PRO1	No matter what the odds, if I believe in something I will make it happen			0.75			8%	2.14	0.76	74%	2.95	0.88	0.85	
PRO2	I love being a champion for my ideas, even against others' oppositions			0.78					0.80					
PRO3	I excel at identifying opportunities			0.76					0.75					
PRO4	If I believe in an idea, no obstacle will prevent me from making it happen			0.89					0.91					

Notes: E-Eigenvalue; α_I-coefficient alpha for initial sample, n=259; α_R-coefficient alpha for grouped sub-sample, n=184;
PRO – Proactive Personality

Table 4-4. Results of Principal Axis Factor Analyses. Individual Level Employee Perceptions of Work and Personal Attributes: 5-Factor Solution

Principal Axis Factoring (varimax rotation): n=247; KMO (df=325) = 0.89, p<.001; 68% variance explained														
Item Detail		Final Multiple Factor Solution							Single Factor Solution			α	
Individual Level Employee Perceptions		1	2	3	4	5	% var.	E	1	% var.	E	α_I	α_R
ROLE1	The major satisfaction in my life comes from my job				0.52		8%	2.06	0.60	57%	1.71	0.62	0.64
ROLE2	I would probably keep working even if I didn't need the money				0.52				0.63				
ROLE3	To me, my job is only a small part of who I am (recoded)				0.48				0.56				
DISEN	I cannot imagine another occupation for myself				0.41				0.72	75%	1.52	0.68	0.66
DISEN	Over time, I have felt more connected to my work				0.56				0.72				

Notes: E-Eigenvalue; α_I-coefficient alpha for initial sample, n=259; α_R-coefficient alpha for grouped sub-sample, n=184;
ROLE – Job Role Involvement; DISEN – Disengagement

Table 4-5. Results of Principal Axis Factor Analyses. Individual Level Employee Perceptions of Work and Personal Attributes: 5-Factor Solution

Principal Axis Factoring (varimax rotation): n=247; KMO (df=325) = 0.89, p<.001; 68% variance explained													
Item Detail		Final Multiple Factor Solution							Single Factor Solution			α	
Individual Level Employee Perceptions		1	2	3	4	5	% var.	E	1	% var.	E	α_I	α_R
DP1	If something can go wrong for me, it will					0.68			0.70				
DP2	I hardly ever expect things to go my way					0.89	5%	1.29	0.91	77%	2.30	0.85	0.84
DP3	I rarely count on good things happening to me					0.78			0.81				

Notes: E-Eigenvalue; α_I-coefficient alpha for initial sample, n=259; α_R-coefficient alpha for grouped sub-sample, n=184;
DP – Dispositional Pessimism

Table 4-6. Results of Principal Axis Factor Analyses. Individual Level Employee Perceptions of Workgroup Processes and Workplace Climate: 3-Factor Solution

Principal Axis Factoring (varimax rotation): n=241; KMO (df=66) = 0.91, p<.001; Fixed 3-factor solution: 80%												
Item Detail		Final Multiple Factor Solution					Single Factor Solution			α	
Individual Level Employee Perceptions		1	2	3	% var.	E	1	% var.	E	α_I	α_R
COH1	We work well together as a team	0.86			80%	6.80	0.91	83%	3.34	0.93	0.93
COH2	We pull together to get the job done	0.81					0.88				
COH3	We really care about each other	0.77					0.85				
COH4	We trust each other	0.82					0.90				
PCE1	Our jobs provide us with chances to grow and develop		0.62			1.48	0.74	78%	2.84	0.91	0.91
PCE2	Our ideas and opinions are appreciated		0.78				0.86				
PCE3	We are assigned tasks that allow us to use our best skills		0.82				0.87				
PCE4	We get sufficient feedback about how well we are doing		0.84				0.90				
WKP1	Regularly monitor how well we are meeting our discipline goals			0.80		1.30	0.84	76%	3.03	0.89	0.88
WKP2	Monitor important aspects of our work environment (e.g., inventories, equipment, and process operations, information flows)			0.74			0.82				
WKP3	Develop standards for acceptable performance of our members			0.75			0.82				
WKP4	Smoothly integrate our work efforts			0.65			0.81				

Notes: E-Eigenvalue; α_I-coefficient alpha for initial sample, n=259; α_R-coefficient alpha for grouped sub-sample, n=184;
COH – Workgroup Cohesion; PCE – Psychological Climate for Engagement; WKP – Workgroup Performance Processes

Table 4-7. Results of Principal Axis Factor Analyses. Aggregate Level Employee Perceptions of Leader Behavior Patterns: 3-Factor Solution

Principal Axis Factoring (varimax rotation): n=236; KMO (df=36) = 0.90, p<.001; Fixed 3-factor solution: 84%													
Item Detail		Final Multiple Factor Solution					Single Factor Solution			α			n
Aggregate Level Employee Perceptions		1	2	3	% var.	E	1	% var.	E	α_I	α_R	α_{AGG}	n_A=6
LE1	Our supervisor is engaged in his/her work		0.85				0.92						
LE2	Our supervisor is focused on getting the job done		0.78			1.39	0.88	84%	2.53	0.91	0.88	0.88	n_G=23
LE3	Our supervisor is immersed in his/her work		0.85				0.83						
FL1	Our supervisor behaves in a manner that is respectful of our personal needs (L1)	0.76					0.83						
FL2	Our supervisor stimulates us to think about old problems in new ways (L4)	0.84			84%		0.86						
FL3	Our supervisor has a clear understanding of where we are going (L5)	0.80				5.19	0.86	79%	3.95	0.93	0.92	0.92	n_G=24
FL4	Our supervisor encourages us to be "team players" (L6)	0.80					0.81						
FL5	Our supervisor leads us by example (L7)	0.88					0.93						
TL1	Our supervisor reacts or responds to performance only under extreme circumstances (L8)			0.52		0.98	-	-	-	-	-	-	-

Notes: E-Eigenvalue; α_I-coefficient alpha for initial sample, n=259; α_R-coefficient alpha for grouped sub-sample, n=184;
α_{AGG}-Aggregate level coefficient alpha value;
n_A-Average number of participants per group at aggregate level; n_G-Number of groups at aggregate level;
LE – Leader Engagement; FL – Transformational Leadership Styles; TL – Transactional Leadership Styles

Table 4-8. Results of Principal Axis Factor Analyses. Individual Level Performance Outcomes: 3-Factor Solution

Principal Axis Factoring (varimax rotation): n=256; KMO (df=21) = 0.79, p<.001; Fixed 3-factor solution: 83%												
Item Detail		Final Multiple Factor Solution					Single Factor Solution			α	
Aggregate Level Employee Perceptions		1	2	3	% var.	E	1	% var.	E	α_I	α_R
PERF1	...the quality of your work?	0.94			83%	3.49	0.91	82%	3.26	0.92	0.92
PERF2	...the quality of your interactions with coworkers?	0.67					0.76				
PERF3	...the quality of your interactions with patients?	0.82					0.88				
PERF4	...your overall work performance?	0.90					0.92				
E_CPB1	I take a personal interest in the well-being of others (e.g., help new employees)		0.74			1.43	0.73	77%	1.54	0.70	0.63
E_CPB2	I pass along work-related information to others		0.72				0.73				
O_CPB1	My attendance at work is above the norm			0.40		0.90	-	-	-	-	-

Notes: E-Eigenvalue; α_I-coefficient alpha for initial sample, n=259; α_R-coefficient alpha for grouped sub-sample, n=184;
PERF – Task Performance; E_CPB – Employee directed Contextual Performance Behaviors; O_CPB – Organization directed Contextual Performance Behaviors

Table 5-1. Results of Confirmatory Factor Analysis. Individual Level Employee Perceptions of Work and Personal Attributes

Items	Perceived Organizational Support (POS)	Affective Organizational Commitment (ACOM)	Proactive Personality (PROACT)	Job Role Involvement (JOBINV)	Dispositional Pessimism (DP)	Disengagement (DISENGB)	Employee Engagement (INDENG)
POS1	*0.95(0.90)*	*2.18***	*0.06*	*0.53***	*-0.19*	*-0.79***	*0.69***
POS2	*0.95(0.90)*						
POS3	*0.91(0.83)*						
POS4	*0.94(0.88)*						
ACOM1	0.79***	*0.90(0.82)*	*0.39**	*0.93***	*-0.21**	*-1.10***	*1.15***
ACOM2		*0.92(0.85)*					
ACOM3		*0.84(0.70)*					
PROACT1	0.03	0.18**	*0.77(0.60)*	*0.29*	*-0.27*	*-0.18*	*0.62***
PROACT2			*0.80(0.63)*				
PROACT3			*0.75(0.57)*				
PROACT4			*0.90(0.82)*				
JOBINV1	0.36***	0.60***	0.25**	*0.62(0.39)*	*-0.12*	*-0.63***	*0.69***
JOBINV2				*0.61(0.38)*			
JOBINV3				*0.52(0.28)*			
DP1	-0.13	-0.14*	-0.24**	-0.15	*0.71(0.50)*	*0.23**	*-0.38***
DP2					*0.90(0.81)*		
DP3					*0.82(0.68)*		
DISENGB1	-0.45***	-0.60***	-0.13	-0.64***	0.24**	*0.53(0.28)*	*-0.92***
DISENGB2						*0.97(0.94)*	
INDENG1	0.34***	0.53***	0.38***	0.61***	-0.34***	-0.67***	*0.76(0.58)*
INDENG2							*0.68(0.46)*
INDENG3							*0.72(0.51)*
INDENG4							*0.68(0.46)*
INDENG5							*0.64(0.41)*
INDENG6							*0.63(0.40)*
INDENG7							*0.89(0.80)*
INDENG8							*0.81(0.65)*

Notes: Sample n=259, Values in diagonal are standardized regression weights. All standardized regression weights are significant at p<0.001. Values in parentheses are squared multiple correlations. Values below diagonal are correlation coefficients, **p<0.01, ***p<0.001. Values above diagonal are covariances, *p<0.05, **p<0.01, ***p<0.001.

Table 5-2. Results of Confirmatory Factor Analysis. Employee Perceptions of Workgroup Characteristics and Processes

Items	Psychological Climate for Engagement (PCE)	Workgroup Cohesion (COH)	Workgroup Performance Processes (WKP)
PCE1	*0.75(0.56)*	*1.30***	*0.76***
PCE2	*0.86(0.74)*		
PCE3	*0.87(0.76)*		
PCE4	*0.89(0.80)*		
COH1	0.59***	*0.90(0.81)*	*0.89***
COH2		*0.88(0.77)*	
COH3		*0.86(0.73)*	
COH4		*0.90(0.80)*	
WKP1	0.64***	0.63***	*0.81(0.66)*
WKP2			*0.81(0.65)*
WKP3			*0.81(0.66)*
WKP4			*0.85(0.73)*

Notes: Sample n=259, Values in diagonal are standardized regression weights. All standardized regression weights are significant at p<0.001. Values in parentheses are squared multiple correlations. Values below diagonal are correlation coefficients, ***p<0.001. Values above diagonal are covariances, ***p<0.001.

Table 5-3. Results of Confirmatory Factor Analysis. Individual Level Employee Reports of Performance Behaviors

Items	Self-reported perceptions of individual task performance as respondent beliefs it is viewed by his/her leader	Employee directed Contextual Performance Behaviors
PERF1	*0.93(0.86)*	*0.24***
PERF2	*0.74(0.56)*	
PERF3	*0.86(0.74)*	
PERF4	*0.93(0.87)*	
ITOCB1	0.26***	*0.97(0.95)*
ITOCB2		*0.55(0.31)*

Notes: Sample n=259, Values in diagonal are standardized regression weights. All standardized regression weights are significant at p<0.001. Values in parentheses are squared multiple correlations. Values below diagonal are correlation coefficients, ***p<0.001. Values above diagonal are covariances, ***p<0.001.

Table 6-1. Bootstrap Results of Indirect Effects Analysis

Outcome Variable (Y)	Path (a') (X-M)	SE	t	p	Path (b') (M-Y)	SE	t	p	Path (c') (X-Y)	SE	t	p
Task Performance	0.31	0.06	5.48	<0.001	-0.003	0.05	-0.06	>0.05	0.16	0.04	4.16	<0.001
Interaction with Leader	-	-	-	-	-	-	-	-	0.11	0.05	2.27	<0.05
Contextual Performance (Employee)	0.29	0.05	5.38	<0.001	0.32	0.06	5.50	<0.001	0.02	0.04	0.42	>0.05
Contextual Performance (Organization)	0.30	0.05	5.38	<0.001	0.08	0.07	1.11	>0.05	0.10	0.06	1.85	>0.05

Notes: Path (a') – [(X) Psychological Climate for Engagement – (M) Employee Engagement)]
Path (b') – [(M) Employee Engagement – (Y) Outcome variable)]

Table 6-2. Model Summary, Bias corrected and Accelerated 95% Confidence Intervals, and Normal Theory Tests for Indirect Effects with 1000 Bootstrap Resamples

Outcome Variable (Y)	R-squared	Adjusted R-squared	F	(df1, df2)	p	Lower Bound	Upper Bound	Effect	SE	Z
Task Performance	0.16	0.15	10.55	(3, 160)	<0.001	-0.04	0.04	-0.01	0.02	-0.25
Contextual Performance (Employee)	0.19	0.18	18.99	(2, 162)	<0.001	0.04	0.19	0.09	0.02	3.86**
Contextual Performance (Organization)	0.04	0.03	3.69	(2, 162)	<0.05	-0.02	0.08	0.02	0.02	1.10

Note: **p<0.001

Table 7. General Equation and Model Formats for Hypotheses 1, 2 and 3

Step 1:
Level-1 Model: DV_{ij}(*Employee Engagement*)=$\beta_{0j}+\beta_{1j}$(*Psychological Climate for Engagement*)$+r_{ij}$ Level-2 Model: $\beta_{0j}=\gamma_{00}+\gamma_{01}$(*Leader Behavior Patterns*$_1$)$+u_{0j}$ $\beta_{1j}=\gamma_{10}+\gamma_{11}$(*Leader Behavior Patterns*$_1$)$+u_{1j}$
Step 2:
Level-1 Model: DV_{ij}(*Performance Outcomes*$_2$)=$\beta_{0j}+\beta_{1j}$(*Psychological Climate for Engagement*)$+r_{ij}$ Level-2 Model: $\beta_{0j}=\gamma_{00}+\gamma_{01}$(*Leader Behavior Patterns*$_1$)$+u_{0j}$ $\beta_{1j}=\gamma_{10}+\gamma_{11}$(*Leader Behavior Patterns*$_1$)$+u_{1j}$
Step 3:
Level-1 Model: DV_{ij}(*Performance Outcomes*$_2$)=$\beta_{0j}+\beta_{1j}$(*Employee Engagement*)$+\beta_{2j}$(*Psychological Climate for Engagement*)$+r_{ij}$ Level-2 Model: $\beta_{0j}=\gamma_{00}+\gamma_{01}$(*Leader Behavior Patterns*$_1$)$+u_{0j}$ $\beta_{1j}=\gamma_{10}+\gamma_{11}$(*Leader Behavior Patterns*$_1$)$+u_{1j}$ $\beta_{2j}=\gamma_{20}+\gamma_{21}$(*Leader Behavior Patterns*$_1$)$+u_{2j}$

Notes: $_1$ – Leader Behavior Patterns are Leader Engagement, and Transformational Leadership and Transactional Leadership Styles
$_2$ – Performance Outcomes are Task Performance, Employee directed-, and Organization directed-Contextual Performance Behaviors

Table 8-1. Lower Level Mediation Results: Task Performance and Leader Engagement

Lower Level Mediation Results: Task Performance and Leader Engagement			
	Outcome Variables		
Fixed Effects	Step 1: Employee Engagement	Step 2: Task Performance	Step 3: Task Performance
Intercept (γ_{00})	5.21**(0.10)	3.83**(0.05)	3.84**(0.06)
Psychological Climate for Engagement (γ_{10})	0.30**(0.06)	0.18**(0.03)	-
Employee Engagement (γ_{10})	-	-	-0.002(0.05)
Psychological Climate for Engagement (γ_{20})	-	-	0.16**(0.04)
Leader Engagement (γ_{01})	-0.01(0.12)	0.18*(0.07)	0.21**(0.07)
Leader Engagement (γ_{11})	-0.07(0.07)	-0.04(0.04)	-0.04(0.06)
Leader Engagement (γ_{21})	-	-	-0.02(0.05)
Random Effects	Step 1: Employee Engagement	Step 2: Task Performance	Step 3: Task Performance
Between-group variance in Intercept (τ_{00})	0.02	0.005	0.002
Between-group variance in Climate for Engagement slope (τ_{10})	0.005	0.0005	0.0001
Between-group variance in Employee Engagement slope (τ_{20})	-	-	0.02
Within-group variance (σ^2)	1.30	0.49	0.47
Deviance (Parameters)	514.506938 (8)	383.846858 (8)	350.283701 (13)
Pseudo R^2	16% (Dev=34); (5)	20% (Dev=39); (5)	24% (Dev=73); (5)

Notes: **, $p < .01$. Final model includes difference in deviance (Dev) and parameters between initial and final models.
R^2 was calculated following procedures outlined by Kreft & deLeeuw (1998)

Table 8-2. Lower Level Mediation Results: Contextual Performance (Employee) and Leader Engagement

Lower Level Mediation Results: Contextual Performance (Employee) and Leader Engagement			
	Outcome Variables		
Fixed Effects	Step 1: Employee Engagement	Step 2: Contextual Performance (Employee)	Step 3: Contextual Performance (Employee)
Intercept (γ_{00})	5.21**(0.10)	6.12**(0.09)	6.12**(0.07)
Psychological Climate for Engagement (γ_{10})	0.30**(0.06)	0.14**(0.04)	-
Employee Engagement (γ_{10})	-	-	0.31**(0.08)
Psychological Climate for Engagement (γ_{20})	-	-	0.01(0.04)
Leader Engagement (γ_{01})	-0.01(0.12)	-0.06(0.10)	-0.08(0.09)
Leader Engagement (γ_{11})	-0.07(0.07)	-0.06(0.05)	-0.03(0.09)
Leader Engagement (γ_{21})	-	-	-0.02(0.05)
Random Effects	Step 1: Employee Engagement	Step 2: Contextual Performance (Employee)	Step 3: Contextual Performance (Employee)
Between-group variance in Intercept (τ_{00})	0.02	0.11*	0.05
Between-group variance in Climate for Engagement slope (τ_{10})	0.005	0.02	0.005
Between-group variance in Employee Engagement slope (τ_{20})	-	-	0.08**
Within-group variance (σ^2)	1.30	0.66	0.54
Deviance (Parameters)	514.506938 (8)	461.949610 (8)	389.873169 (13)
R^2	16% (Dev=34); (5)	10% (Dev=26); (5)	31% (Dev=98); (5)

Notes: * $p < .05$. **, $p < .01$. Final model includes difference in deviance (Dev) and parameters between initial and final models.
R^2 was calculated following procedures outlined by Kreft & deLeeuw (1998)

Table 8-3. Lower Level Mediation Results: Contextual Performance (Organization) and Leader Engagement

Lower Level Mediation Results: Contextual Performance (Organization) and Leader Engagement			
	Outcome Variables		
Fixed Effects	Step 1: Employee Engagement	Step 2: Contextual Performance (Organization)	Step 3: Contextual Performance (Organization)
Intercept (γ_{00})	5.21**(0.10)	5.59**(0.14)	5.63**(0.13)
Psychological Climate for Engagement (γ_{10})	0.30**(0.06)	0.13†(0.07)	-
Employee Engagement (γ_{10})	-	-	0.20†(0.10)
Psychological Climate for Engagement (γ_{20})	-	-	0.08(0.07)
Leader Engagement (γ_{01})	-0.01(0.12)	0.11(0.17)	-0.06(0.16)
Leader Engagement (γ_{11})	-0.07(0.07)	0.04(0.09)	-0.11(0.12)
Leader Engagement (γ_{21})	-	-	-0.002(0.10)
Random Effects	Step 1: Employee Engagement	Step 2: Contextual Performance (Organization)	Step 3: Contextual Performance (Organization)
Between-group variance in Intercept (τ_{00})	0.02	0.31**	0.20**
Between-group variance in Climate for Engagement slope (τ_{10})	0.005	0.04	0.03†
Between-group variance in Employee Engagement slope (τ_{20})	-	-	0.03
Within-group variance (σ^2)	1.30	1.80	1.65
Deviance (Parameters)	514.506938 (8)	642.407813 (8)	571.765882 (13)
R^2	16% (Dev=34); (5)	6% (Dev=21); (5)	17% (Dev=91); (5)

Notes: † $p < .10$, **, $p < .01$. Final model includes difference in deviance (Dev) and parameters between initial and final models.
R^2 was calculated following procedures outlined by Kreft & deLeeuw (1998)

Table 8-4. Lower Level Mediation Results: Task Performance and Transformational Leadership

Lower Level Mediation Results: Task Performance and Transformational Leadership			
	Outcome Variables		
Fixed Effects	Step 1: Employee Engagement	Step 2: Task Performance	Step 3: Task Performance
Intercept (γ_{00})	5.18**(0.10)	3.85**(0.06)	3.85**(0.06)
Psychological Climate for Engagement (γ_{10})	0.29**(0.06)	0.16**(0.03)	-
Employee Engagement (γ_{10})	-	-	0.001(0.06)
Psychological Climate for Engagement (γ_{20})	-	-	0.13**(0.04)
Transformational Leadership (γ_{01})	0.02(0.13)	0.16*(0.07)	0.24**(0.08)
Transformational Leadership (γ_{11})	0.02(0.07)	-0.01(0.04)	0.004(0.07)
Transformational Leadership (γ_{21})	-	-	-0.01(0.05)
Random Effects	Step 1: Employee Engagement	Step 2: Task Performance	Step 3: Task Performance
Between-group variance in Intercept (τ_{00})	0.02	0.003	0.004
Between-group variance in Climate for Engagement slope (τ_{10})	0.01	0.0001	0.0004
Between-group variance in Employee Engagement slope (τ_{20})	-	-	0.02
Within-group variance (σ^2)	1.30	0.50	0.46
Deviance (Parameters)	515.474647 (8)	387.102897 (8)	350.858771 (13)
R^2	16% (Dev=33); (5)	19% (Dev=36); (5)	24% (Dev=72); (5)

Notes: * $p < .05$. **, $p < .01$. Final model includes difference in deviance (Dev) and parameters between initial and final models.
R^2 was calculated following procedures outlined by Kreft & deLeeuw (1998)

Table 8-5. Lower Level Mediation Results: Contextual Performance (Employee) and Transformational Leadership

Lower Level Mediation Results: Contextual Performance (Employee) and Transformational Leadership			
	Outcome Variables		
Fixed Effects	Step 1: Employee Engagement	Step 2: Contextual Performance (Employee)	Step 3: Contextual Performance (Employee)
Intercept (γ_{00})	5.18**(0.10)	6.13**(0.08)	6.12**(0.07)
Psychological Climate for Engagement (γ_{10})	0.29**(0.06)	0.16**(0.05)	-
Employee Engagement (γ_{10})	-	-	0.33**(0.07)
Psychological Climate for Engagement (γ_{20})	-	-	0.02(0.04)
Transformational Leadership (γ_{01})	0.02(0.13)	-0.25*(0.11)	-0.21*(0.09)
Transformational Leadership (γ_{11})	0.02(0.07)	-0.01(0.06)	0.14(0.10)
Transformational Leadership (γ_{21})	-	-	-0.07(0.05)
Random Effects	Step 1: Employee Engagement	Step 2: Contextual Performance (Employee)	Step 3: Contextual Performance (Employee)
Between-group variance in Intercept (τ_{00})	0.02	0.09*	0.03
Between-group variance in Climate for Engagement slope (τ_{10})	0.01	0.02	0.01
Between-group variance in Employee Engagement slope (τ_{20})	-	-	0.08*
Within-group variance (σ^2)	1.30	0.65	0.52
Deviance (Parameters)	515.474647 (8)	457.684928 (8)	385.300442 (13)
R^2	16% (Dev=33); (5)	14% (Dev=31); (5)	36% (Dev=103); (5)

Notes: † p < .10, * $p < .05$. **, $p < .01$. Final model includes difference in deviance (Dev) and parameters between initial and final models. R^2 was calculated following procedures outlined by Kreft & deLeeuw (1998)

Table 8-6. Lower Level Mediation Results: Contextual Performance (Organization) and Transformational Leadership

Lower Level Mediation Results: Contextual Performance (Organization) and Transformational Leadership			
	Outcome Variables		
Fixed Effects	Step 1: Employee Engagement	Step 2: Contextual Performance (Organization)	Step 3: Contextual Performance (Organization)
Intercept (γ_{00})	5.18**(0.10)	5.58**(0.14)	5.61**(0.14)
Psychological Climate for Engagement (γ_{10})	0.29**(0.06)	0.16*(0.07)	-
Employee Engagement (γ_{10})	-	-	0.19†(0.10)
Psychological Climate for Engagement (γ_{20})	-	-	0.11(0.08)
Transformational Leadership (γ_{01})	0.02(0.13)	-0.17(0.18)	-0.24(0.17)
Transformational Leadership (γ_{11})	0.02(0.07)	0.12(0.09)	-0.08(0.13)
Transformational Leadership (γ_{21})	-	-	-0.06(0.09)
Random Effects	Step 1: Employee Engagement	Step 2: Contextual Performance (Organization)	Step 3: Contextual Performance (Organization)
Between-group variance in Intercept (τ_{00})	0.02	0.28**	0.18*
Between-group variance in Climate for Engagement slope (τ_{10})	0.01	0.03	0.02
Between-group variance in Employee Engagement slope (τ_{20})	-	-	0.04
Within-group variance (σ^2)	1.30	1.81	1.65
Deviance (Parameters)	515.474647 (8)	641.246810 (8)	570.521195 (13)
R^2	16% (Dev=33); (5)	7% (Dev=22); (5)	18% (Dev=93); (5)

Notes: † $p < .10$, * $p < .05$. **, $p < .01$. Final model includes difference in deviance (Dev) and parameters between initial and final models. R^2 was calculated following procedures outlined by Kreft & deLeeuw (1998)

Table 8-7. Lower Level Mediation Results: Task Performance and Transactional Leadership

Lower Level Mediation Results: Task Performance and Transactional Leadership			
	Outcome Variables		
Fixed Effects	Step 1: Employee Engagement	Step 2: Task Performance	Step 3: Task Performance
Intercept (γ_{00})	5.19**(0.10)	3.83**(0.06)	3.84**(0.06)
Psychological Climate for Engagement (γ_{10})	0.29**(0.06)	0.19**(0.03)	-
Employee Engagement (γ_{10})	-	-	-0.005(0.06)
Psychological Climate for Engagement (γ_{20})	-	-	0.17**(0.04)
Transactional Leadership (γ_{01})	0.04(0.14)	0.14(0.08)	0.13(0.08)
Transactional Leadership (γ_{11})	0.03(0.08)	0.04(0.04)	-0.07(0.08)
Transactional Leadership (γ_{21})	-	-	0.08(0.05)
Random Effects	Step 1: Employee Engagement	Step 2: Task Performance	Step 3: Task Performance
Between-group variance in Intercept (τ_{00})	0.02	0.01	0.01
Between-group variance in Climate for Engagement slope (τ_{10})	0.01	0.002	0.001
Between-group variance in Employee Engagement slope (τ_{20})	-	-	0.02
Within-group variance (σ^2)	1.30	0.49	0.47
Deviance (Parameters)	515.367293 (8)	388.106964 (8)	355.205838 (13)
R^2	16% (Dev=33); (5)	19% (Dev=35); (5)	23% (Dev=68); (5)

Notes: † $p < .10$, **, $p < .01$. Final model includes difference in deviance (Dev) and parameters between initial and final models.
R^2 was calculated following procedures outlined by Kreft & deLeeuw (1998)

Table 8-8. Lower Level Mediation Results: Contextual Performance (Employee) and Transactional Leadership

Lower Level Mediation Results: Contextual Performance (Employee) and Transactional Leadership			
	Outcome Variables		
Fixed Effects	Step 1: Employee Engagement	Step 2: Contextual Performance (Employee)	Step 3: Contextual Performance (Employee)
Intercept (γ_{00})	5.19**(0.10)	6.10**(0.08)	6.11**(0.07)
Psychological Climate for Engagement (γ_{10})	0.29**(0.06)	0.13**(0.05)	-
Employee Engagement (γ_{10})	-	-	0.31**(0.08)
Psychological Climate for Engagement (γ_{20})	-	-	0.002(0.04)
Transactional Leadership (γ_{01})	0.04(0.14)	0.02(0.11)	-0.01(0.10)
Transactional Leadership (γ_{11})	0.03(0.08)	0.03(0.06)	-0.14(0.10)
Transactional Leadership (γ_{21})	-	-	0.06(0.05)
Random Effects	Step 1: Employee Engagement	Step 2: Contextual Performance (Employee)	Step 3: Contextual Performance (Employee)
Between-group variance in Intercept (τ_{00})	0.02	0.09*	0.05
Between-group variance in Climate for Engagement slope (τ_{10})	0.01	0.02	0.002
Between-group variance in Employee Engagement slope (τ_{20})	-	-	0.08*
Within-group variance (σ^2)	1.30	0.67	0.54
Deviance (Parameters)	515.367293 (8)	464.002019 (8)	389.190395 (13)
R^2	16% (Dev=33); (5)	12% (Dev=24); (5)	31% (Dev=99); (5)

Notes: * $p < .05$. **, $p < .01$. Final model includes difference in deviance (Dev) and parameters between initial and final models.
R^2 was calculated following procedures outlined by Kreft & deLeeuw (1998)

Table 8-9. Lower Level Mediation Results: Contextual Performance (Organization) and Transactional Leadership

Lower Level Mediation Results: Contextual Performance (Organization) and Transactional Leadership			
	Outcome Variables		
Fixed Effects	Step 1: Employee Engagement	Step 2: Contextual Performance (Organization)	Step 3: Contextual Performance (Organization)
Intercept (γ_{00})	5.19**(0.10)	5.59**(0.14)	5.60**(0.13)
Psychological Climate for Engagement (γ_{10})	0.29**(0.06)	0.13†(0.07)	-
Employee Engagement (γ_{10})	-	-	0.22*(0.10)
Psychological Climate for Engagement (γ_{20})	-	-	0.06(0.07)
Transactional Leadership (γ_{01})	0.04(0.14)	0.28(0.19)	0.22(0.18)
Transactional Leadership (γ_{11})	0.03(0.08)	0.12(0.10)	-0.30*(0.14)
Transactional Leadership (γ_{21})	-	-	0.17†(0.10)
Random Effects	Step 1: Employee Engagement	Step 2: Contextual Performance (Organization)	Step 3: Contextual Performance (Organization)
Between-group variance in Intercept (τ_{00})	0.02	0.29**	0.20**
Between-group variance in Climate for Engagement slope (τ_{10})	0.01	0.05	0.03
Between-group variance in Employee Engagement slope (τ_{20})	-	-	0.02
Within-group variance (σ^2)	1.30	1.75	1.59
Deviance (Parameters)	515.367293 (8)	638.110053 (8)	565.865155 (13)
R^2	16% (Dev=33); (5)	9% (Dev=25); (5)	20% (Dev=97); (5)

Notes: † $p < .10$, * $p < .05$. **, $p < .01$. Final model includes difference in deviance (Dev) and parameters between initial and final models. R^2 was calculated following procedures outlined by Kreft & deLeeuw (1998)

Table 9. General Equation and Model Formats for Hypotheses 4, 5, 6, 7, and 8

Step 1:
Level-1 Model: $DV_{ij}(Employee\ Engagement)=\beta_{0j}+\beta_{1j}(Interaction\ with\ Leader)+r_{ij}$ Level-2 Model: $\beta_{0j}=\gamma_{00}+\gamma_{01}(Leader\ Behavior\ Patterns_1)+u_{0j}$ $\beta_{1j}=\gamma_{10}$ Level-2 Model: Interaction Term $\beta_{0j}=\gamma_{00}+\gamma_{01}(Leader\ Engagement)+\gamma_{02}(Transformational\ Leadership)+\gamma_{03}(Interaction\ Term)+u_{0j}$ $\beta_{1j}=\gamma_{10}$
Step 2:
Level-1 Model: $DV_{ij}(Performance\ Outcomes_2)=\beta_{0j}+\beta_{1j}(Employee\ Engagement)+\beta_{2j}(Interaction\ with\ Leader)+r_{ij}$ Level-2 Model: $\beta_{0j}=\gamma_{00}+\gamma_{01}(Leader\ Behavior\ Patterns_1)+u_{0j}$ $\beta_{1j}=\gamma_{10}$ $\beta_{2j}=\gamma_{20}$ Level-2 Model: Interaction Term $\beta_{0j}=\gamma_{00}+\gamma_{01}(Leader\ Engagement)+\gamma_{02}(Transformational\ Leadership)+\gamma_{03}(Interaction\ Term)+u_{0j}$ $\beta_{1j}=\gamma_{10}$ $\beta_{2j}=\gamma_{20}$

Notes: $_1$ – Leader Behavior Patterns are Leader Engagement, and Transformational Leadership and Transactional Leadership Styles
$_2$ – Performance Outcomes are Task Performance, Employee directed-, and Organization directed-Contextual Performance Behaviors

Table 10-1. Summary Statistics of Fixed Effects for Final Models Predicting Proposed Outcome Variables (Employee Engagement and Task Performance)

Fixed Effects	*Transformational Leadership*	*Transactional Leadership*	*Leader Engagement*	*Leader Engagement x Transformational Leadership*
Model for Intercept (β_0) Employee Engagement	ICC=1% between-group variance explained			*Pseudo R^2=2%*
Intercept (γ_{00})	5.15**(0.10)	5.16**(0.10)	5.14**(0.10)	5.15**(0.10)
Transformational Leadership (γ_{01})	0.26*(0.13)	-	-	0.38(0.57)
Transactional Leadership (γ_{01})	-	-0.02(0.14)	-	-
Leader Engagement (γ_{01})	-	-	0.10(0.13)	0.02(0.23)
Interaction with Leader (γ_{20})	-0.02(0.08)	-0.01(0.08)	-0.001(0.08)	-0.02(0.08)
Interaction Term (γ_{01})	-	-	-	-0.02(0.09)
Model for Intercept (β_0) Task Performance	ICC=11% between-group variance explained			*Pseudo R^2=15%*
Intercept (γ_{00})	3.83**(0.06)	3.82**(0.07)	3.81**(0.06)	3.82**(0.06)
Transformational Leadership (γ_{01})	0.29**(0.08)	-	-	0.39(0.36)
Transactional Leadership (γ_{01})	-	0.10(0.10)	-	-
Leader Engagement (γ_{01})	-	-	0.24**(0.08)	0.18(0.14)
Employee engagement (γ_{10})	0.05(0.04)	0.06(0.05)	0.06(0.04)	0.05(0.04)
Interaction with Leader (γ_{20})	0.12*(0.05)	0.15**(0.05)	0.14**(0.05)	0.12*(0.05)
Interaction Term (γ_{01})	-	-	-	-0.02(0.06)

Notes: † p < .10, * $p < .05$. **, $p < .01$.
R^2 was calculated following procedures outlined by Kreft & deLeeuw (1998)

Table 10-2. Summary Statistics of Fixed Effects for Final Models Predicting Proposed Outcome Variables (Employee directed- and Organization directed- Contextual Performance Behaviors)

Fixed Effects	*Transformational Leadership*	*Transactional Leadership*	*Leader Engagement*	*Leader Engagement x Transformational Leadership*
Model for Intercept (β_0) Contextual Performance (Employee)	ICC=6% between-group variance explained			*Pseudo* R^2=19%
Intercept (γ_{00})	6.09**(0.07)	6.09**(0.07)	6.09**(0.07)	6.09**(0.07)
Transformational Leadership (γ_{01})	-0.23*(0.09)	-	-	0.22(0.40)
Transactional Leadership (γ_{01})	-	-0.06(0.10)	-	-
Leader Engagement (γ_{01})	-	-	-0.09(0.09)	0.16(0.16)
Employee engagement (γ_{10})	0.34**(0.05)	0.32**(0.05)	0.32**(0.05)	0.34**(0.05)
Interaction with Leader (γ_{20})	0.06(0.05)	0.04(0.05)	0.05(0.05)	0.06(0.05)
Interaction Term (γ_{01})	-	-	-	-0.07(0.06)
Model for Intercept (β_0) Contextual Performance (Organization)	ICC=7% between-group variance explained			*Pseudo* R^2=10%
Intercept (γ_{00})	5.64**(0.12)	5.61**(0.12)	5.64**(0.12)	5.64**(0.12)
Transformational Leadership (γ_{01})	-0.19(0.16)	-	-	0.89(0.67)
Transactional Leadership (γ_{01})	-	0.17(0.17)	-	-
Leader Engagement (γ_{01})	-	-	-0.09(0.16)	0.35(0.27)
Employee engagement (γ_{10})	0.24**(0.09)	0.23**(0.09)	0.23**(0.09)	0.24**(0.09)
Interaction with Leader (γ_{20})	0.13(0.09)	0.11(0.09)	0.12(0.09)	0.12(0.09)
Interaction Term (γ_{01})	-	-	-	-0.18(0.11)

Notes: † $p < .10$, * $p < .05$. **, $p < .01$.
R^2 was calculated following procedures outlined by Kreft & deLeeuw (1998)

Table 10-3. Summary Statistics of Random Effects for Final Models Predicting Proposed Outcome Variables (All outcomes)

Random Effects	*Transformational Leadership*	*Transactional Leadership*	*Leader Engagement*	*Leader Engagement x Transformational Leadership*
Between-group variance in Employee engagement slope (τ_{00})	0.001	0.0001	0.004	0.001
Within-group variance (σ^2)	1.55	1.59	1.58	1.55
Between-group variance in Task Performance slope (τ_{00})	0.01	0.05*	0.02	0.004
Within-group variance (σ^2)	0.52	0.52	0.52	0.51
Between-group variance in Contextual Performance (Employee) slope (τ_{00})	0.01	0.02	0.02	0.01
Within-group variance (σ^2)	0.69	0.70	0.70	0.68
Between-group variance in Contextual Performance (Organization) slope (τ_{00})	0.08	0.08	0.10	0.04
Within-group variance (σ^2)	1.95	1.94	1.94	1.94

Notes: * $p < .05$. **, $p < .01$.

Appendix

Appendix 1-1. Organizational Survey Overview:

Civility Among Health Care Professionals Organizational Survey

Welcome to the 2010 Civility Among Health Care Professionals Survey!

The 2010 Civility Among Health Care Professionals (CAHP) survey is being conducted by researchers in the psychology department at the University of Connecticut (Storrs). Your participation will help us to better understand the kinds of issues that all organizational employees deal with regularly in their work and home lives. Your feedback will be vital to the implementation of new training and organizational development programs for *the host organization* and your participation will grant you a voice in influencing these organizational change efforts. Data from this study will also help doctoral candidates meet requirements necessary to complete their dissertation projects for Ph.D. training.

The survey should take approximately 25 minutes to complete. Your participation will always be confidential. This study does not involve any risk to you. No one at *the host organization* will ever see any of your responses, only researchers at UConn-Storrs. *The host organization* will only receive summaries of responses for different groups (i.e., males vs. females, supervisors vs. non-supervisors).

You do not have to participate if you do not want to. Any questions or concerns you may have about this study can be directed to Dr. Vicki Magley at Vicki.Magley@uconn.edu.

This research project has been approved by the University of Connecticut Institutional Review Board (IRB). An IRB is a group of people that reviews research studies to make sure they are safe for participants. If you have any questions about your rights as a participant, you may contact the IRB at 860-486-8802.

Before you begin, please create and enter a personal identification number (PIN) by following the instructions below. Filling in your PIN will help ensure the confidentiality of your responses and will help us to link your responses from this survey to future CAHP surveys. Again, no one at *the host organization* will ever see any of your individual responses; only the UConn-Storrs research team will have access to your information.

Please use the following information in this order to create your PIN:
**1) Birth month (2 digits),
**2) Birth day (2 digits),
**3) Last 2 digits of your social security number.
Example: Rob Penn, Birth month: 01, Birth day: 06, Last 2 digits of social security number: 76

**Based on the information above, Rob Penn's PIN is: 010676

Following the instructions above, please enter your PIN

_____

Appendix 1-2. Organizational Survey Demographic Questions:

We would like to start by collecting information about where and when you work most of the time.

What is your discipline (Please choose one from the list below)?
Response scale: 1 = Medical/Dental; 2 = Mental Health; 3 = Clerical; 4 = Other (please specify)

What is your primary work shift?
Response scale: 1 = Morning; 2 = Evening; 3 = Night; 4 = Other (please specify)

Are you a full-time, part-time, or per diem employee at *the host organization*?
Response scale: 1 = Full-time employee; 2 = Part-time employee; 3 = Per diem employee

What is your primary work facility?
Response scale: 1 = Bergin; 2 = Bridgeport; 3 = Brooklyn; 4 = Cheshire; 5 = Corrigan; 6 = Cybulski 7 = Enfield; 8 = Garner; 9 = Gates; 10 = Hartford; 11 = MacDougall; 12 = Manson Youth; 13 = New Haven; 14 = Northern; 15 = Osborn; 16 = Radgowski; 17 = Robinson; 18 = Walker 19 = Willard; 20 = York; 21 = Central Office; 22 = Prefer not to report my facility

How many days do you usually work at your job during each pay period (i.e., two-week period)?
Response scale: 1 = 1; 2 = 2; 3 = 3; 4 = 4; 5 = 5; 6 = 6; 7 = 7; 8 = 8; 9 = 9; 10 = 10

Your sex
Response scale: 1 = Male; 2 = Female

In what age group are you?
Response scale: 1 = 18-24 years old; 2 = 25-33 years old; 3 = 34-42 years old; 4 = 43-51 years old; 5 = 52-60 years old; 6 = 61-69 years old; 7 = 70 years and older

What is your highest level of education?
Response scale: 1 = Less than high school diploma; 2 = High school diploma or GED; 3 = Some college 4 = Diploma or certificate program; 5 = Graduated from college (e.g., A.A., B.A.); 6 = Some graduate or professional school; 7 = Completed graduate or professional degree (e.g., M.A., A.P.R.N., Ph.D.)

What is your race?
Response scale: 1 = Black or African-American; 2 = Asian; 3 = Caucasian; 4 = Hispanic/Latino; 5 = Native-American; 6 = Multi-racial; 7 = Other (please specify)

What is the sex of your primary on-site supervisor?
Response scale: 1 = Male; 2 = Female

Do you supervise others?
Response scale: 1 = Yes; 2 = No

What is the gender composition of your discipline?
Response scale: 1 = Mostly men; 2 = Mostly women; 3 = As many women as men

Relative to my age, the majority of my discipline is....
Response scale: 1 = Younger than me; 2 = Older than me; 3 = About the same age as me

How long have you been employed at CMHC? (in YEARS rounded up)

How long have you been employed at CMHC? (in YEARS rounded up)

Appendix 1-3. Research Model Items:

Instructions: For the next several statements please think about your SUPERVISOR. Your SUPERVISOR may or may not share your work shift or be on-site (i.e., at your facility), but he or she covers your functional unit and has some input or influence over your evaluation.	
WKINT_S	At work, I interact with my supervisor…

Notes: WKINT_S (Interaction with my supervisor)
Response scale:1 = once or twice in the past six months; 2 = every month; 3 = several times in a month; 4 = several times in a week; 5 = several times daily

Instructions: How do you feel your performance is viewed by the SUPERVISOR who covers your functional unit and has some input or influence over your evaluation? What does your clinical supervisor (i.e., not you) think of …	
PERF1	… the quality of your work?
PERF2	… the quality of your interactions with coworkers?
PERF3	… the quality of your interactions with patients?
PERF4	…your overall work performance?

Notes: PERF (Self-reported Task Performance)
Response scale:1= poor; 2 =below average; 3 = average; 4 = above average; 5 = excellent

Instructions: The following statements refer to YOU AND YOUR WORK EXPERIENCES. Please rate the extent to which you agree or disagree with each of the following statements.	
CP-E1	I take a personal interest in the well-being of others (e.g., help new employees)
CP-E2	I pass along work-related information to others
CP-O1	My attendance at work is above the norm
*CP-O2**	I take reasonable work breaks*

Notes: CP-E (Employee-directed Contextual Performance), CP-O (Organization-directed Contextual Performance); *Items removed from the final composite measure.
Response scale: 1 = Strongly Disagree; 2 = Disagree; 3 = Somewhat disagree; 4 = Neither disagree nor agree; 5 = Somewhat Agree; 6 = Agree; 7 = Strongly Agree

Instructions: The following statements refer to YOU AND YOUR WORK EXPERIENCES. Please rate the extent to which you agree or disagree with each of the following statements.	
*EE1**	When I get up in the morning, I feel like going to work (Vigor)*
EE2	I find the work that I do full of meaning and purpose (Dedication)
EE3	Time flies when I'm working (Absorption)
*EE4**	My job inspires me (Dedication)*
EE5	I feel happy when I am working intensely (Absorption)
EE6	I am proud of the work that I do (Dedication)
EE7	I am immersed in my work (Absorption)
EE8	I get carried away when I'm working and lose all track of time (Absorption)
EE9	I am enthusiastic about my job (Vigor)
EE10	At my job, I feel very energetic (Vigor)
Instructions: For the next several statements please think about your SUPERVISOR. Your SUPERVISOR may or may not share your work shift or be on-site (i.e., at your facility), but he or she covers your functional unit and has some input or influence over your evaluation.	
LE1	Our supervisor is engaged in his/her work (Dedication)
LE2	Our supervisor is focused on getting the job done (Vigor)
LE3	Our supervisor is immersed in his/her work (Absorption)

Notes: EE (Individual Employee Engagement), LE (Leader Engagement). Item descriptions from original scales are in parentheses. *Items removed from the composite measure.
Response scale: 1= Never; 2 = Almost never/ A few times a year or less; 3= Rarely/ Once a month or less 4 = Sometimes/ A few times a month; 5= Often/ Once a week; 6 = Very often/ A few times a week; 7 = Always/ Everyday

Appendix 1-4. Research Model Items:

Instructions: For the next several statements please think about your SUPERVISOR. Your SUPERVISOR may or may not share your work shift or be on-site (i.e., at your facility), but he or she covers your functional unit and has some input or influence over your evaluation.	
FL1	Our supervisor behaves in a manner that is respectful of our personal needs (Individualized Support)
FL2	Our supervisor stimulates us to think about old problems in new ways (Intellectual Stimulation)
FL3	Our supervisor has a clear understanding of where we are going (Articulating a Vision)
FL4	Our supervisor encourages us to be "team players" (Fostering the Acceptance of Group Goals)
FL5	Our supervisor leads us by example (Providing a Role Model)
*TL1**	Our supervisor shows us that s/he expects a lot from us (High Performance Expectations)*
*TL2**	Our supervisor usually gives us positive feedback when we perform well (Contingent Reward)*
TL3	Our supervisor reacts or responds to performance only under extreme circumstances (Management-by-Exception (Passive))
*TL4**	Our supervisor allows a lot of autonomy and self-direction in achieving work goals (Laissez-Faire)*

Notes: FL (Transformational Leadership Styles), TL (Transactional Leadership Styles); Item descriptions from original scales are in parentheses. *Items removed from the composite measure.
Response scale: 1 = Not at all; 2 = Once in a while; 3 = Sometimes; 4 = Fairly often; 5 = Frequently, if not always

Instructions for completing Social Networking Analysis Questions:
The questions on the next few pages refer to the people at your primary facility with whom you have the MOST FREQUENT work-related interactions (e.g., exchanging information regarding patient care). We want to know who these people are from YOUR perspective. These are likely to be individuals on your same shift; please do not include people you interact with solely for social reasons. Please mark 'YES' next to the individual(s) who meet this description. ALSO MARK YOUR NAME.

Instructions: The following statements refer to the people you work with that you identified on the previous page. In the items, "WE" and/or " WORK GROUP" refer to those individuals. In our work group…	
*PCE1**	We have a good understanding, overall, of what we are supposed to be doing in our jobs (Meaningfulness)*
*PCE2**	We make efficient use of our resources, time, and budget (Availability)*
*PCE3**	We are held accountable for low performance (Availability)*
*PCE4**	We cooperate with each other to get the job done (Safety)*
PCE5	Our jobs provide us with chances to grow and develop (Availability)
PCE6	We try to pick up new skills and knowledge (Availability)
PCE7	Our ideas and opinions are appreciated (Safety)
PCE8	We are assigned tasks that allow us to use our best skills (Meaningfulness)
PCE9	We get sufficient feedback about how well we are doing (Safety)
*PCE10**	We deal with conflict openly and effectively (Safety)*
*PCE11**	We understand and respect the things that make us each unique (Safety)*

Notes: PCE (Psychological Climate for Engagement); Item descriptions from original scales are in parentheses. *Items removed from the final composite measure.
Response scale: 1 = Strongly Disagree; 2 = Disagree; 3 = Somewhat disagree; 4 = Neither disagree nor agree; 5 = Somewhat Agree; 6 = Agree; 7 = Strongly Agree

Appendix 1-5. Other Study Measure Items:

Instructions: The following statements refer to your thoughts about *the host organization* in general. Please rate the extent to which you agree or disagree with each of the following statements.	
POS1	*The host organization* really cares about my well-being
POS2	*The host organization* cares about my general satisfaction at work
POS3	*The host organization* is willing to extend itself in order to help me perform my job to the best of my ability
POS4	*The host organization* shows a great deal of concern for me
Instructions: The following statements refer to YOU AND YOUR WORK EXPERIENCES. Please rate the extent to which you agree or disagree with each of the following statements.	
JSAT1	All in all, I am satisfied with my job
AFFCOM1	I feel a strong sense of "belonging" to CMHC
AFFCOM2	I feel "emotionally attached" to CMHC
AFFCOM3	I talk up CMHC to others as a great organization to work for*
JOBINV1	The major satisfaction in my life comes from my job
JOBINV2	I would probably keep working even I didn't need the money
JOBINV3	To me, my job is only a small part of who I am (reverse coded)
DISENG1	I cannot imagine another occupation for myself (reverse coded)
DISENG2	Over time, I have felt more connected to my work (reverse coded)
PROACT1	No matter what the odds, if I believe in something I will make it happen
PROACT2	I love being a champion for my ideas, even against others' oppositions
PROACT3	I excel at identifying opportunities
PROACT4	If I believe in an idea, no obstacle will prevent me from making it happen

Notes: POS (Perceived Organizational Support); JSAT1 (Job Satisfaction); AFFCOM (Affective Organizational Commitment); JOBINV (Job Role Involvement); DISENG (Disengagement); Proactive Personality (PROACT)
Response scale: 1 = Strongly Disagree; 2 = Disagree; 3 = Somewhat disagree; 4 = Neither disagree nor agree; 5 = Somewhat Agree; 6 = Agree; 7 = Strongly Agree

Instructions: Respond to the following statements according to YOUR own feelings, rather than how you think "most people" would answer. There are no "correct" or "incorrect" answers.	
DP1	If something can go wrong for me, it will
DP2	I hardly ever expect things to go my way
DP3	I rarely count on good things happening to me

Notes: DP (Dispositional Pessimism)
Response scale: 1 = I disagree a lot; 2 = I disagree a little; 3 = I neither disagree nor agree; 4 = I agree a little; 5 = I agree a lot

Appendix 1-6. Other Study Measure Items:

Instructions for completing Social Networking Analysis Questions:
The questions on the next few pages refer to the people at your primary facility with whom you have the MOST FREQUENT work-related interactions (e.g., exchanging information regarding patient care). We want to know who these people are from YOUR perspective. These are likely to be individuals on your same shift; please do not include people you interact with solely for social reasons. Please mark 'YES' next to the individual(s) who meet this description. ALSO MARK YOUR NAME.

Instructions: The following statements refer to the people you work with that you identified on the previous p the items, "WE" and/or " WORK GROUP" refer to those individuals.	
COH1	We work well together as a team
COH2	We pull together to get the job done
COH3	We really care about each other
COH4	We trust each other
Instructions: The following statements refer to the people you work with that you identified on the previous page. In the items, "WE" and/or " WORK GROUP" refer to those individuals. To what extent do the people in your work group actively work to…	
WKGPRS1	Regularly monitor how well we are meeting our discipline goals
WKGPRS2	Monitor important aspects of our work environment (e.g., inventories, equipment, and process operations, information flows)
WKGPRS3	Develop standards for acceptable performance of our members
WKGPRS4	Smoothly integrate our work efforts

Notes: COH (Workgroup Cohesion); WKGRPS (Workgroup Performance Processes)
Response scale: 1 = Strongly Disagree; 2 = Disagree; 3 = Somewhat disagree; 4 = Neither disagree nor agree; 5 = Somewhat Agree; 6 = Agree; 7 = Strongly Agree