The Mediating Role Of Motivation And Job Satisfaction In Work Environment-outcome Relationships

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THE MEDIATING ROLE OF MOTIVATION AND JOB SATISFACTION IN WORK ENVIRONMENT-OUTCOME RELATIONSHIPS

by

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Summer Term
2007

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ABSTRACT

Research that links various aspects of the work environment to important work outcomes can be traced back almost seventy years. Despite the history and proliferation of these studies, firm conclusions have not been reached regarding the ways through which the work environment impacts these outcomes. For example, mediating variables such as motivation and job satisfaction have been proposed as affective and cognitive states that could impact the environment-outcome relationships but have received little attention. Additionally, organizational and contextual moderators such as group size and demographics that could impact the relationships have been called for but have yet to be studied. Consequently, much remains to be examined in the environment-outcome relationships beyond the basic links. Therefore, the primary objective of the current study was to investigate the effects of motivation and job satisfaction as mediators, and group size, group tenure, and group gender composition as moderators, of work environment-work outcome relationships. Specifically, it was proposed that motivation and job satisfaction mediate the relationships between the feedback environment, learning environment, and reward and recognition environment and job performance and turnover intentions. Finally, it was expected that group size, group tenure, and group gender composition moderate these same environment-outcome relationships. It is suggested that findings gleaned from this study can provide a clearer picture of how certain work environment variables impact specific work outcomes, which can provide researchers and practitioners with information to improve the organizational setting and individual and organizational outcomes of interest. Support was found for several hypotheses and future research directions are noted.
This paper is dedicated to my parents, Linda and Andrew Sargent. Their strong emphasis on education and high achievement throughout my life has served as the foundation of my academic and professional career. I could not have done this without their love and support.
ACKNOWLEDGMENTS

There are several people I would like to acknowledge who have been instrumental in my educational journey from birth to the Ph.D. My parents, Lin and Andy Sargent; my best friend, Becka McPherson; my mentors and colleagues, Dr. Bruce Fisher, Mike Collins, Dr. Tony Paquin, Dr. Mark Frame, and Dr. Phillip Meade; my ever-patient and loving husband, Jason; Dr. Florian Jentsch for his expertise in and instruction of the data analyses in this paper; my committee members, Dr. Eduardo Salas and Dr. Luis Rabelo; and finally my advisor, Dr. Robert Pritchard. I feel so fortunate to have been paired with Bob my first year of graduate school. His expertise, encouragement, flexibility, and warm heart made this last leg of my education bearable and very often enjoyable!
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INTRODUCTION

Statement of the Problem

With organizations today facing increasing levels of national and international competition, there is a continuing focus on improving organizational performance. One way in which companies focus on improving performance is by measuring it and linking it to other organizational variables. These variables are often centered on the work environment, or climate, of the organization. Climate has been commonly defined as shared perceptions of organizational policies, practices, and procedures, both formal and informal (Reichers & Schneider, 1990). In contrast to organizational culture which determines why something happens in an organization, climate determines what will happen (Ostroff, Kinicki, & Tamkins, 2003). Organizational climate variables have consistently shown correlations with important outcomes such as organizational and individual performance (Pritchard & Karasick, 1973; Schneider & Bowen, 1985), turnover (Egan, Yang, and Bartlett, 2004; Zenger, 1992), and organizational commitment (DeCotis & Summers, 1987; Steel, Shane, & Kennedy, 1990). Turnover is also of great interest for many companies in today’s workplace as careers tend to be characterized by change rather than stability (Bolles, 2006; Rousseau, 1998) and the cost of that turnover can be extremely high (Abbasi & Hollman, 2000).

Although researchers and practitioners have given attention to the work environment, additional work is needed to more clearly delineate the process through which these environmental variables are affecting outcomes such as performance and withdrawal. Recent reviews have called for more research on mediating and moderating variables in climate-outcome studies (Carr, Schmidt, Ford, & Deshon, 2003; Kopelman, Brief, & Guzzo, 1990; Ostroff, 2003).
Kopelman et al. called attention to motivation as a possible mediator in 1990, but by Carr et al.’s (2003) review, this had not yet been addressed. One exception is Parker, Baltes, Young, Huff, Altmann, Lacost, and Roberts’s (2003) meta-analysis which used a combination of different studies to test motivation as a mediator. Although Parker et al. (2003) did find that motivation fully mediated the relationship, they called for single studies that include all variables in their model in order to better test this proposition.

Carr et al. (2003) and Parker et al. (2003) also called for studies of potential moderators of the organizational climate-work outcome relationships. Specifically, Parker et al. (2003) suggested that future research should consider the role of setting and other moderator variables, such as those related to the organization’s geographic location and size or employee’s level in the organizational hierarchy and their occupational group. Carr et al. (2003) called for research on size and demographic make-up of the organization, individual difference variables, and climate strength as possible moderators of the climate-outcome relationships.

Finally, methodological issues such as lack of group level data and lack of objective outcome measures have been raised in the same reviews (Carr et al., 2003; Parker et al., 2003). As response-response data is often easier to obtain it is a commonly observed method of data collection in the literature. However, monomethod bias and inflated correlations are possible results of this method of data collection (Shadish, Cook, & Campbell, 2002) and should be used in conjunction with other methods. Additionally, group-level analysis is less common in research due to the number of groups required to satisfy statistical procedures (Barcikowski, 1981) and the difficulty in finding such numbers. As many organizational outcomes of interest are at the group level, more research is needed in this regard.
Purpose of the Current Study

Building on recent reviews (Carr et al., 2003; Parker et al., 2003), the current investigation answers the calls for examinations of motivation and job satisfaction as mediators of the relationships between work environment variables and work outcome variables. Specific work environment factors examined include the feedback environment, the learning environment, and the rewards and recognition environment. These dimensions of the work environment were chosen for two main reasons: The amount of control an organization has over these factors and the theoretical and research-based support of the relationships between these factors and the outcomes of interest in this study. This study also answers the calls for examinations of potential moderators of the environment-outcome relationships. Specifically, group size, group tenure, and gender composition were examined. These moderators were also chosen based on existing empirical support linking the variables to the outcomes of interest.

Figure 1 presents a model that depicts the hypothesized relationships among variables in this study. According to this model, the feedback environment, learning environment, and rewards and recognition environment are related to work outcomes of job performance and turnover intentions directly, and partially through motivation and job satisfaction. Moderators of group size, group tenure, and group gender composition affect the direct correlations between the environment variables and the outcome variables. The test of this model provides more information to researchers and practitioners regarding how work environment variables impact organizational outcome variables of interest, thus facilitating the creation of interventions designed to improve performance, job satisfaction, and motivation, and reduce turnover intentions.
Methodologically, this study utilized annual performance data collected from supervisors, reducing the common response-response model, and analyzed the data at the group level thus adding value to the current collection of work environment and climate research.

In summary, the current study was designed to answer recent calls for the examination of mediators and moderators of climate - , or what is referred to in this paper as work environment, outcome relationships using group-level data from different sources. The following portion of the paper contains a literature review presenting support for the model in this study. In the first section of the literature review, an overview and history of the climate literature is presented along with a definition and description of the various conceptualizations of climate and work environment. Next, an overview of findings to date on specific relationships between environment variables and various outcomes, including mediators and moderators, will be presented along with the hypotheses tested in this study. The third portion of the review will examine the level-of-analysis issues and debates present in the literature around work environment and climate.
Figure 1: Graphical representation of hypothesized relationships.
LITERATURE REVIEW

Organizational Climate

The concept of organizational climate has close to a seventy year history. From Lewin, Lippitt, and White’s paper on social climates in 1939 to the most recent reviews (Carr, Schmidt, Ford, & Deshon, 1993; Parker, Baltes, Young, Huff, Altmann, Lacost, & Roberts, 1993) that summarize the previous fifty years of research, and the frequency with which organizations today employ climate surveys (Church & Waclawski, 1998; Ricci, Kirn, & Quinn, 1998), the concept of organizational climate has made a place for itself. It is important to note that throughout its history, the concept has been defined and conceptualized in a variety of ways (James & Jones, 1974). Early in its history, the concept of organizational climate was blurred with that of job satisfaction (Guion, 1973; Johannesson, 1973). Eventually a distinction was made describing climate as a description of the work environment and job satisfaction as the evaluation of that description (Schneider, 1973). Today, the most common definition of organizational climate as mentioned above is generally a close derivative of “shared perceptions of organizational policies, practices, and procedures” (Reichers & Schneider, 1990). However, this same concept has also been called organizational environment, organizational culture, collective climate, and psychological climate to name a few (see Parker et al., 2003 for distinctions). In this paper, the term work “environment” will be used in place of work “climate” or “culture” and, after reviewing relevant literature, will be clearly defined at the construct, measurement, data source, and analysis levels to avoid the confusion and debates surrounding the use of the term (Hofmann, 2004; James & Jones, 1974; Klein, Dansereau, & Hall, 1994). The use of the term “work
environment” will generally follow Reichers & Schneider’s definition of a shared perception of organizational practices and procedures.

A first step in the conceptualization of a group construct like work environment is to make some fundamental decisions as to the nature of the construct. The model by Hoffmann (2004) in Figure 2 is one way to do that. Hoffman conceptualized the work environment construct as a global construct, configural construct, or shared construct (Hofmann, 2004). The model suggests that researchers could use a decision matrix such as this to identify both the type

Figure 2: Hofmann’s (2004) Classification of Collective Constructs and Composition Models
of collective construct (i.e. the theoretical level of the construct), as well as the associated composition model (i.e. the methodological process for aggregating individual responses) (Hofmann, 2004). As the items employed in this study ask employees about constructs that emerge from shared actions, perceptions, or attitudes and the measure references individual and collective actions, perceptions, or attitudes, the collective construct employed in this study is a shared construct of several work environment dimensions composed of both individual and collective references (Box 2.1 in Figure 2).

In addition to the choice of conceptualizations of work environment, various taxonomies, identifying differing numbers and types of dimensions, have also been proposed (Brown & Leigh, 1996; Campbell, Dunnette, Lawler, & Weick, 1970; James & Jones, 1974; Ostroff, 1993; Pritchard & Karasick, 1973; Schnake, 1983). Although viewing the work environment as a molar concept is appropriate when one is interested in broad outcomes, often times researchers are interested in more specific outcomes, such as number of accidents, and thus studying the specific safety dimension of the environment may be more appropriate (Carr et al., 2003). From Campbell, Dunnette, Lawler, and Weick in 1970 who proposed four dimensions of climate: individual autonomy, the degrees of structure imposed on the position, reward orientation, and consideration, warmth and support, to Ostroff in 1993 who proposed twelve dimensions of climate grouped into three higher order dimensions: affective, cognitive, and instrumental, the various number of dimensions and inconsistency in dimension titles over the years has added to the already mentioned confusion in the literature around the concept of organizational climate (James & Jones, 1974; Carr et al., 2003; Parker et al., 2003). See Figure 3 for an example of the number of variables available for study within the work environment and a sample taxonomy.
(James & Jones, 1974). Fortunately, as mentioned by Parker and colleagues, more recent research has began to remedy the overlaps and overabundance of definitions and dimensions surrounding the work environment concept.

Figure 3: Sample taxonomy of work environment variables (James & Jones, 1974)

Using various dimensions, researchers have attempted to create models that relate work environment variables to individual and organizational outcomes. Kopelman, Brief, and Guzzo (1990) proposed a model that relates five dimensions of climate: goal emphasis, means emphasis,
reward orientation, task support, and socioemotional support, to employee attitudes and motivation. Parker et al.’s (2003) review modeled James’ (1979; 1981) five dimensions of climate perceptions: job, role, leader, work group, and organization to performance through job satisfaction, job involvement, commitment, and motivation. The model proposed in Carr et al.’s (2003) meta-analysis relates the three higher-level dimensions of climate from Ostroff’s (1993) taxonomy to performance, psychological well-being and withdrawal through the cognitive and affective states of job satisfaction and motivation. In addition, a plethora of individual studies have related various work environment dimensions to individual and organizational outcomes of interest.

In summary, the work environment has been conceptualized, defined, and measured in a number of ways over the years. Although no particular conceptualization or taxonomy has been agreed upon, researchers do concur that a clear and precise explanation of exactly what is being examined and reported should accompany each study. In this paper, the work environment is defined as a shared construct composed of common individual perceptions of organizational policies, practices, and procedures that references both the individual and the collective group.

Work Environment and Outcomes

Now that matters related to the work environment construct itself have been reviewed, the literature linking the work environment to important outcomes such as performance and turnover intentions will be examined.
Performance

It has long been accepted that behavior is produced by the interaction of individuals with their environment (Brunswick, 1956; March & Simon, 1959; Murray, 1938; Tagiuri, 1961). It was these findings some sixty years ago that stirred the research on organizational climate and its outcomes. One of the earliest reviews on climate noted that the field of organizational psychology was emerging which offered a unique opportunity for the study of environmental variation (Forehand & Gilmer, 1964). “A consequence of such a perspective is intensified interest in human behavior as it is conditioned by organizational properties, and in organizations as they are influenced by the behavior of their members” (p. 362). The review discussed various ways that the work environment influences behavior, the conceptual confusion around the work environment term, and future directions.

In one of the first individual work environment-outcome studies, Likert (1961) found performance differences in environments that were characterized as participative, democratic and unstructured versus those characterized as nonparticipative, autocratic, and structured. Other early studies found that environmental conditions that imposed constraints on creativity were related to lower productivity among scientists (Vollmer, 1962, 1963) which supports March & Simon’s (1959) position that certain organizational procedures can have unintended consequences on behavior. Lodahl and Porter (1961) found that this relationship was dependent on homogeneity of group members thus suggesting possible interaction effects. In a laboratory study where environment was manipulated, Frederiksen (1968) found that performance was more predictable for participants in an innovative climate, performance was higher for participants in consistent climates, and participants in different climates used different methods to solve
problems. An additional experimental study found that performance was highest in an achieving business environment versus a democratic-friendly business environment (Litwin & Stringer, 1968). Moving into the 1970s, researchers continued to find relationships between the work environment and performance. Friedlander and Greenberg (1971) found that perceived organizational climate measures of supportiveness correlated significantly with work effectiveness and behavior, and Pritchard and Karasick (1973) found that climate was fairly strongly related to subunit performance. Into the 1990s and today, researchers are still examining links between the work environment and work outcomes. Brown and Leigh (1996) found relationships between two dimensions of the work environment, support and contribution, and performance. Carr et al.’s (2003) meta-analysis found that the relationships between work climate dimensions and performance were fully mediated by job satisfaction and commitment. Additionally, in another recent comprehensive look at this relationship, Parker et al.’s (2003) meta-analysis showed that the relationship between a global climate factor and performance was fully mediated by work attitudes and motivation.

Turnover Intentions

Another important outcome in organizations is turnover. Turnover can be extremely costly to organizations and can have additional negative impacts on employee morale. The extent to which employers can measure turnover intentions, and intervene before turnover occurs, may be critical to the survival of their organization.

In hopes of predicting and preventing organizational turnover, many researchers have looked for antecedents, such as aspects of the work environment, which may be partly responsible (Curry, 2005; Kaye & Jordon-Evans, 1999; Williams, 1999; Zenger, 1992). For
example, Egan Yang, and Bartlett (2004) found relationships between the organizational learning culture and turnover intentions. In addition, Steel, Shane, and Kennedy (1990) looked at the relationship between three dimensions of the work environment and various work outcomes. They found that the decision-making, communication, and group cohesiveness climates were intercorrelated and differentially related to various outcomes including turnover intentions.

Although categorized as a cognitive and affective state, the concept of organizational commitment often includes measures of turnover intentions (Mowday, Porter, & Steers, 1982), therefore relevant work environment findings are also noted here. DeCotiis and Summers (1987) examined the work environment-commitment relationship and found relationships between the environment and commitment, and between commitment and voluntary turnover. Recently, a meta-analysis by Carr and colleagues (2003) found standardized estimates of .10 to .34 between aspects of the work environment and commitment and .15 between the climate and measures of withdrawal. Carr et al. found that the relationships between work climate dimensions and withdrawal were almost fully mediated by job satisfaction and commitment.

Work Environment Dimensions and Work Outcomes

This section of the literature review examines three specific work environment dimensions that will be examined in this study along with the hypotheses derived from the proposed model.

Feedback Environment

Feedback has been generally defined as a subset of the available information in the work environment that conveys which behaviors are desired by the organization along with an
evaluation of those behaviors (for slight variations see London, 2003; Rosen, Levy, & Hall, 2006; Steelman, Levy, & Snell, 2004). Levy, Albright, Cawley, and Williams (1995), London (2003), and Steelman et al. (2004) have examined the more general feedback culture, or environment, of an organization. Steelman and colleagues define the feedback environment as daily interactions between members of an organization. London suggested that organizations may create more global psychological settings by enhancing the quality of feedback given, emphasizing its importance, and supporting its use by employees.

Feedback and Performance

As aspects of the feedback environment can vary, these variations would presumably relate to important work outcomes such as improved individual and organizational performance. Theoretical and research-based support for this link exists. According to expectancy theories, feedback should increase the performance-to-outcome expectancy beliefs by clarifying which behaviors will be rewarded. Indeed, the relationship between feedback and performance is fairly robust (Guzzo, Jette, & Katzell, 1985; Ilgen, Fisher, & Taylor, 1979; Ivancevich & McMahon, 1982; Pritchard, Bigby, Beiting, Coverdale, & Morgan, 1981; Pritchard, Jones, Roth, Stuebing, & Ekeberg, 1988), but plays host to a number of moderators and mediators (Kluger & DeNisi, 1996; Murphy & Cleveland, 1995). One example of this can be seen in El-Alayli and Baumgardner (2003). They found that having an entity theory of personality (construing personal attributes as fixed) led to increased effort after failure and feedback in a performance-oriented climate, whereas having an incremental theory (viewing personal attributes as malleable) led to decreased effort. In a recent meta-analysis, Smither, London, and Reilly (2005) found that multi-source feedback will improve performance only slightly and only when a variety of conditions
are present: feedback indicates that change is necessary, recipients have a positive feedback orientation, perceive a need to change their behavior, react positively to the feedback, believe change is feasible, set appropriate goals to regulate their behavior, and take actions that lead to skill and performance improvement. In another example, Norris-Watts and Levy (2003) found that variation in the feedback environment impacts organizational citizenship behaviors through organizational commitment. Most recently, Rosen, Levy, and Hall (2006) found that aspects of the feedback environment are related to performance through perceptions of organizational politics and employee morale. They concluded that when employees have greater access to information regarding behaviors that are acceptable and desired at work, perceptions of politics are reduced and work outcomes are enhanced. Thus there is considerable support for the link between the feedback environment and performance.

There are aspects of feedback that are important and this study will focus on several of these feedback characteristics, specifically frequency (Beck & Seta, 1980; Ilgen, Fisher, & Taylor, 1979; Kyungwon, Oah, & Dickinson, 2003), quality (Greguras, Robie, & Schleicher, 2003; London, 2003; Stuemfig & Maehr, 1970; Wiederanders & Harvey, 1977), timeliness (Ammons, 1956; Ilgen, Fisher, & Taylor, 1979), specificity (Kluger & DeNisi, 1996; Mento, Steel, & Karren, 1987; Salmoni, Schmidt, & Walter, 1984; Tubbs, 1986), consideration and approachability of the feedback giver (Nemeroff & Wexley, 1979), and extent to which feedback is valued in the group (London, 2003). The combination of these characteristics is proposed to determine the effectiveness of the feedback environment.

**Hypothesis 1 a:** The more effective the feedback environment (frequency, timeliness, consideration and approachability of the feedback giver, and value of feedback) the higher the group performance.
For this study, data is available only at the group level and will be analyzed and interpreted as such.

Feedback and Turnover Intentions

Given the definition of feedback noted above, one could logically link a lack of feedback to turnover intentions. Turnover intentions are defined as a conscious and deliberate willingness to leave the organization (Tett & Meyer, 1993). Theory (Fishbein & Ajzen, 1975) and researchers (Abrams, Ando, & Hinkle, 1998) have argued that behavioral intentions of turnover are the best predictor of actual turnover behaviors. Additionally, actual turnover is influenced by a number of outside factors beyond the employee’s control such as availability of alternative jobs. For these, and other methodological reasons, turnover intentions will be measured in this study.

Connecting variations in the feedback environment and turnover intentions, if employees are not given information on what behaviors are desired and/or are not given information on how they are doing on those behaviors, negative consequences could follow. One type of consequence is frustration and mental anguish that could result from such a scenario, thus leading to turnover intentions. Although this relationship was suggested by Porter and Steers in 1973 and Price in 1975, few studies have looked at this relationship. One exception is Walsh, Ashford, and Hill (1985). They found that the obstruction of feedback from several sources led to increased turnover intentions. The relationship between feedback and commitment is more prevalent (Farrell & Rusbult, 1981; Marsh & Mannari, 1977; Porter, Crampon, & Smith, 1976; Steers, 1977) and, as mentioned previously, commitment sometimes includes the element of turnover intentions (Mowday, Porter, & Steers, 1982). For example, Roebuck (1996) suggested that soft feedback (subjective and provided by an individual) is related to employee commitment, and
Tziner and Latham (1985) found that feedback followed by goal-setting led to significantly higher commitment than feedback alone, regardless of the appraisal scale that was used. Despite the lack of research on the feedback-turnover intentions relationship, the following hypothesis is proposed:

_Hypothesis 1 b:_ The more effective the feedback environment, the lower the turnover intentions.

As mentioned above, this review suggests a number of aspects of feedback are important. Specifically frequency (Beck & Seta, 1980; Ilgen, Fisher, & Taylor, 1979; Kyungwon, Oah, & Dickinson, 2003), quality (Greguras, Robie, & Schleicher, 2003; London, 2003; Stuemfig & Maehr, 1970; Wiederanders & Harvey, 1977), timeliness (Ammons, 1956; Ilgen, Fisher, & Taylor, 1979), specificity (Kluger &DeNisi, 1996; Mento, Steel, & Karren, 1987; Salmoni, Schmidt, & Walter, 1984; Tubbs, 1986), consideration and approachability of the feedback receiver (Nemeroff & Wexley, 1979), and extent to which feedback is valued in the group (London, 2003) will be measured.

Learning Environment

Learning can be defined cognitively or behaviorally. From a cognitive perspective, learning is defined as changes in an individual’s mental models or knowledge representations (Shuell, 1986). The cognitive approach differs from the behavioral approach in that with the cognitive approach, performance or behavioral changes may or may not occur (Greeno, 1974). Behavior is seen as only a possible outcome of knowledge acquisition and is due to a variety of outside influences or constraints, and therefore performance increases may not necessarily result (Alavi, 2002).
Learning Environment and Performance

A common definition of the learning environment includes both the structural and process dimensions of learning within an organizational context (Egan, Yang, & Bartlett, 2004; Watkins & Marsick, 1993; 2003). Watkins and Marsick (1993; 2003) suggest that there are seven dimensions of the learning environment that include both people and structure. A learning organization is viewed as one that has the capacity to integrate people and structure to move itself toward continuous learning and change. Various dimensions of the learning environment have been examined and linked to performance. The effects of variations in the learning environment on performance have been studied in student home learning environments (Foster, Lambert, Abbott-Shim, McCarty, & Franze, 2005), technological learning environments (Sherry, Jesse, & Billig, 2002), college environments (Anaya, 2001), distance-learning environments (Tselios, Avouris, Dimitracopoulou, & Daskalaki 2001), distributed learning environments (Alavi, 2002), various media learning environments (Su & Klein, 2006), and organizational transfer of training climates (Baldwin & Ford, 1988). Given these and many more studies, it is suffice to say that variations in the learning environment can impact performance. Research in this area tends to focus on which variations of the learning environment are most effective and why. An interesting addition to the literature would be an examination of the learning environment and its relation to group performance.

A number of aspects of the learning environment are important and this study will focus on several of these learning characteristics, specifically opportunities for learning (Canny, 2004; Ng, Butts, Vandenberg, DeJoy, and Wilson, 2006; Rau, 2006), emphasis on learning from mistakes (Fischer, Mazor, Baril, Alper, DeMarco, & Pugnaire, 2004; Lorenzet, Salas, &
Tannenbuam, 2005; Tjosvold, Yu, & Hui, 2004), support of learning (Baldwin & Ford, 1988; Hardy, Jonen, Moller, & Stern, 2006; Kamimura & Ishikuma, 2000; Perry, 1998), and extent to which learning is valued in the group (Wakamatsu, Ohtani, & Konishi, 2004). The combination of these characteristics is proposed to determine the effectiveness of the learning environment.

**Hypothesis 2a**: The more effective the learning environment (opportunities for learning, emphasis on learning from mistakes, support of learning, and extent to which learning is valued), the higher the group performance.

**Learning Environment and Turnover**

Furthermore, an examination of the link between the learning environment and organizational turnover intentions could prove worthwhile. While careers today are characterized by change rather than stability (Rousseau, 1998), career development strategies, including career growth, learning, and training, have been posed as retention tools (Kaye & Jordon-Evans, 1999; 2000). Indeed, Curry (2005) found that training is beneficial to overall retention of employees in a longitudinal study of child welfare employees. Additionally, Cicero-Reese & Black (1997) found that education is related to higher retention, Egan et al. (2004) found that variations in the organizational learning culture is negatively related to turnover intentions, and Ng, Butts, Vandenberg, DeJoy, and Wilson (2006) found that opportunity for learning is related to organizational commitment. Others, however, have found that higher education leads to higher turnover (Balfour & Neff, 1993), have found weak relationships between organizational learning culture and turnover intentions (Egan et al., 2004), or found no relationships between education, training and turnover (Graef, Potter, & Rohde, 2002). Curry (2005) noted that the literature on the training-turnover relationship is ambiguous and called for further examination. One direction
noted was looking to work environments that are supportive of ongoing learning, growth, and development (Kaye & Jordon-Evans, 1999; 2000). Despite the mixed findings on the relationship between the learning environment and turnover intentions, the following hypothesis is proposed:

*Hypothesis 2 b*: The more effective the learning environment, the lower the turnover intentions.

As mentioned above, a number of aspects of the learning environment are important. Specifically opportunities for learning (Canny, 2004; Ng, Butts, Vandenberg, DeJoy, and Wilson, 2006; Rau, 2006), emphasis on learning from mistakes (Fischer, Mazor, Baril, Alper, DeMarco, & Pugnaire, 2004; Lorenzet, Salas, & Tannenbaum, 2005; Tjosvold, Yu, & Hui, 2004), support of learning (Baldwin & Ford, 1988; Hardy, Jonen, Moller, & Stern, 2006; Kamimura & Ishikuma, 2000; Perry, 1998), and extent to which learning is valued in the group (Wakamatsu, Ohtani, & Konishi, 2004) will be measured.

Organizational Rewards and Recognition Environment

The reward and recognition environment in an organization is made up of extrinsic rewards such as base pay increases, bonuses, paper awards, time-off awards, etc. It also includes the intangible recognition given from co-workers and superiors for work performed.

Rewards and Recognition and Performance

In 1959, March and Simon suggested that reward systems have influential properties such as the amount of the reward, the dependence of the promotion and monetary reward on performance, the perceived operationality of criteria, and independence of individual rewards, that produce direct and interactive effects on work outcomes. Blake and Mouton’s (1961; 1962)
findings support one example proposed by March and Simon of an inverse relationship between the independence of individual rewards and competition among group members. Additionally, Blau (1954) found that personal competitiveness was related to productivity in a competitive work group, but not in a noncompetitive group. A few years later, Pritchard and colleagues found that the level of rewards dimension of the environment was related to performance (Pritchard & Karasick, 1973), that rewards influence performance above the effects of goal-setting (Pritchard & Curtis, 1973), and that group incentives increase organizational productivity (Pritchard, Jones, & Roth, 1988). Additionally, Orpen (1982) and Harrison, Virick, and William (1996) found that when rewards are highly dependent on good performance, performance increases. In contrast, many pay-for-performance studies have found relatively weak links between pay and performance levels (HayGroup, Inc., 1989; Medoff & Abraham, 1980). Similarly, Brown and Leigh (1996) did not find a relationship between their recognition dimension and performance. Despite these mixed findings, organizations have used rewards and recognition to increase performance for years. Commission-based jobs, such as retail and sales, are especially likely to have performance contingent reward systems.

A number of aspects of the reward and recognition environment are important and this study will focus on two of these characteristics, specifically frequency of reward or recognition (Coates, 1982; Grey, 1978; Taylor & Neslin, 2005) and contingency of rewards on performance (Orpen, 1982; Harrison, Virick, & William, 1996). Although not an exhaustive list, the combination of these characteristics is proposed to determine the effectiveness of the learning environment.
Hypothesis 3a: The more effective the reward and recognition environment (frequency of reward and recognition and contingency of rewards on performance), the higher the group performance.

Rewards and Recognition and Turnover

According to expectancy theories, if organizational rewards and recognition are known consequences of certain performance levels and these rewards are valued, the desired behaviors should be observed. Furthermore, if employees are satisfied with the rewards, then turnover intentions may be reduced. An issue that arises in many reward system discussions is differentiation. Although giving higher rewards for higher performance has been encouraged for retention of top performers, Zenger (1992) found that organizations that only reward extremely high performance face more turnover of moderately high performers. This of course can be equally detrimental to organizational performance and employee morale. Along these lines, Williams (1999) found that an objective reward contingency accounts for the most variance in functional turnover ($R^2 = .34$). Other researchers suggest that those high performing employees who receive rewards are more likely to leave due to the availability of alternative employment opportunities (Lance, 1988). In contrast, Dreher (1982) argued that employees who are rewarded will be more likely to remain in the organization due to increased job satisfaction. Likewise, a positive relationship between a decline in rewards and turnover has been found (Rusbult & Farrell, 1983). Still others have suggested that the relationship is nonlinear (Jackofsky, 1984) or nonexistent (Wright & Bonett, 1993). According to March and Simon’s (1958) ease and desirability of movement framework, an organization can continue only as long as the payments or inducements offered to employees are sufficient to elicit continued contributions, including
participation in the organization. Despite the existing research and theory, Greenberg (1990) noted that the relationship between turnover and procedures for reward allocation has been neglected. Although the relationship between organizational rewards and recognition and turnover is unclear, the following hypothesis is proposed:

_Hypothesis 3 b:_ The more effective the reward and recognition environment, the lower the turnover intentions.

As previously mentioned, several aspects of the reward and recognition environment are important. Specifically frequency of reward or recognition (Coates, 1982; Grey, 1978; Taylor & Neslin, 2005) and contingency of rewards on performance (Orpen, 1982; Harrison, Virick, & William, 1996) will be examined.

It is expected that variations in the three work environment dimensions will be correlated to some degree. Variations in an organization’s feedback environment could be related to variations in its learning environment as feedback is an information sharing activity and learning involves the acquisition of knowledge. Variations in the feedback environment could also be related to variations in the reward and recognition environment as organizational rewards and recognition are almost always tied to performance levels that are communicated through formal and informal feedback sessions. Similarly, variations in the learning environment could be tied to variations in the reward and recognition environment to the extent that the learning results in desired behavioral changes. As mentioned previously, learning does not necessarily include a behavioral change. However, when learning does result in behavior changes that are desired by the organization, rewards and recognition most likely will follow. This leads to the following hypothesis:
Hypothesis 4a: Variations in the feedback environment, learning environment, and reward and recognition environments are positively correlated. Although correlated, it is expected that variations in the three environments offer unique information to performance and turnover intentions outcomes. For instance, if the frequency of feedback increases and indicates that an employee needs to go to training, but the support of learning and time given to go to training do not increase at a similar rate, the employee may not get to go to training and performance will not be fully explained by variations in the feedback environment. Similarly, if feedback frequency increases indicating that an employee is doing an outstanding job but the rewards and recognition associated with performance do not increase at a comparable rate, that employee’s turnover intentions may not be fully explained by variations in the feedback environment. This leads to the following hypothesis:

Hypothesis 4b: Variations in the feedback environment, learning environment, and reward and recognition environment each account for unique variance in group performance and turnover intentions.

Work Environment and Job Satisfaction/Motivation

The model presented in Figure 1 shows direct links between the feedback, learning and reward/Recognition environments on the one hand and the dependent variables of performance and satisfaction on the other. The model also indicates that the environment variables influence motivation and job satisfaction, and motivation and job satisfaction partially mediate the relationships between the environment variables and the outcome variables of performance and turnover.
Job Satisfaction

Job satisfaction is one of the most widely studied constructs in industrial and organizational psychology (Spector, 1997). The antecedents and consequences of satisfied employees are of equally great interest to researchers and practitioners. The work environment appears to be an obvious starting point, however, the relationships between aspects of the work environment and job satisfaction have been questioned. As mentioned previously, Johannesson (1973) found that climate measures failed to add new or different variance over satisfaction measures thus blurring the two concepts. Guion (1973) suggested that this could be due to the fact that organizational climate is more a function of individual differences than organizational attributes. However, James & Jones (1974) suggested that it may also be the case that both perceived work environment and job attitudes covary because of similar differences in situations, and that analyzing only the climate-attitude relationships may lead to erroneous conclusions. In addition, researchers have more recently found that job satisfaction may be more of a stable internal trait that is less influenced by the environment (Elfering, Semmer, & Kalin, 2000; Gupta, Jenkins, Beehr, 1992; Staw & Ross, 1985). Despite these debates, many studies have found significant relationships between dimensions of the work environment and job satisfaction.

Blau and Scott (1962), Likert (1961), and Morse and Reimer (1956) all found employee satisfaction differences in environments that were characterized as participative, democratic and unstructured versus those characterized as nonparticipative, autocratic, and structured. Other early studies found that environmental conditions that imposed constraints on autonomy or creativity were related to lower satisfaction (Vollmer, 1962, 1963) although there was evidence of interactions depending on individual personality and needs and work-group interrelations.
Herzberg, Mausner, and Snyderman (1959) found that the determinants of dissatisfaction had more to do with the work environment while the determinants of satisfaction were more centered on the job as self-reported by participants. Additionally, Friedlander and Margulis (1969) found that different aspects of the work environment related to different aspects of satisfaction although these relationships were moderated by employee work values. Alternatively, Herman and Hulin (1972) demonstrated that differences in job satisfaction measures were due more to structural groupings within the organization than to individual difference measures. In their 1968 experimental study, Litwin and Stringer found that job satisfaction was highest in a democratic-friendly business environment, and Pritchard and Karasick (1973) found that work climate was fairly strongly related to job satisfaction. In another example, Schnake (1983) measured five dimensions of climate: reward orientation, structure, warmth and support, standards, and responsibility and found relationships between all five dimensions and three different measures of job satisfaction. More recently, Parker et al.’s (2003) meta-analysis showed a .61 standardized estimate of the relationship between a global climate factor and job satisfaction and Carr et al.’s (2003) meta-analysis found standardized estimates ranging from .12 to .29 depending on the facet of the environment examined. In sum there is a large amount of evidence linking the work environment to job satisfaction.

Feedback and Job Satisfaction

Looking specifically at the feedback environment and job satisfaction, Shikdar and Das (2003) found that the provision of assigned and participative standards with performance feedback increased job satisfaction significantly in a repetitive industrial production setting. In a
longitudinal study, Pearson (1991) found that extrinsic feedback had a significant influence on job satisfaction. Additionally, Walsh, Ashford, and Hill (1985) found lower levels of job satisfaction when feedback from several sources was obstructed. Looking at goal-setting as part of the feedback process, Kim and Hamner (1976), Das (1982), and Das and Shikdar (1990) all found that when feedback included goals, worker satisfaction increased significantly. Finally, Tziner and Latham (1989) examined different forms of feedback and also found that feedback with goal-setting increased employee satisfaction more than feedback alone. Feedback with goal-setting is believed to have a positive impact on job satisfaction by making the work more challenging, interesting, less boring, and creating more job attention (Shikdar & Das, 2003).

The aspects of feedback measured in this study can be related to job satisfaction. For instance, the more frequent, higher quality, and more timely the feedback, the more satisfying it is likely to be to the receiver. In addition, the more consideration of the feedback receiver’s emotions that is displayed, the greater approachability of the feedback giver, and the more feedback is valued in the group, the more likely the feedback will be satisfying to the individual. Although there are several facets of overall job satisfaction, the extent to which an employee is satisfied with the feedback and its implications and consequences, the more satisfied he or she is likely to be with the job overall.

Learning and Job Satisfaction

Next, examining the learning environment and job satisfaction, Cropanzano and Byrne (2001) noted that although many variables have been linked to job satisfaction, the learning environment has not been explored adequately. Rowden (2002) and Rowden and Conine (2005) responded to this and examined several aspects of the learning environment. Both studies found
that formal, informal, and incidental learning were all highly correlated with employee satisfaction in small to midsize companies. Additionally, Watkins and Marsick (2003) and Egan et al. (2004) found relationships between variations in the learning culture of an organization and employee satisfaction. Learning is believed to impact worker satisfaction by providing growth opportunities that satisfy basic internal human needs.

The aspects of learning examined in this study can also be related to job satisfaction. For example, the more opportunities for learning, the greater emphasis on learning from mistakes, and the more support of learning, the more likely an employee is to be satisfied with the learning environment. Additionally, the more time given for learning and the greater the extent to which learning is valued in the group may also influence satisfaction. Satisfaction with these aspects of the learning environment is also proposed to influence overall job satisfaction.

Reward and Recognition and Job Satisfaction

Finally, there is substantial evidence that links the reward and recognition environment to job satisfaction (Hampton & Hampton, 2004; Kalleberg & Loscocco, 1983; Kesselman, Wood, & Hagen, 1974; Mannheim, 1975; Rusbult & Farrell, 1983). In one example, Rowden and Conine (2005) found that the amount of recognition contributed to employees’ self-reported levels of job satisfaction. Shreeve, Goetter, Norby, Griffith, Stueckle, de Michele, and Midgley (2005) found complex relationships between teacher satisfaction levels and perceptions of recognition. Additionally, Pritchard and Karasick (1973) found that the level of rewards dimension of the environment was related to job satisfaction, and Schnake (1983) found that the reward orientation aspect of the environment was related to three different measures of job satisfaction. Although Scott-Ladd et al. (2005) found a significant correlation between rewards and job satisfaction,
their path analysis coefficient was not significant given their model. According to expectancy theories, to the extent that the expected rewards and recognition are valued employees will exert effort to achieve them (Vroom, 1964). This in turn could be expected to satisfy their needs and result in some level of job satisfaction.

As with aspects of feedback and learning, the aspects of reward and recognition measured in this study can be related to job satisfaction. For instance, the more frequent the verbal recognition and the more contingent the rewards are on performance, the more satisfied an individual is likely to be. Satisfaction with rewards and recognition is proposed to be related to overall job satisfaction.

Motivation

Motivation has been commonly defined as the amount, direction, and persistence of effort directed toward a task and has received considerable attention in the literature. In Forehand and Gilmer’s early review, they proposed several bases for a link between the work environment and work motivation. One such basis rests on Vroom’s 1960 suggestion that different organizational properties carry differential opportunity for satisfying the values that employees bring with them to the organization. In another basis for such a link, Fiske and Maddi (1961) provided evidence that an environment with a diversity of stimulation is intrinsically motivating. Finally, the power of a group to reward and punish its members through cohesiveness (Likert, 1961) and congruence of attitudes (Blau & Scott, 1962) could be seen as a basis for linking the environment to motivation. Other researchers (James, Hartman, Stebbins, & Jones, 1977; Litwin & Stringer, 1968) have focused on how aspects of the work environment induce outcome expectancies, instrumentalities, and valuations that directly affect individual motivation as outlined in
traditional expectancy models (Rotter, 1954; Vroom 1964) and self-regulatory models of motivation (Kanfer, 1990). Parker et al.’s (2003) meta-analysis showed the relationship between climate and motivation was fully mediated by work attitudes.

Feedback Environment and Motivation

Looking specifically at the feedback environment, several aspects of feedback have been examined in relation to work motivation. One major area of research involves feedback sign, positive or negative. Feedback environments can vary drastically in the degree to which positive and/or negative feedback is most prevalent. Despite intuitive reasoning, there has been no clear relationship established between the sign of feedback and its effect on motivation (Kluger & DeNisi, 1996). Some suggest that self-regulation theory can explain the variability in feedback sign effects (Higgins, 1997; 1998). Van-Dijk and Kluger (2004) found that both negative feedback with regard to obligations and positive feedback with regard to wishes increased motivation. Additionally, Idson and Higgins (2000) found that the effects of subsequent motivation of success and failure feedback are moderated by the extent to which individuals have been previously successful in promotion self-regulation and prevention self-regulation.

Another area of research examines the feedback delivery format. Some organizations adopt frequent formal and informal face-to-face feedback sessions while others simply check the box on the required performance appraisal form once a year. Bracken, Jeffres, and Neuendorf (2004) found that text-only negative feedback resulted in more intrinsic motivation than verbal feedback in a computer environment. This discovery is in line with findings from non-computer environments (Cameron & Pierce, 1994). Narciss (2004) found that the type of feedback given, information tutoring feedback versus solution presentation, differentially affects motivation in
environments where students are forced to stay on tasks for a given amount of time. Zhang and Lu (2002) found that attributional feedback had direct effects on motivation and interactive effects with self-efficacy on motivation formation. Geister, Konradt, and Hertel (1996) found that process feedback in a virtual team environment had a positive effect on motivation. Latham and Wexley (1981) assert that when feedback is understood, accepted, and acted upon by the employee it can enhance motivation. In general, there is sufficient evidence to show that feedback is very important in the motivational process (Butler & Nisan, 1986; Locke & Latham, 1990; Pritchard & Ashwood, 2006; Shanab, Peterson, Dargahi, & Derolan, 1981; Tang & Sarsfield-Baldwin, 1990; Valierand & Reid, 1988; Young & Kline, 1996). When employees have knowledge of what is expected of them and how they are being evaluated on those expectations, given that the expectations are reachable, motivation should remain high.

The aspects of feedback examined in this study can be related to motivation. For instance, the more frequent, higher quality, and more timely the feedback, the more motivated an individual may be to respond to that feedback. In addition, the greater emotional consideration of the feedback receiver that is displayed, the more approachable the feedback giver appears, and the greater the extent to which feedback is valued in the group, the more an individual is likely to be motivated to respond. These aspects of feedback are proposed to be related to overall motivation.

Learning Environment and Motivation

Next, looking at the learning environment and motivation, it can be expected that the extent to which learning is valued, supported, and available in an organization, motivation to improve or learn new things will also be adopted. The majority of research in this area has taken
place in school settings. Bong (2005) examined the school environment and found that modified learning environment perceptions explained changes in motivation. This finding was used to justify continued efforts to create a motivationally adaptive environment. Hsu and Huang (2006) found that variations in students’ home learning environments were related to learning motivation but that school learning environments were not. A possible explanation for this was their finding that students were almost universally dissatisfied with the school learning environment. Ben-Ari and Eliassy (2003) also found differential connections between two school learning environments and three motivational variables. Looking at work environments, Egan et al. (2004) found that variations in the organizational learning culture were related to IT employee motivation to transfer learning. Although the majority of research in this area is done in the school environment, the relationships found between variations in the learning environment and motivation could transfer into the work setting.

The aspects of learning measured in this study can also be related to motivation. For example, the more opportunities for learning, the greater emphasis on learning from mistakes, and the greater support of learning, the more likely an individual is to be motivated to learn. Also, the more time given for learning and the greater the extent to which learning is valued in the group may also be related to motivation to learn. These aspects of learning are proposed to be related to overall work motivation.

Reward and Recognition Environment and Motivation

Finally, much research has been done in linking the reward and recognition environment to motivation. The bulk of this research centers around the effects of extrinsic rewards on intrinsic motivation. In Deci, Koestner, and Ryan’s (1999) meta-analysis, engagement-
contingent, completion-contingent, performance-contingent rewards, all tangible rewards, all expected rewards, and all other rewards significantly undermined intrinsic motivation. Tangible rewards tended to be more detrimental to children than college students, and verbal rewards tended to be less enhancing for children than college students. In addition Pritchard, Campbell, and Campbell (1977) found support for the hypothesis of extrinsic rewards negatively influencing intrinsic motivation. Behavioral (Bernstein, 1990; Dickinson, 1981; Eisenberger & Cameron, 1996), attributional (Bem, 1972; Lepper, Greene, & Nisbett, 1973; Lepper, Sagotsky, Dafoe, & Greene, 1982), and motivational theories (Deci & Ryan, 1980; 1985) all provide theoretical support for this finding of extrinsic rewards undermining intrinsic motivation. Despite the vast theoretical and empirical support, this finding has been, and remains, controversial. Some researchers suggest the opposite effect, that extrinsic rewards can increase motivation (Cameron & Pierce, 1994; Carton, 1996; Flora, 1990). Practitioners must have evidence in line with this view as organizations appear to make extensive use of extrinsic rewards in organizations to elicit desired behaviors. Research on praise and verbal recognition has shown more positive effects on motivation (Eisenberger & Cameron, 1996; Magnus, 1981; Tang & Hall, 1995; Thistlethwaite, 1959). In summary, the evidence on motivational effects of rewards and recognition is substantial yet mixed.

Finally, the aspects of reward and recognition that are measured study can be linked to motivation. For example, the more frequent the rewards and recognition and the more contingency the rewards are on performance, the more likely an employee is to feel motivated. As with aspects of feedback and learning, these reward and recognition aspects are proposed to be related to overall work motivation.
Job Satisfaction, Motivation and Work Outcomes

The model in Figure 1 indicates that job satisfaction and motivation are partial mediators of the environment-outcome relationships. Thus, it is important to link these mediators to the work outcomes. Partial mediation, as opposed to full mediation, is hypothesized due to the large number of variables that can be assumed to be simultaneously affecting dimensions of the work environment and outcomes.

Job Satisfaction

Performance

The link between job satisfaction and performance has interested researchers since the infamous Hawthorne studies were conducted in the 1930s (Roethlisberger & Dickson, 1939). Despite the vast research to date, there is considerable literature surrounding the debate on the casual ordering within the job satisfaction-performance relationship. Are employees performing well because they are satisfied, are they satisfied because they are performing well, or are both variables simultaneously influencing each other? The literature indicates very little relationship between the two variables (Brayfield & Crockett, 1955; Brief, 1998; Cote, 1999; Iaffaldano & Muchinsky, 1985; Judge, Hanisch, & Drankoski, 1995; Spector, 1997). A more common question today is what other variables may be moderating or mediating this relationship (Judge, Thoreson, Bono, & Patton, 2001; Schliecher, Watt, & Greguras, 2004)? However, for the purposes of this study, it is suffice to note that many researchers have found small positive correlations between job satisfaction and performance (Abramis, 1994; Iaffaldano & Muchinsky, 1985; Jackson & Schuler, 1985; Judge, Thoreson, Bono, & Patton, 2001; Petty, McGee, & Cavender, 1984). Recently, Parker et al.’s (2003) meta-analysis showed a .23 standardized estimate of the direct
relationship between job satisfaction and performance and provided evidence of partial mediation through motivation. This leads to the following set of hypotheses which respond to recent calls for tests of mediation (Carr et al., 2003; Parker et al., 2003):

**Hypothesis 5**: Job satisfaction partially mediates the feedback environment - group performance relationship.

**Hypothesis 6**: Job satisfaction partially mediates the learning environment - group performance relationship.

**Hypothesis 7**: Job satisfaction partially mediates the reward and recognition environment - group performance relationship.

**Turnover Intentions**

In addition to performance, many researchers have also found relationships between job satisfaction and turnover (Aarons & Sawitsky, 2006; Boswell, Boudreau, & Tichy, 2005; Griffith, Horn, & Gaertner, 2000; Horn, Caranikas-Walker, Prussia, & Griffith, 1992), turnover intentions (Bender, 1980; Egan et al., 2004; Freund, 2005; Lambert, Hogan, & Barton, 2001; Lorden, 1998; Morrison, 2004; Trimble, 2006; Van Dick, Christ, Stellmacher, Wagner, Ahlswede, Grubba, Hauptmeier, Hohfeld, Moltzen, & Tissington, 2004), and withdrawal (Carr et al., 2003). These relationships are fairly robust and slightly more intuitive as an unsatisfied worker would be more likely to leave, or want to leave, than a satisfied one. As with most bivariate relationships, a number of mediators and moderators have been found (Carsten & Spector, 1987; Cotton & Tuttle, 1986; George & Jones, 1996). For example Trimble (2006) found that the job satisfaction-turnover intentions connection was partially mediated by organizational commitment, and that tenure was a stronger moderator than age. Currivan (1999),
however, found that the causal ordering of job satisfaction and commitment on turnover is unknown and spurious variables may be similarly affecting both variables. Looking at moderators, Trevor (2001) found that education, cognitive ability, and occupation-specific training moderated the job satisfaction-voluntary turnover relationship.

In light of the theoretical and empirical evidence presented thus far that links the work environment dimensions to the work outcomes, the work environment dimensions to job satisfaction, and job satisfaction to the work outcomes, along with the recent calls for tests of mediation (Carr et al., 2003; Parker et al., 2003), the following hypotheses are presented:

Hypothesis 8: Job satisfaction partially mediates the feedback environment – turnover intentions relationship.

Hypothesis 9: Job satisfaction partially mediates the learning environment – turnover intentions relationship.

Hypothesis 10: Job satisfaction partially mediates the reward and recognition environment – turnover intentions relationship.

Motivation

Performance

The relationship between motivation and performance has also received much attention (Frederick-Recascino & Hall, 2003; Haydel & Roeser, 2002; Kirk & Brown, 2003; Knippenberg, 2000; Rozell & Gardner, 2000; Tavani & Losh, 2003; Verkuyten, Thijs, & Canatan, 2001). The concept of motivation is slightly more complex than job satisfaction, and thus straight motivation-performance studies are more difficult to summarize. For instance, distinctions between intrinsic and identified motivation have been made and differentially linked to
performance (Burton, Lydon, D’Alessandro, & Koestner, 2006). Also, Sudre and Kitsantas (2004) distinguish between test taking motivation and self-regulated strategies, finding that test taking motivation only predicts performance in non-consequential conditions and self-regulated strategies predict performance in both consequential and non-consequential conditions. As a result, combining studies with various conceptualizations of motivation has generally resulted in weaker than expected relationships with performance. For example, Parker et al.’s (2003) meta-analysis showed only a .06 standardized estimate of the direct relationship between motivation and performance. Other researchers have examined employee self-perceptions of extrinsic and intrinsic motivation and supervisor perceptions of employee motivation, and their connection to supervisor performance appraisal ratings in various cultures (Devoe & Iyengar, 2004). The found that North American managers perceived their employees as more extrinsically motivated, Asian managers perceived their employees as equally motivated by extrinsic and intrinsic motivation, and Latin American managers perceived their employees are more intrinsically motivated. Not surprisingly relationships were found between the respective motivation perceptions and performance ratings, however an interesting finding is that employees in all three cultures reported themselves as being more intrinsically motivated (Devoe & Iyengar, 2004). Motivation has also been linked to performance as a moderator and mediator. In example, Kuvaas (2006) found that intrinsic motivation both moderated and mediated the relationship between performance appraisal satisfaction and work performance. Also, Geister et al. (2006) found that initial motivation moderated the online feedback-performance improvement relationship. In brief, there is substantial literature examining the relationship between various conceptualizations of motivation and performance. This leads to the following set of hypotheses which respond to
recent calls for tests of mediation (Carr et al., 2003; Parker et al., 2003), some of which are derived from earlier discussions:

**Hypothesis 11**: Motivation partially mediates the feedback environment - group performance relationship.

**Hypothesis 12**: Motivation partially mediates the learning environment - group performance relationship.

**Hypothesis 13**: Motivation partially mediates the reward and recognition environment - group performance relationship.

**Turnover Intentions**

Motivation has also been linked to a much lesser extent to turnover (Hines, 1973) and, not purposefully, to turnover intentions (Houkes & Jannsen, 2001; Houkes, Jannsen, de Jonge, & Bakker, 2003). Hines (1973) found that employees high in need for achievement motivation exhibited greater labor turnover than those low in need for achievement motivation. He suggested that those with lower motivation “appear to reflect a lack of perceived opportunity to achieve or to exceed some self-imposed standard of excellence in their job performance” (p. 315).

Surprisingly, not much more work has followed up on this or any related relationships. Recent meta-analyses of turnover have not included motivation as a possible antecedent (Cotton & Tuttle, 1986; Griffeth, Hom, & Gaertner, 2000; Horn, Caranikas-Walker, Prussia, & Griffeth, 1992).

Once again, after reviewing the theoretical and empirical evidence supporting the relationships between the work environment and outcomes, work environment dimensions and
motivation, and motivation and outcomes, the following hypotheses also respond to recent calls for tests of mediation (Carr et al., 2003; Parker et al., 2003):

*Hypothesis 14:* Motivation partially mediates the feedback environment – turnover intentions relationship.

*Hypothesis 15:* Motivation partially mediates the learning environment – turnover intentions relationship.

*Hypothesis 16:* Motivation partially mediates the reward and recognition environment – turnover intentions relationship.

Organizational and Contextual Factors

Another goal of the current study is to test organizational and contextual variables as potential moderators of the work environment-outcome relationships. Although many such variables exist, in the following section, group size, gender composition, and tenure will be discussed. These potential moderators were selected based on availability and empirical findings in the literature linking them to the outcomes variables of interest in this study.

Group Size

Performance

Group size and its correlates have been of interest to researchers for many years (Baumgartel & Sobol, 1959; Talacchi, 1960; Thomas, 1959). Thomas & Fink (1963) reviewed studies that looked at the effects of group size on group and individual performance, consensus and member satisfaction, and other variables. They concluded that group size was merely a “correlate of the social and psychological condition capable of producing changes in member and
group behavior” and suggested other intervening variables such as members’ need for recognition. Other researchers have suggested that group size plays a more important role. For example, as size increases, the possibility of subgroups forming increases. This has been proposed as a barrier to the goals of the larger group as subgroups form their own norms and goals (Blau & Scott, 1962; Golembiewski, 1962b; Thomas & Fink, 1963). Additionally, if individual evaluations are tied to the larger goals, conflicts between subgroup goals and larger group goals may affect these evaluations, and potentially, rewards and recognition (Forehand & Gilmer, 1964). Along these same lines, it has also been suggested that group member satisfaction will decrease as group size increases due to the unequal dispersion and/or smaller number of opportunities that are available to satisfy employee needs (Baumgartel & Sobol, 1959; Talacchi, 1960; Thomas, 1959). Guetzkow and Forehand (1961) also suggested that group size may be tied to managerial effectiveness as opportunities for one-on-one communication with each employee decreases and coordination of subgroup goals increases. Additionally, James and Hornick (1973) found that perceived organizational climate was significantly related to organizational size measures. These findings suggest that group size could impact the environment-outcome relationships in this study.

As suggested by Guetzkow and Forehand, increased group size could reduce opportunities for one-on-one communication between management and employees. This could reduce the amount of feedback an employee receives and/or result in a disconnect between frequent informal feedback at a subgroup level vs. infrequent formal feedback at the larger group level. Less frequent and/or inconsistent feedback could have negative impacts on performance. This leads to the following hypothesis:
Hypothesis 17 a: Group size moderates the feedback environment – performance relationship such that as the group size increases, the link between the variations in the feedback environment and performance decreases.

As mentioned above, as group size increases, opportunities available for each employee may decrease if resources are fixed. Learning and training opportunities could fall into this category. Assuming these learning opportunities would have resulted in improved performance, this reduction in opportunities directly affects performance. The following hypothesis is proposed:

Hypothesis 17 b: Group size moderates the learning environment – performance relationship such that as group size increases, the link between variations in the learning environment and performance decreases.

The potential reduction in resources with increasing group size could also impact the available rewards and recognition. If the reward-performance contingency is dependant on available resources and these resources decreases, the contingency may weaken, leading to the following hypothesis:

Hypothesis 17 c: Group size moderates the reward and recognition environment – performance relationships such that as group size increases, the link between variations in the rewards and recognition environment and performance decreases.

Turnover Intentions

Less research has linked group size to turnover or turnover intentions. In 1969, Wispe found that turnover and university department size were correlated .81 (p < .01) in 1950 and .69 (p < .01) in 1960. She also found that the type of university (public vs. private) impacted the two
turnover correlations differently. More recently, Benson, Dickinson, and Neidt (2000) investigated the relationship between four measures of turnover and organizational size. They found the strongest relationship between the accession rate and the average tenure of leavers. Nevertheless, there is ample room for further investigation of turnover at the smaller group level.

As noted above, if one-on-one interactions between management and employees are reduced as group size increases, it is possible that the frequency of feedback will also be reduced. If important performance information is not being communicated to the employee, and other outcomes of interest to the employee are thus being withheld, the employee may be more likely to want to leave the organization. In addition to outcomes being withheld, employees could be extremely frustrated if they are not meeting goals or previously set expectations and are unsure why. This could also lead to increased turnover intentions and the following hypothesis:

**Hypothesis 18 a**: Group size moderates the feedback environment – turnover intentions relationship such that as group size increases, the relationship between variations in the feedback environment and turnover intentions increases.

Again, as group size increases, opportunities and resources may decrease. This may results in less training or educational opportunities available for each employee. Not only could this impact performance, but employees who see more learning opportunities at other firms may make plans to leave. This leads to the next hypothesis:

**Hypothesis 18 b**: Group size moderates the learning environment – turnover intentions relationship such that as group size increases, the relationship between variations in the learning environment and turnover intentions increases.
For similar arguments presented above, employees may seek employment elsewhere due to more reward and recognition opportunities or in search of an environment where performance is directly rewarded and recognized.

*Hypothesis 18 c:* Group size moderates the reward and recognition environment—turnover intentions relationship such that as group size increases, the relationship between variations in the reward and recognition environment and turnover intentions increases.

Group Gender Composition

Gender and its relation to performance has received much attention in the student mathematics arena. For years it has been suggested that males outperform females in certain mathematics skills (Anastasi, 1958; Halpern, 1986; Maccoby & Jacklin, 1974). A recent meta-analysis in this field now suggests that overall females outperform males by a negligible amount (Hyde, Fennema, & Lamon, 1990). However, this study also looked at specific age groups and found that males outperform females in high school and college. Biological and social theories have attempted to explain these performance differences (Fennema & Peterson, 1985; Halpern, 1986) but no firm conclusions have been reached. Another major area of study relates gender to motor performance. A typical finding involves males very slightly outperforming females until puberty when males’ motor skills increase rapidly and females’ skills level off. Again, researchers look to biological and social theoretical explanations (Anastasi, 1981; Maccoby & Jacklin, 1974). In general, researchers agree that before puberty motor performance differences are mostly socially based and afterwards they are mostly biologically based (Thomas & French, 1985).
Performance

Gender differences in performance have also been explored in the work environment. As organizations increasingly employ teams for accomplishing tasks, and diversity is at an all time high, implications of group composition have been of great interest to researchers (see Williams & O’Reilly, 1998). Group diversity has been promoted for its ability to appeal to a wide array of clients, greater innovation and creativity, and improved chances for organizational survival (McMahan, Bell, & Virick, 1998; Schneider & Northcraft, 1999; O’Reilly, Williams, & Barsade, 1998). On the other hand, group diversity has been linked to more group conflict, leading to decreased morale and increased turnover (Acona & Caldwell, 1992; Jackson, 1992; Milliken & Martins, 1996). As females are entering the workforce at dramatic rates (Bureau of Labor Statistics Data, 2000), gender diversity in work groups is a critical area of study. A meta-analysis by Wood (1987) found that mixed-gender groups perform better than same-gender groups due to gender differences in behavior: men tend to offer suggestions and opinions during group tasks, whereas women tend to act friendly and agree with others. Wood argued that it was the combination of these differences that led mixed-gender groups to higher performance. Other researchers in the past came to similar conclusions. Strodbeck, James, and Hawkins (1957) and Strodbeck and Mann (1956) suggested that role specialization occurs in mixed-gender groups, with men showing more leadership and task-related behaviors and women showing more yielding and expressive behaviors. Myaskovsky, Unikel, and Dew (2005) also looked at gender composition of small work groups. Unlike Wood (1987) they found no performance differences between same-gender groups and mixed-gender groups. However, they did find that in mixed-gender groups women were less task-oriented than same-gender groups, while men were more
task-oriented than in same-gender groups. Also when women were solo they were less talkative than when they were the majority. The reverse was true for men.

Several gender-performance researchers have suggested that the context or setting plays a large role (Eagly & Karau, 1991; Hall, 1984; Hans & Eisenberg, 1985; Karakowsky & Siegel, 1999). With this suggestion in mind, along with the frequency of females in the workplace and the common use of teams, group gender composition is proposed as a moderator in the hypotheses below. Gender composition will be operationalized as the ratio of males to females in each group. The closer to a 1:1 ratio, the stronger the mixed-gender statistic.

Due to the evidence of mixed gender groups outperforming same gender groups for reasons of role specialization, increased creativity, and different yet complimentary behaviors, these same reasons could strengthen the link between feedback received and performance. For example, if the group receives ambiguous feedback on how to improve, the varying viewpoints, skills, and behaviors in a mixed-gender group could lead to feedback acceptance, increased ideas and ways to utilize the feedback, and eventually increased performance. This leads to the following hypothesis:

_Hypothesis 19 a_: Group gender composition moderates the feedback environment – performance relationship such that as the male-female ratio approaches 1:1, the stronger the feedback-performance relationship.

For similar reasons as presented above, the complimentary skills, abilities, and viewpoints in a mixed-gender group could facilitate the link between learning and performance. For example, lessons learned from a group project could vary from males to females owing to their varying viewpoints and roles in the project. By eliminating the lessons learned from one
gender, current and future project performance may not be as high as it possibly could be, leading to the next hypothesis:

_Hypothesis 19 b_: Group gender composition moderates the learning environment – performance relationship such that as the male-female ratio approaches 1:1, the stronger the learning-performance relationship.

As males and females often respond differently to different types of rewards and levels of recognition, it can be proposed that a mixed-gender group may respond more or less favorably to a reward or recognition. For example, if a purely financial reward is given based on performance, men may be more motivated to increase performance. On the other hand, women may be more motivated by time off awards. If a reward that is more desirable to men is presented as a performance incentive to an all male group, performance may be higher than if this same reward is presented to a mixed-gender or all female group. However a mixed gender group may outperform a same-gender group if the reward is not desirable or motivating to the gender represented in the same-gender group but desirable and motivating to half of the mixed-gender group. This complex proposition leads to the following nondirectional hypothesis:

_Hypothesis 19 c_: Group gender composition moderates the reward and recognition environment – performance relationship.

**Turnover Intentions**

Gender has also been linked to turnover. Many studies have suggested that women are more likely to withdraw from an organization due to family responsibilities, lack of flexible work schedules, and/or dissatisfaction with work conditions (Wenk & Rosenfeld, 1992; Weisberg & Kirschenbaum, 1993; Rosin & Korabik, 1999). This potential image of women with a ‘quitter’
profile (Felmlee, 1995) led Mano-Negrin (2003) to suggest that larger environmental variables need to be taken into account. She found that women’s turnover behavior was affected by their perception of employment opportunities in the organizational and labor markets, while men’s turnover behavior was affected by objective, organizational and labor market conditions. It can be reasonably argued that many other environmental variables could be operating in women’s decisions to leave an organization.

If females react differently than males to aspects of the feedback environment, then gender composition of the group could affect the feedback-turnover intentions relationship. For example, if females react more favorably to constructive feedback delivered in a coaching style yet direct, emotionless, criticism is consistently delivered, in a military environment for example, an all female group may be more likely to have turnover intentions than an all male or mixed-gender group. A mixed-gender group may allow for the gender that is unaccustomed or uncomfortable with aspects of the feedback environment to learn to adapt and cope by modeling and speaking with the other gender. This adaptation and coping may reduce some of the turnover intentions that may have been present in the same-gender group. This leads to the following hypothesis:

*Hypothesis 20 a:* Group gender composition moderates the feedback environment – turnover intentions relationship such that as the male-female ratio approaches 1:1, turnover intentions decrease.

For similar reasons as presented above, a mixed-gender group may allow the gender who is unhappy with or unaccustomed with aspects of the learning environment to adapt and cope by modeling and speaking with the other gender. This adaptation and coping again could reduce turnover intentions.
Hypothesis 20 b: Group gender composition moderates the learning environment – turnover intentions relationship such that as the male-female ratio reaches 1:1, turnover intentions decrease.

As with the reward-performance link, males and females may respond and be motivated differently by different types of rewards and recognition. This difference could lead one gender or the other to seek employment elsewhere if the rewards are perceived to be more in line with their needs. This relationship would depend on the gender composition and the alignment of the reward to the gender. Therefore, the following nondirectional hypothesis follows:

Hypothesis 20 c: Group gender composition moderates the reward and recognition environment – turnover intentions relationship.

Tenure

The amount of time spent on the job has been linked to performance and other outcomes. Intuitively, it seems that a positive correlation should exist as the more time one is on the job, the more experience and skill one gains, the more familiar one becomes with the ins and outs of the organization and industry, and therefore, the better one can perform. Indeed, Ali and Davies (2003) found that tenure was the main determinant of job performance. More experienced employees outperformed those with less experience. Several other researchers discovered the same relationship (Avolio, Waldman, & McDaniel, 1990; Giniger, Dispenzieri, & Eisenberg, 1983; Schwab & Heneman, 1977; Sparrow & Davies, 1988).

In the area of CEO performance, Hambrick and Fukutomi (1991) found that CEOs begin with a knowledge deficit but rapidly learn in the initial employment stage. Miller and Shamsie
(2001) also found an increase in performance with time, but suggested that an inverted-U shape relationship exists, with performance declining after so many years. Indeed, Henderson, Miller, and Hambrick (2006) found an inverted-U relationship between CEO tenure and performance but only in dynamic industries where the leader is proposed to be unable to keep up with the changes. In stable industries, this relationship did not hold. Sturman (2003) performed a meta-analysis of the inverted U relationship between tenure and performance for all levels of employees and found general support for jobs with low complexity. However, with highly complex jobs, the relationship was non-linear but not an inverted-U, and positive in nature. In sum, the relationship between tenure and performance is complex and could be interacting with aspects of the work environment.

As the tenure of a group increases, the more familiar they become with aspects of the feedback environment, what is means, how serious it is, how and when to respond, etc. This could be logically linked to group performance as filtering out irrelevant feedback and knowing when to respond to certain elements could help one to focus on what is critical to performance. This leads to the next hypothesis:

_Hypothesis 21 a: _Group tenure moderates the feedback environment – performance relationship such that as tenure increases, the link between variations in the feedback environment and performance increases.

Length of tenure can also help one to understand aspects of the learning environment. For example, the extent to which the organization supports learning and transfer of that learning could help an employee or group know when or if to go to training, and if it will be related to performance on the job. The ability and knowledge to carefully select learning opportunities and
understand the learning environment could be related to performance in the following way:

_Hypothesis 21 b_: Group tenure moderates the learning environment – performance relationship such that as tenure increases, the link between variations in the learning environment and performance increases.

The longer one is on the job the clearer the rewards and recognition environment should become. For example, one will begin to understand what is rewarded, when it is rewarded, etc. It will become clear if performance or friendships are rewarded among other variables. As a group collectively understands these relationships, they should hopefully be able to increase their reward-performance contingencies in the following manner:

_Hypothesis 21 c_: Group tenure moderates the reward and recognition environment – performance relationship such that as tenure increases, the link between variations in the reward and recognition environment and performance increases.

**Turnover Intentions**

Organizational tenure has also been linked to turnover. This relationship has been studied extensively with the idea that organizational commitment and interpersonal attachment to the group increases with time and the extent to which the group in homogeneous (Evan, 1963; O’Reilly, Caldwell, & Barnett, 1989; Wagner, Pfeffer, & O’Reilly, 1984; Williams & O’Reilly, 1998). For example, in 1983, Pfeffer suggested that turnover would be greater in organizations with less continuous tenure. Similarly, other researchers have found negative relationships between tenure and turnover (Mitchel, 1981; Mably, Griffeth, Hand, & Meglino, 1979; Porter & Steers, 1973; Price, 1977). More recently, Sorenson (2000) found that individuals who had been members of heterogeneous groups throughout their tenure were more likely to leave the team,
although the tenure composition of the team generally did not affect turnover rates. From a different angle, lengthening employees’ tenure due to slowing organizational growth and hierarchical flattening has been linked to less organizational commitment and increased turnover (Fisher, 1991; Kanter, 1977; Stout, Slocum, & Cron, 1988; Taylor, Audia, & Gupta, 1996).

As tenure increases, every aspect of the work environment should become clearer. As the work environment becomes clearer, dissatisfied employees will most likely self-select out of the organization when the opportunity arises. Therefore, as tenure increases the chances of turnover intentions and turnover are reduced, assuming no major changes to the environment. In example, aspects of the feedback environment will become known and either accepted and learned or will be rejected and turnover will occur. It is likely that the turnover will occur in the earlier stages of the employment relationship assuming alternative opportunities present themselves to the dissatisfied employees. Therefore:

_Hypothesis 22a_: Group tenure moderates the feedback environment – turnover intentions relationship such that as tenure increases, the relationship between variations in the feedback environment and turnover decrease.

Likewise, the learning environment will become clearer and either accepted or rejected in the earlier stages of the employment lifecycle:

_Hypothesis 22b_: Group tenure moderates the learning environment – turnover intentions relationship such that as tenure increases, the relationship between variations in the learning environment and turnover decrease.

Finally, the reward and recognition environment will also be accepted or rejected early on barring no major changes to the environment:
Hypothesis 22 c: Group tenure moderates the reward and recognition environment – turnover intentions relationships such that as tenure increases, the relationship between variations in the reward and recognition environment and turnover decrease.

Level of Analysis and Measurement Issues

The level at which data is measured, analyzed, and interpreted is important. This is especially true when dealing with shared perceptions such as work environments. As far back as the earliest review of work environment, the level of analysis has been a concern (Forehand & Gilmer, 1964). In their review, they suggested that an assumption of a general atmosphere or environment is necessary and rests on four points: Identification of comparable organizational units, relative permanence, mode of combination of unit properties, and homogeneity within the organizational unit. Ten years after Forehand and Gilmer’s review, James and Jones (1974) reviewed the literature and discussed three approaches to defining and measuring the work environment. The multiple measurement-organizational attribute approach regards the environment as a set of organizational attributes or main effects measurable by a variety of methods. The perceptual measurement-organizational attribute approach views the work environment as a set of perceptual variables which are seen as organizational main effects. Finally, the perceptual measurement-individual attribute approach views the environment as perceptual and as an individual attribute. As mentioned by Hofmann (2004) it is still clear today that “the nature of the construct under examination is intimately tied up with the way in which a researcher operationalizes that construct through the measurement process” (p. 257). Hofmann also notes, as can be seen in Figure 2, that the level of the construct and the level of the data source do not necessarily have to match. He merely stresses that the researcher needs to identify
and take into account the level of construct, measurement, data source, and analysis. Kozlowski and Klein (2000) note that although the level of the construct, measurement, and analysis are often the same, the level of data source may differ. This occurs when, as is often the case, individuals are asked about their perceptions of the work environment in reference to the group. This is considered an acceptable method so long as the data show evidence for aggregation at the group level that is being referenced.

As such, the archival data used in this study were collected at the individual level, and will be analyzed and interpreted at the group level as work environment is a shared construct. Although examination of group-level phenomenon is important, group-level analyses are less common in the literature due to the number of groups required to properly perform the analyses with sufficient power. Access to work samples with these numbers of groups is often limited. In addition to adequate power, a sufficient amount of consensus within each group is necessary to justify group-level aggregation.

Group Consensus

In James and Jones’s (1974) review, they stressed the importance of demonstrating small within-group variance (e.g. consensus of perception) to validate the use of accumulated perception as a measure of that variable. Additionally, Campbell and Beaty in 1971 suggested that there must exist a significant amount of between-group variance when using the organizational climate concept. Between-group variance is the amount of variation among groups’ perceptions of the variable of interest. Within-group variance is the amount of variation among a particular group’s members’ perceptions of the variable. In studies of the work environment, one would hope to see small within-in group variance and larger between group
variance in order to show that the groups differ in environment perceptions. Researchers today still agree that within- and between-group variance are important, but vary in the statistics used to justify the aggregate individual perceptions to the group level (e.g. Eta-squared, intra-class correlation coefficients, $R_{wg}$). An additional reason for gauging consensus within the group is to help rule out the individual differences that could play into measures of perception (Guion, 1973).

Accuracy of Perceptions

In addition to within group consensus, the issue of accuracy of perceptions has been discussed by several researchers. James and Jones (1974) noted that although accuracy implies consensus, the opposite is not necessarily true. However, Blau (1960) and Davis, Spaeth, and Huson (1961) have demonstrated that the extent to which the individual’s perceptions, accurate or not, are shared and supported by others in the organization is an important situational influence. In addition, Asch (1958), Kelly and Thibaut (1969), and Shaw (1971) all showed that individuals test the accuracy of their own perceptions against the perceptions of others in the same situation. Gion (1973) notes that despite these findings, the accuracy of the perceptions should not be neglected due to the interest in relating these perceptions to other organizational variables. Campbell, Dunnette, Lawler, and Weick (1970) did, in fact, find that participants’ perceptions of their experimental climate were in agreement with the actual conditions in Litwin and Stringer’s (1968) study, but climate perceptions are rarely matched against actual conditions due to the lack of objective condition measures.
Group Means

Another measure used to assess group differences is the mean. Use of the mean to represent a group’s climate and mean differences between groups to justify aggregation has been questioned (Guion, 1973; James, 1982; Pace, 1966). An alternative proposed by Payne and Pugh (1976) is the cluster analysis technique that statistically groups responses to ensure within-group consensus and between-group variance. These groups have been termed “collective climates.” Jackofsky and Slocum (1988; 1990) argued that collective climates are theoretically meaningful as they emerge out of the interaction of organizational members. However, Patterson, Payne, and West (1996) have questioned the meaningfulness of these statistically derived groups by showing that the clusters do not necessarily follow any logical organizational structure, location pattern, job type, etc. As discussed below, sufficient within-group consensus as compared to between-group consensus exists to support the use of group means in this study.

Summary

This study investigated mediators and moderators of the relationships between various dimensions of the work environment and work outcomes. Specifically, job satisfaction and motivation were tested as partial mediators of the relationships between the feedback, learning, and reward and recognition environments and performance and turnover. Moderators of group size, tenure, and gender composition were also investigated. The findings of this study may hold practical implications for organizations implementing interventions to increase performance, job satisfaction, motivation, or decrease turnover and turnover intentions.
METHOD

Measures

The majority of the data for this study came from a previously administered organizational climate survey designed for a federal government agency. The survey is composed of 93 items that assess 17 dimensions of the work environment. The complete survey is shown in Appendix B. The items in the environment variables are shown in Table 1. Participants were asked to indicate the extent to which they agreed with each item. Responses were on a 5-point scale from strongly agree (5) to strongly disagree (1). The items for the job satisfaction and motivation scales are also shown in Table 1 along with their alphas. The last data collected from the survey is one item that assesses turnover intentions: “As of today, how long do you plan to stay at organization?” A common concern with the use of single-item measures is that they are unreliable (Wanous, Reichers, & Hudy, 1997). As in the case of the other sources of random error, this unreliability would reduce the size of any relationships, making obtained results more conservative and increasing the chances of Type II error. In support of single-item measures, prior studies have found that single-item measures can be psychometrically comparable to multiple-item measures (Gardner, Cummings, Dunham, & Pierce, 1998; Wanous, et al., 1997).

The survey also automatically collected data that identifies the branch to which each respondent belongs, their gender, and the length of service in the agency, and optionally asks for respondent age. Only six respondents out of 963 did not indicate an age group. Group size was calculated by grouping the data by the branch (identified automatically) and determining frequencies.
### Table 1: Survey items

<table>
<thead>
<tr>
<th>Feedback</th>
<th>Learning</th>
<th>Recognition/Rewards</th>
<th>Motivation</th>
<th>Job Satisfaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \alpha = .87 )</td>
<td>( \alpha = .88 )</td>
<td>( \alpha = .82 )</td>
<td>( \alpha = .95 )</td>
<td>( \alpha = .87 )</td>
</tr>
<tr>
<td><strong>I receive specific feedback on the quality of my work.</strong></td>
<td>Learning new knowledge is valued at organization.</td>
<td>Deserving individuals are recognized for their achievements.</td>
<td>The average level of work motivation in my work group is high.</td>
<td>Overall, working at organization is fulfilling for me.</td>
</tr>
<tr>
<td><strong>The feedback I receive from my supervisor helps me do my job.</strong></td>
<td>Opportunities for education and growth are provided at organization.</td>
<td>I seldom receive praise from my supervisor.</td>
<td>Employee motivation levels are valued in my work group.</td>
<td>Overall, I am satisfied with my job.</td>
</tr>
<tr>
<td><strong>My supervisor does not provide feedback in a timely manner.</strong></td>
<td>At organization, employees help each other learn.</td>
<td>I frequently receive positive feedback from my supervisor.</td>
<td>Overall, my level of work motivation is high.</td>
<td>I get a real sense of accomplishment from my job.</td>
</tr>
<tr>
<td><strong>When my supervisor gives me performance feedback, he or she is considerate of my feelings.</strong></td>
<td>In my area, people openly discuss mistakes in order to learn from them.</td>
<td>Within my work group, people are rewarded according to their job performance.</td>
<td></td>
<td>I am satisfied with the progress I have made in my job.</td>
</tr>
<tr>
<td><strong>On those occasions when my job performance falls below what is expected, my supervisor lets me know.</strong></td>
<td>I am given time for additional learning and development.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Feedback is valued in my work group.</strong></td>
<td>Organization supports employee learning and development.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>My supervisor is usually available when I want performance information.</strong></td>
<td>We spend the appropriate time learning from our successes and failures.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>The only time I receive performance feedback from my supervisor is during my performance review.</strong></td>
<td>Continuous improvement is emphasized in my work group.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>I feel my supervisor is often annoyed when I directly ask for feedback.</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>I feel comfortable asking my supervisor for feedback about my work performance.</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Performance data consist of supervisory ratings that are part of mandatory performance appraisals each year. Individuals are rated on a 3-point scale: “Distinguished performance”, “Meets/Exceeds expectations”, or “Does not meet expectations” for overall performance. These data were gathered independently of the survey data but during the same month, October of 2006. As mentioned earlier, work environment is conceptualized as a shared construct in this study and therefore was measured at the group level. To do this the performance data was analyzed as the average performance rating per branch. The mean performance rating across the groups was 1.29 with a .15 standard deviation. A mean of 1.29 is equal to approximately 71% of groups receiving a “Meets/Exceeds expectations” average rating. Although the variance is low, the individual performance ratings consisted of ratings of “Distinguished performance” and “Meets/Exceeds expectations” only, with “Does not meet expectations” not used at all. Additionally, the distribution of the average performance ratings is approximately normal with adequate range given the two point scale (see Figure 4).

Figure 4: Performance Data Distribution
The agency is composed of 19 organizations each with a varying number of divisions that are in turn composed of a varying number of branches. N’s are discussed below. Branches are the smallest meaningful unit where work environment perceptions could reasonably be expected to differ.

Procedure

The survey was distributed through an online link embedded in an email at a federal government agency in October of 2006 (see Appendix A). All employees were invited to participate in the survey, but it was not mandatory. Participants were informed that responses were confidential. Data were collected by a third party vendor and returned to the agency with participant names removed. Subsequent data analyses were completed by the author as an employee of the government agency.

Respondent Characteristics

Survey respondents were 958 employees of a federal government agency in the southeastern region of the United States. This response rate represents 46% of the total local agency workforce. Respondents ranged in age from 18 to 70 with 84% of respondents between ages 31 and 60. Sixty-six percent were male and 34% were female. Average tenure was 16.6 years ranging from less than one year to 44.17 years. All statistics are representative of the entire local agency workforce. Eighty-four percent of the entire workforce is also between ages 31 and 60, with a total range of ages 17 to 83. Sixty-seven percent are male and 33% are female. Average tenure is 17.2 years ranging from less than one year to 44.17 years. T-tests of mean differences did not reveal any significant differences between the survey sample and the entire
local workforce. The respondents came from 145 distinct branches of 18 organizations. Branches ranged in size from 3 to 18 members with an average size of 6.61 members per branch.

Power Analysis

A power analysis was done to determine if the number of branches available was sufficient to yield a power of 80%. According to the most conservative estimates in Barcikowski’s (1981) power table for group level analyses, with an average group size of 10, expected effect size of .10, estimated population intraclass correlation of .05, power of .80, and $\alpha = .01$ (erring on the conservative side) approximately 85 groups were needed. Although the average group size in this study was less than 10, all other estimates were extremely conservative and there were 145 groups available, sufficiently higher than 85, and therefore satisfied statistical procedures.

Data Aggregation

The data were then examined for appropriateness of aggregation to the branch level. As mentioned previously there are several ways to justify aggregation (Hofmann, 2004). Eta-squared has been a popular one (e.g. Glick & Roberts, 1984; Ostroff, 1993), but as Bliese (1998) demonstrated, eta-squared values are highly influenced by group size and ICC values are much less so. Therefore, given the small average group size in this study, intraclass correlations coefficients (ICCs) were calculated (Shrout & Fleiss, 1979) and the significance of the F tests were examined for these values (Klein & Kozlowski, 2000). The formula used for calculation of ICC(1) follows:

$$ICC(1) = \frac{MSB - MSW}{MSB + ((k-1) * MSW)}$$

(Equation 1)
where MSB is the Mean Square Between groups, MSW is the Mean Square Within groups, and \( k \) is the average group size. ICC values are shown in Table 2. Although one would like to see ICC values above .1, when group size is small, one can look to the significance level of the values. Significant ICC(1) values indicate clustering effects with little individual variability (Bliese, 1998). Significant but smaller ICC(1) values, as found in this study, signify the need for several responses per group to reliably estimate average response levels of the group (Bliese, 1998). This study’s use of the mean score per branch for each variable of interest satisfied this requirement.

All of the ICC(1) values for each dimension of the environment, motivation, and job satisfaction were significant. ICC(2) values estimate the reliability of the group mean. The ICC(2) values in this study were smaller than some researchers have suggested, however the groups in this study were very small and, as mentioned, ICC values are partly a function of group size. In addition, other researchers have found similar values with smaller groups (Brown & Trevino, 2006). The formula used for calculation of ICC(2) follows:

\[
\text{ICC(2)} = \frac{(\text{MSB} - \text{MSW})}{\text{MSB}} \quad \text{(Equation 2)}
\]

See Table 2 for all ICC values. Eta squared values were also all significant and reported in the Table 2. However, as these values are most highly influenced by group size, they are presented only for additional information and were not used in the decision to justify aggregation. Despite the small group size, the significant ICC statistics justified aggregating the data to the branch level and conducting analyses at the group level.
Table 2: Intraclass correlation coefficients

<table>
<thead>
<tr>
<th>Factor</th>
<th>ICC (1)</th>
<th>ICC (2)</th>
<th>Eta Squared</th>
<th>Significance</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feedback</td>
<td>0.09</td>
<td>0.41</td>
<td>0.23</td>
<td>0.000</td>
<td>1.696</td>
</tr>
<tr>
<td>Learning</td>
<td>0.09</td>
<td>0.39</td>
<td>0.22</td>
<td>0.000</td>
<td>1.637</td>
</tr>
<tr>
<td>Job Satisfaction</td>
<td>0.08</td>
<td>0.36</td>
<td>0.21</td>
<td>0.000</td>
<td>1.559</td>
</tr>
<tr>
<td>Rewards/Recognition</td>
<td>0.06</td>
<td>0.31</td>
<td>0.20</td>
<td>0.001</td>
<td>1.447</td>
</tr>
<tr>
<td>Motivation</td>
<td>0.06</td>
<td>0.29</td>
<td>0.20</td>
<td>0.002</td>
<td>1.412</td>
</tr>
</tbody>
</table>

Data Analyses

All analyses were conducted on SPSS 14.0 for Windows statistical software. Unless otherwise noted, an alpha level of .05 was used in all analyses. Data were screened for normality, range, and outliers prior to analyses in order to meet the assumptions of linear model testing. A mixed model approach was used to test the hypotheses. Variables of interest were entered in as either factors or covariates and fixed or random effects depending on the nature of the data. See the Results section for specific treatment of variables.

Missing Data

Only three of the forty study variables were missing more than five percent of data when looking at individual level, item level data. At the group level there was no missing data as group level data was calculated using the means of individual level data and no group had a variable with no responses from those group members. When the number of cases with missing data is small (ex., <5% in larger samples), it is common simply to drop these cases from analysis. This was done by default by SPSS, which uses listwise deletion. Even when there are larger numbers of cases with missing data, the researcher may drop cases rather than impute values, as
imputation can distort coefficients of association and correlation relating variables (see Brick & Kalton, 1996; Kalton & Kasprzyk, 1982). The three variables with more than five percent of data missing were analyzed using t-tests of mean differences to compare cases with missing data and cases with no missing data. These cases did not differ significantly from each other or from the total sample on any study variables. Therefore, analyses continued with listwise deletion and no imputation.

Description of the Analysis Strategy

Hierarchical linear modeling (HLM) was employed to test the proposed hypotheses for several reasons. First, as the data were collected at the individual level but nested in groups, I needed to identify what, if any, association there was between the nesting variable and the measures of interest. HLM does just that, i.e., it allows one to test relationships with individual data while taking group membership into account. In other words, it can handle the non-independence of the individual level data.

Second, HLM permits one to test fixed and random effects simultaneously. The key issue between fixed and random effects, statistically, is whether the effects of the levels of a factor are thought of as being a draw from a probability distribution of such effects. If so, the effect is random. If the levels of a factor are not a sample of possible levels, the effects are fixed. As such, group membership was entered as a random effect while all other variables were entered as fixed effects.

Third, the groups varied in size. HLM is equipped for dealing with varying group sizes. Fourth, HLM can handle a model where individual and group level variables exist together. Although all hypotheses that include the performance variable must be tested at the group level
due to the nature of the data, other hypotheses can be meaningfully tested at the individual level or both. For example, the relationship between variations in the learning environment and turnover intentions can be meaningful examined, and is of interest, at the individual and group level.

Fifth, data were collapsed across two dimensions, items into factors, and individuals into groups. As mentioned above, sufficient alphas for the factors justified collapsing across items, and ICC data justified collapsing into groups. However, with the exception of performance-related hypotheses, HLM permits analyses at the individual level without losing the richness of the data when collapsing across groups, while still taking group membership into account. Whenever possible, individual level data were analyzed with HLM to assess any effects of group association before proceeding to group level analyses.

In the following section, the results are presented. HLM techniques were first used to analyze the hypotheses that involved only individual level data nested in groups. If the random effect of group membership was not significant, or if the data were only at the group level such as the performance data, analyses were then done with the group level data.

RESULTS

Hypotheses 1-3

**DV: Performance.** Hypotheses 1a, 2a, and 3a involved the performance variable and thus were analyzed at the group level. With the exception of gender and group membership, all independent variables were entered into the mixed model analysis as covariates, with group membership entered as the only random effect. Hypothesis 1a stated that the effectiveness of the feedback environment is related to group performance. This hypothesis was not supported ($R^2 =$
Next, Hypothesis 2a stated that the effectiveness of the learning environment is related to group performance. This hypothesis was not supported ($R^2 = .006, \beta = .078, F(1, 143) = .883, p = .349$). Hypothesis 3a stated that the effectiveness of the reward and recognition environment is related to group performance. This hypothesis was also not supported ($R^2 = .004, \beta = .064, F(1, 143) = .594, p = .442$). As mentioned previously, the performance variable was assessed for normality and range along with the other study variables using normality plots and box plots. Although the group performance ratings showed an approximately normal distribution with adequate range given the scale, the variance could have been higher ($SD = .153$) and could be the reason for the lack of support of Hypotheses 1a, 2a, and 3a.

**DV: Turnover Intentions.** Hypotheses 1b, 2b, and 3b were analyzed first at the individual and second at the group level. Hypothesis 1b stated that the effectiveness of the feedback environment is related to turnover intentions. The HLM analysis with the individual level data found a significant effect of feedback environment, $F(1, 934) = 15.683, p < .000$, and no significant effect of group membership ($p = .109$). We thus proceeded to the group level analysis. The association between feedback environment within the group as averaged across group members and turnover intention, also averaged across the members of the group, was weak but significant, $R^2 = .060, \beta = -.244, F(1, 143) = 9.052, p = .003$.

Next, Hypothesis 2b stated that the effectiveness of the learning environment is related to turnover intentions. The HLM analysis with the individual level data found a significant effect, $F(1, 931) = 26.562, p = .000$, and no significant effect of group membership ($p = .116$). We thus proceeded to the group level analysis. This effect was weak but significant, $R^2 = .064, \beta = -.252$, \(p = .000\).
$F(1, 143) = 9.723, p = .002$. Lastly, Hypothesis 3b stated that the effectiveness of the reward and recognition environment is related to turnover intentions. The HLM analysis with the individual level data found a significant effect, $F(1, 946) = 22.468, p = .000$, and no significant effect of group membership ($p = .100$). We thus proceeded to the group level analysis. This effect was also weak but significant, $R^2 = .039, \beta = -.198, F(1, 143) = 5.851, p = .017$.

Hypothesis 4

**DV: Performance.** Hypothesis 4a stated that variations in the three environments would be correlated. This hypothesis was supported at both the individual and group level. Correlations ranged from .582 to .766, $p < .01$ at the individual level, and from .624 to .783, $p < .01$ at the group level, respectively.

Hypothesis 4b stated that variations in the three environments would each contribute unique variance to the outcome variables. The effects on performance were analyzed at the group level only. When entered together, there was no significant effect on performance, $R^2 = .007, F(1, 141) = .316, p = .814$. This is in line with the results of Hypotheses 1a, 2a, or 3a above, none of which had been supported. Looking at the three environment variables' unique contributions, there were also no significant findings (feedback: $F(1, 141) = .057, p = .812$; learning: $F(1, 141) = .260, p = .611$; reward and recognition: $F(1, 141) = .001, p = .972$).

**DV: Turnover Intentions.** The HLM analysis with the individual level data found that only variations in the learning environment contributed to the turnover intentions outcome when all three environments were entered simultaneously (feedback: $F(1, 946) = .003, p = .956$; learning: $F(1, 946) = 7.338, p = .007$; reward and recognition: $F(1, 941) = 2.111, p = .147$). There was no significant effect of group membership ($p = .113$) and I thus proceeded to the group
level analysis. The effect of all three environments together was weak but significant ($R^2 = .079$, $\beta = -.196, -.201, .099$, $F(1, 141) = 4.027, p = .009$), again with variations in the learning environment having the strongest but not significant effect at the group level (feedback: $F(1, 141) = 2.234, p = .137$; learning: $F(1, 141) = 2.947, p = .088$; reward and recognition: $F(1, 141) = .454, p = .502$).

Hypotheses 5-10

Hypotheses 5, 6, and 7 stated that job satisfaction partially mediates the environment – performance relationships. As Hypotheses 1a, 2a, and 3a were not supported, these analyses were not conducted (Baron & Kenny, 1986).

Hypotheses 8, 9, and 10 stated that job satisfaction partially mediates the environment – turnover intentions relationships. As Hypothesis 1b was supported (feedback related to turnover intentions) and no group membership effect was found, we next entered job satisfaction into the analysis at the group level. Results showed evidence of complete mediation as the feedback environment effect becomes non-significant and the job satisfaction effect is significant (Feedback: $\beta = -.024, F(1, 142) = .056, p = .813$; job satisfaction: $\beta = -.355, F(1, 142) = 12.704, p = .000$).

Next, as hypothesis 2b was supported (learning related to turnover intentions) and no group membership effect was found, we next entered job satisfaction into the analysis at the group level. Results showed evidence of complete mediation as the learning environment effect becomes non-significant and job satisfaction is significant (Learning: $\beta = .056, F(1, 142) = .229$, $p = .633$; job satisfaction: $\beta = -.412, F(1, 142) = 12.211, p = .001$).
Lastly, as Hypothesis 3b was also supported (reward and recognition related to turnover intentions) and no group membership effect was found, we next entered job satisfaction into the analysis at the group level. Results showed evidence of complete mediation as the reward and recognition environment effect becomes non-significant and job satisfaction is significant (Reward and recognition: $\beta = .056, F(1, 142) = .311, p = .578$; job satisfaction: $\beta = -.404, F(1, 142) = 16.313, p = .000$).

Hypotheses 11-16

Hypotheses 11, 12, and 13 stated that motivation partially mediates the environment – performance relationships. Again, since Hypotheses 1a, 2a, and 3a were not supported, these analyses were not conducted (Baron & Kenny, 1986).

Hypotheses 14, 15, and 16 stated that motivation partially mediates the environment – turnover intentions relationships. As Hypothesis 1b was supported (feedback related to turnover intentions) and no group membership effect was found, we next entered motivation into the analysis at the group level. Results showed evidence of complete mediation as the feedback environment effect becomes non-significant and motivation is significant (Feedback: $\beta = -.137, F(1, 142) = 2.074, p = .152$; motivation: $\beta = -.200, F(1, 142) = 4.453, p = .037$).

Next, as Hypothesis 2b was supported (learning related to turnover intentions) and no group membership effect was found, we next entered motivation into the analysis at the group level. Results did not show evidence of mediation as although the learning environment effect becomes non-significant, motivation is not significant (Learning: $\beta = -.125, F(1, 142) = 1.346, p = .248$; motivation: $\beta = -.190, F(1, 142) = 3.073, p = .082$).
Finally, as Hypothesis 3b was supported (rewards and recognition related to turnover intentions) and no group membership effect was found, we next entered motivation into the analysis at the group level. Results showed evidence of complete mediation as the reward and recognition environment effect becomes non-significant and motivation is significant (Reward and recognition: $\beta = -.060, F(1, 142) = .372, p = .543$; motivation: $\beta = -.239, F(1, 142) = 5.835, p = .017$).

Hypotheses 17-18

**DV: Performance.** Hypotheses 17 a-c stated that the relationship between the work environments and performance would be moderated by group size. Once again, because Hypotheses 1a, 2a, and 3a were not supported, these analyses were not conducted (Baron & Kenny, 1986).

**DV: Turnover Intentions.** Hypotheses 18 a-c stated that the relationship between the work environments and turnover intentions would be moderated by group size. As Hypothesis 1b was supported (feedback related to turnover intentions) and no group membership effect was found, we next entered group size and the interaction term (feedback X group size) into the analysis at the group level. Results did not show evidence of moderation as the interaction term was not significant, $\beta = .518, F(1, 141) = .284, p = .595$.

Next, as Hypothesis 2b was supported (learning related to turnover intentions) and no group membership effect was found, we next entered group size and the interaction term (learning X group size) into the analysis at the group level. Results did not show evidence of moderation as the interaction term was not significant, $\beta = .512, F(1, 141) = .261, p = .610$. 69
Lastly, as Hypothesis 3b was also supported (reward and recognition related to turnover intentions) and no group membership effect was found, we next entered group size and the interaction term (feedback X group size) into the analysis at the group level. Results did not show evidence of moderation as the interaction term was not significant, $\beta = .120$, $F(1, 141) = .024$, $p = .878$.

Hypotheses 19-20

**DV: Performance.** Hypotheses 19 a-c stated that the relationship between the work environments and performance would be moderated by gender. As Hypotheses 1a, 2a, and 3a were not supported, these analyses were not conducted (Baron & Kenny, 1986).

**DV: Turnover Intentions.** Hypotheses 20 a-c stated that the relationship between the work environments and turnover intentions would be moderated by gender. As Hypothesis 1b was supported (feedback related to turnover intentions) and no group membership effect was found, we next entered gender and the interaction term (feedback X gender) into the analysis at the group level. Results showed evidence of moderation as the interaction term is significant, $\beta = .175$, $F(1, 141) = 4.583$, $p = .034$. The regression slope for male dominated groups ($\beta = -.599$) was slightly steeper than the slope for female dominated groups ($\beta = -.441$). A male dominated group was defined as a group with more than 80% males. Similarly, a female oriented group was defined as a group with more than 80% females. See Appendix C for a graphical representation of the interaction.

Next, as Hypothesis 2b was supported (learning related to turnover intentions) and no group membership effect was found, we next entered gender and the interaction term (learning X
gender) into the analysis at the group level. Results did not show evidence of moderation as the interaction term was not significant, $\beta = .099$, $F(1, 141) = 1.466$, $p = .228$.

Finally, as Hypothesis 3b was supported (rewards and recognition related to turnover intentions) and no group membership effect was found, we next entered gender and the interaction term (rewards and recognition X gender) into the analysis at the group level. Results showed evidence of moderation as the interaction term is significant, $\beta = .215$, $F(1, 141) = 6.901$, $p = .010$. This time, the regression slope was positive for female oriented groups ($\beta = .316$) and negative for male oriented groups ($\beta = -.434$). It appears that females and males are reacting differently to the reward environment in respect to its impact on turnover intentions. See Appendix C for a graphical representation of the interaction.

Hypotheses 21-22

**DV: Performance.** Hypotheses 21 a-c stated that the relationship between the work environments and performance would be moderated by tenure. As Hypotheses 1a, 2a, and 3a were not supported, these analyses were not conducted (Baron & Kenny, 1986).

**DV: Turnover Intentions.** Hypotheses 22 a-c stated that the relationship between the work environments and turnover intentions would be moderated by tenure. As Hypothesis 1b was supported (feedback related to turnover intentions) and no group membership effect was found, we next entered tenure and the interaction term (feedback X tenure) into the analysis at the group level. Results did not show evidence of moderation as the interaction term was not significant, $\beta = .023$, $F(1, 141) = .074$, $p = .786$. As Hypothesis 2b was supported (learning related to turnover intentions) and no group membership effect was found, we next entered tenure and the interaction term (learning X tenure) into the analysis at the group level. Results did not show
evidence of moderation as the interaction term was not significant, $\beta = .031$, $F(1, 141) = .140$, $p = .709$. As Hypothesis 3b was supported (rewards and recognition related to turnover intentions) and no group membership effect was found, we next entered tenure and the interaction term (rewards and recognition X tenure) into the analysis at the group level. Results did not show evidence of moderation as the interaction term was not significant, $\beta = .072$, $F(1, 141) = .752$, $p = .387$. 
Table 3: Results Summary

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DISCUSSION

Work Environments and Outcomes

Hypotheses 1 – 3 looked at the relationships between variations in the feedback, learning, and reward and recognition environments and important work outcomes. Surprisingly, the three work environments were not related to performance. Although the performance variable showed an approximately normal distribution with adequate range for a two-point scale, it is possible that the amount of variance in the performance variable (SD = .153) contributed to these findings. Subsequent mediation and moderation analyses of these relationships were not conducted. Future researchers should reexamine these relationships with performance data, if it is available, that makes finer distinctions and, therefore, has more variance. As performance is such a critical element of any work environment, it would be worthwhile to seek out adequate performance data or collect performance ratings that are separate from administrative decisions in order to better test these relationships. The work environments were, however, all significantly but weakly negatively related to the turnover intentions outcome. The more effective the feedback, learning, and reward and recognition environments, the lower the turnover intentions ($R^2 = .060, \beta = -.244$, $F(1, 143) = 9.052, p = .003$; $R^2 = .064, \beta = -.252$, $F(1, 143) = 9.723, p = .002$; and $R^2 = .039, \beta = -.198$, $F(1, 143) = 5.851, p = .017$ respectively). If employees are not given information on what behaviors are desired and/or are not given information on how they are doing on those behaviors, frustration and distress could result and lead to turnover intentions. Likewise, if adequate training and learning opportunities are not provided, individuals may not be able to perform as expected, leading to dissatisfaction from both the employee and the company and turnover intentions. Lastly, many individuals have needs for, and often expect, organizational rewards and
recognition for their efforts. If these are not provided, employees who have these needs and/or expectations may look for other environments where rewards and recognition are valued. Despite the intuitive appeal, the results for these relationships were very weak and interpretations should be made with caution.

Hypothesis 4a examined the correlations among the work environments. This hypothesis was supported with strong correlations ranging from .582 to .783, p < .01. Variations in an organization’s feedback environment could be related to variations in its learning environment as feedback is an information sharing activity and learning involves the acquisition of knowledge. Variations in the feedback environment could also be related to variations in the reward and recognition environment as organizational rewards and recognition are almost always tied to performance levels that are communicated through formal and informal feedback sessions.

Similarly, variations in the learning environment could be tied to variations in the reward and recognition environment to the extent that the learning results in desired behavioral changes. Therefore, organizations that change aspects of one environment dimension may unintentionally affect a number of aspects in the same or different environments. Due to the strength of these correlations, conclusions can be drawn in this area with more confidence. Hypothesis 4b looked at the unique contributions of the work environments on the outcomes. When entered together, the multiple $R^2$ was negligible but significantly related to turnover intentions ($R^2 = .079, \beta = -.196, -.201, .099, F(1, 141) = 4.027, p = .009$), and only variations in the learning environment had a significant unique relationship. Again, there was no relationship with performance. It is possible that the correlations among the work environments led to this finding such that the variance overlapped when entered together. Additionally, the correlations between the
environments and turnover intentions were extremely weak, although significant, when analyzed separately. This may have also contributed to this finding. As with the individual relationships between the work environments and turnover intentions, this finding is very weak and should be interpreted with caution.

Mediation of Work Environment – Outcome Relationships

Hypotheses 5 – 10 examined job satisfaction as a partial mediator of the work environment – outcomes relationships. Hypotheses 5 – 7 involved the performance variable and were not run due to the results of Hypotheses 1a, 2a, and 3a. Hypotheses 8 – 10 were all partly supported. Although partial mediation was hypothesized, evidence of full mediation was found between variations in all three environments and turnover intentions. The small yet significant relationships between the environments and turnover intentions disappeared once job satisfaction was entered and showed a significant relationship with the outcome. This could be due to the cognitive and affective processing that takes place during one’s evaluation of the environment. This evaluation may be necessary in order to formulate turnover intentions. However, as the work environment – turnover intentions relationships were very small to begin with, conclusions of mediation should be made cautiously and more studies should be conducted. Hypotheses 11 – 16 examined motivation as a mediator of the work environment – outcome relationships. Hypotheses 11 – 13 were not run, again due to earlier findings. Hypotheses 14 and 16 were partly supported with motivation showing evidence of full mediation of the feedback and reward and recognition environment – turnover intentions relationships respectively, as opposed to the hypothesized partial mediation. Again, this could be due to the evaluation and reaction to the environments and the evaluation and reaction that may be necessary before turnover intentions
evolve. Again, statistically these environment – turnover relationships were very weak to begin with and thus conclusions of mediation should be made cautiously. Hypothesis 15 was not supported. Motivation did not partially mediate the learning environment – turnover intentions outcome, although it did come very close. Why feedback and rewards may relate to turnover intentions completely through motivation, but learning does not even partially is harder to explain. As in Hypothesis 4b, where learning was the only environment with a unique contribution, the relationship between learning and turnover intentions may be related to an unmeasured variable that is influencing these findings. Clearly, there is something influencing, or not influencing, the learning environment-turnover intentions relationship that seems to differ from the other environment-outcome relationships. It is worthwhile to note that conclusions of full mediation should also be made with caution as motivation and job satisfaction were tested separately. Therefore, it is hard to say that one or the other completely mediates the environment – turnover intentions relationships without testing them together. Future researchers could examine this issue before making substantive conclusions.

Moderation of Work Environment – Outcome Relationships

Hypotheses 17 and 18 looked at group size as a moderator of the variations in work environments – outcome relationships. Again, Hypotheses 17 a-c were not run due to prior analyses. Hypotheses 18 a-c were not supported. Group size did not moderate any of the three work environment – turnover intentions relationships. Statistically, it is possible that the aggregation of the individual level data to the branch level influenced these findings. It is also possible that, conceptually, group size does not play a role in these environment – turnover
intentions relationships. Perhaps feedback, learning, and rewards operate at mostly the individual level, with characteristics of the group being less influential.

Hypotheses 19 and 20 examined gender as a moderator of the variations in work environments – outcome relationships. Again, Hypotheses 19 a-c were not run due to prior analyses. Hypotheses 19a and 19c were supported. Gender moderated the feedback environment – turnover intentions and reward and recognition environment – turnover intentions relationships. Females and males seem to react differently to feedback and rewards and how these variables influence their intentions to turnover. As noted above, the turnover intentions on feedback regression slope for male dominated groups ($\beta = -.599$) was slightly steeper than the slope for female dominated groups ($\beta = -.441$). For the turnover intentions on rewards relationship, the regression slope was positive for female oriented groups ($\beta = .316$) and negative for male oriented groups ($\beta = -.434$). The fact that the slope is reversed for males and females could imply that the two genders react very differently to rewards and recognition as they influence their intentions to turnover. It should be noted, however, that the sample size for female oriented groups, defined as having more than 80% females, was very small ($N = 7$) in comparison to the number of male oriented groups, defined as having more than 80% males ($N = 37$). Therefore, conclusions on both interactions should be made with caution. Gender did not moderate the learning environment – turnover intentions relationship. Again, the learning – turnover intentions relationship seems to differ. Future studies of the learning environment should further examine these findings.

Hypotheses 21 and 22 examined tenure as a moderator of the variations in work environments – outcome relationships. Again, Hypotheses 21 a-c were not run due to prior
analyses. Hypotheses 22 a-c were not supported. Tenure did not moderate any of the work environment – turnover intentions relationships. Again, this could be a statistical issue or a conceptual one, such that feedback, learning, and rewards are not influenced by tenure as they relate to turnover intentions.

Implications for Theory

Although organizational researchers have been studying work environment variables for many years, the environment – outcome relationships are still not as clear as we would like. This study attempted to answer the recent calls for studies of mediators and moderators of climate-outcome relationships while measuring these variables at the group level (Carr, Schmidt, Ford, & Deshon, 2003; Kopelman, Brief, & Guzzo, 1990; Ostroff, 2003). The feedback, learning, and reward and recognition environment were all examined and found to be significantly, although weakly, related to turnover intentions, with motivation and job satisfaction separately showing evidence of fully mediating these relationships. These findings, although to be interpreted with caution, add significantly to the literature on work environments and organizational climate research. Researchers should consider the addition of mediators such as job satisfaction and motivation when modeling the relationships between work environment variations and outcomes. Additionally these variables should be examined together in the mediation path, as each show evidence of full mediation when analyzed separately. These findings also could impact cognitive processing and evaluation research to support the hypothesis that individuals do process and evaluate their environments before acting or reacting. The statistical significance and current literature support of these relationships make them worthwhile of additional investigation where perhaps stronger correlations will be found.
Additionally, gender and tenure moderated some of these environment-outcome relationships. Although not strong, the interaction of gender and work environments and tenure and work environments could be important for future research as the dominance of males in the workplace is quickly disappearing and employees no longer remain with companies for significant time periods. The findings that male dominated groups and female oriented groups showed different relationships between some work environment – turnover intentions relationships also adds to the literature on gender and work. It appears that females and males may react very differently to aspects of the work environment and how it relates to their turnover intentions. As the number of female oriented groups was much smaller than the number of male oriented groups in this study, results should be interpreted with caution and future researchers should attempt to study these relationships in a more equal-gender environment.

We have not added another taxonomy or model to the growing literature, but have explored variables that researchers can consider in future studies and more robust models. It appears that all three work environments examined here, motivation, job satisfaction, gender, tenure, performance, and turnover intentions are all worthy of additional examination in work environment or climate-type research.

Implications for Practice

As climate-type surveys become more common in organizations, practitioners could arm themselves with knowledge of what variables to assess in their surveys and why. The results presented here, along with previous findings, could point organizations in the right direction. Knowledge of work environments and how they relate to important outcomes could not only directly benefit organizations’ goals, but also the individual employees daily lives, which
indirectly also benefits the organization. For example, if an organization gathers data on the learning climate, concludes that it is not as healthy as it could be, and knows that this is related to turnover intentions in a negative way, it may be more inclined to actually do something about it than it would have been without this knowledge.

Similarly, the findings of full mediation involving job satisfaction and motivation in some hypotheses could motivate organizations to improve work environments for more, or other, reasons. If improving the work environment can directly affect job satisfaction and motivation, and indirectly affect performance and turnover intentions, the return on investment could be much larger and worthwhile. Alternatively organizations could focus their attention and resources on improving jobs satisfaction and motivation through more ways than changing the environments studied here. Greater increases in these mediating variables may have even greater effects on more distal outcomes of performance, turnover, and others of interest.

The findings around the interaction of gender with the work environment could lead to implications for group composition or differential feedback and reward processes. It appears, from this study, that the relationship between feedback and turnover intentions is stronger for male dominated groups. This could inform management that male dominated groups are more likely to have turnover intentions than female dominated groups if the feedback environment is lacking in quality. This could suggest that management tailor their feedback process depending on the group to which they are delivering the feedback. Alternatively, it may suggest that mixed gender groups may be more effective as the balance of reactions to the feedback reduces negative feelings and turnover intentions. Additionally, male dominated groups showed a negative relationship between the reward and recognition environment and turnover intentions, while
female oriented groups showed a positive relationship. This could mean that male dominated
groups have higher needs for rewards and recognition and are likely to have increased turnover
intentions if the reward and recognition environment needs improvement, while female
dominated groups may have less needs for rewards and recognition and are likely to have less
turnover intentions when the reward environment needs improvement. This could suggest that a
mixed gender group is preferred as differing needs for rewards and recognition balance out
positive and negative reactions that could lead to turnover intentions. Or it is possible that
turnover intentions are independent of the group and managers need to recognize and reward
individuals differently. However, as mentioned above, while the different relationships for male
and female dominated groups were substantial quantitatively and should not be ignored, the
number of female dominated groups in this study was very low and interpretations of these
findings should be made with caution. These are just a few of the many ways that research of this
nature can have important implications for practice.

Limitations

A major limitation of this study appears to be the amount of variance in the performance
variable. Although this variable showed adequate range and distribution, the amount of variance
on a two-point scale may have contributed to the lack of support of the work environment
variables - performance relationships. Had there been finer performance distinctions and more
variability, subsequent proposed analyses may have been run. Due to the amount of support in
the literature, it seems a worthwhile exercise to repeat such analyses with more variance-rich
performance data. Future researchers should attempt to select organizations with satisfactory
performance data or, alternatively, collect performance ratings that are separate from the
administrative ratings used for organizational rewards. Attempts to collect performance ratings that have sufficient variance should aid in future research with this important variable.

An additional limitation is the mostly response-response nature of the data. Although attempts were made to reduce this with the performance data that was independently collected from a different source, as mentioned above, this data was largely ineffectual. This left us with all response-response data. Inflated correlations can be a result of this and must be taken into account when drawing conclusions from this study. Future research should make further attempts to reduce this common data collection method. Performance ratings collected from a different source and apart from administrative decisions, data on turnover intentions collected apart from the climate survey data and with more than one item, and motivation and job satisfaction measures collected separately from the climate survey data could all enhance the quality of this study. Additionally, it would be valuable to measure these variables and associated relationships in work settings where an annual climate survey is available to track changes over time.

The ratio of the number of variables to the number of groups could also be considered a limitation. There were 10 variables and 145 groups. Although all 10 variables were not analyzed together, it could have been a plausible test of such a model with a method such as structural equation modeling (SEM). Alternatively, researchers could focus on particular relationships or subsets of the relationships examined in this study. Settings where larger numbers of groups are available and/or larger average number of members per group would also be valuable in studies of this nature.
A related concern is the sheer number of hypotheses in this study. One could argue that the model should have been tested as a whole as opposed to the many parts. As the model was more of a visual representation of all the hypotheses in this study rather than one proposed model, HLM was deemed more appropriate. Again, future research could look at all of the variables or subsets together with a method such as SEM as to obtain a more systems view of an organization, or simply examine individual relationships that are of interest.

Finally, tests of mediation and moderation were done separately in this study. Given that full mediation was found in some cases, the question remains of where to analyze the moderation if at all. For example, does gender moderate the environment-job satisfaction relationship, the job satisfaction-turnover intentions relationship, both, or neither. Future research could examine moderation and mediation simultaneously or test pieces of the mediated paths with moderators.

One more note of interest involves the setting of the data collection. Data were obtained from a local center of a Federal government agency. Due to the differences in government and private industry settings, one could ask if results would generalize or if a similar study could be conducted elsewhere. Although one cannot draw conclusions without conducting such a study, it seems reasonable to expect that variations in the work climate would be related to important outcomes in any organization. Past research and theory cited in this paper also support this proposition. Repeating similar studies in different types of organizations would be valuable.
CONCLUSIONS

The most important conclusions from this research are that motivation and job satisfaction each show evidence of mediation of the feedback, learning, and reward and recognition environment – turnover intentions relationships. This means that although variations in these environments may appear to have direct effects on outcomes, they may be affecting these outcomes through other cognitive and affective states. Researchers and practitioners should consider including these mediators in future studies or applications. Although not found here, with adequate performance data researchers may replicate these findings between environmental variations and performance. The interaction of group gender dominance with environment – turnover intentions relationships is also an important finding with potentially big implications for practitioners. As teams and females both become increasingly common in organizations, it is important to know how group composition and its consequences may impact key organizational outcomes. Performance and turnover intentions are two equally important outcomes, but are by no means an exhaustive list. Additional outcomes, environments, mediators, and moderators should all be examined in order to improve organizational outcomes and individual well-being.
It is time for the annual organizational health survey for organization. While it is true that we receive lots of surveys, most of those are administered by external sources for their own purposes. However, organization also needs to collect this information to guide our efforts. We have been working diligently over the past couple years to make improvements to our organization and our culture, and it is important that we measure our progress and understand what we are doing well and where we need to focus additional effort. I estimate that you can complete this survey in about 30 minutes.

Shortly, you will receive an e-mail message from organization, a consulting firm, asking you to complete an employee satisfaction survey. When you click on the URL contained in that message, you will be directed to a website containing this very important survey. Your individual responses will be held confidential. The reputation of that firm rests on their integrity, so I am confident that your responses will be held in trust.

Please fill the survey out by October 20th. We will continue to use this survey in future years to help us measure whether we are improving over time.

We will, of course, receive reports on the aggregate opinions of our organization team, and will look at breakdowns by department and function. We can also do our own analyses to assist individual organizations.

Please take the time to respond to the survey. We will all benefit from your input.

Thanks for your help!!!
Yesterday, name sent you a note informing you that you would receive this email announcement of a web-based Organization Employee Survey.

When you click on the link at the bottom of this message, you will be directed to a website containing the survey. Please fill out the survey, by Friday, October 20, 2006.

Your individual responses will be held confidential, and your actual responses will only be seen by me, a consultant and analyst who works for a third party consulting firm called organization. The reputation of our firm rests on our integrity. We assure you that your responses will be held in trust.

We will produce reports on the aggregate opinions of the organization team, and will provide organization leadership with a look at breakdowns by department and function.

Please take the time to respond to the survey. Everyone at organization will benefit from your input. Thanks for your help!!!

Please click on the link below to begin the survey:

http://www.surveytracker.net/scripts/survey.dll?AHID=01N004&u=L.0000000059
APPENDIX B ORGANIZATIONAL CLIMATE SURVEY
### Organization Employee Survey

This is a survey that will measure the climate of *organization*. The data is being collected by a third party consultant. Your answers will be confidential. The aggregate results will be presented to the *organization*.

**Part 1**: Please answer the following questions honestly by indicating how strongly you agree or disagree with the statement. If the statement does not apply to you please check N/A.

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neither Agree nor Disagree</th>
<th>Agree</th>
<th>Strongly Agree</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td><em>Organization</em> values are considered when decisions are being made.</td>
<td></td>
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<td>2</td>
<td><em>Organization</em> elevates the importance of safety above cost.</td>
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<td>3</td>
<td>The people of <em>organization</em> act with integrity.</td>
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<td>4</td>
<td>Succession management is valued at <em>organization</em>.</td>
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<tr>
<td>5</td>
<td>Overall, working at <em>organization</em> is fulfilling for me.</td>
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<td>6</td>
<td>Open communication is encouraged by leadership.</td>
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<td>7</td>
<td>Key positions at <em>organization</em> have potential successors in line.</td>
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<td>8</td>
<td>I share job related knowledge with my work colleagues.</td>
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<td>9</td>
<td>Individuals take personal responsibility for mission safety within our Center.</td>
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<td>10</td>
<td>Individuals are held accountable for following procedures within our Center.</td>
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<td>11</td>
<td>Using tools including risk analysis, critical decisions at <em>organization</em> are made with the best information available.</td>
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<td>12</td>
<td>There is a consistency between the words and actions of our leaders.</td>
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<td>13</td>
<td>My knowledge, skills, and abilities are being fully utilized.</td>
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<td>14</td>
<td>There is cooperation within <em>organization</em> on mission safety.</td>
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<td>15</td>
<td>People at <em>organization</em> put the best interest of the Agency first, followed by the best interest of the Center.</td>
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<td>16</td>
<td>In our work culture, people feel free to raise dissenting opinions without fear of it having a negative impact on their career.</td>
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<td>17</td>
<td>I actively share knowledge with others at <em>organization</em>.</td>
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<td>18</td>
<td>My co-workers do not hesitate to confront each other on matters of safety.</td>
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<td>19</td>
<td>The leaders of <em>organization</em> are fair in dealing with people.</td>
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<td>20</td>
<td>I am currently placed in the appropriate job.</td>
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<td>21</td>
<td>I get the support from my supervisor that I need to do my job.</td>
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<td>22</td>
<td><em>Organization</em> is continuously improving its work processes in order to create a safety conscious <em>organization</em>.</td>
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<td>23</td>
<td>Learning new knowledge is valued at <em>organization</em>.</td>
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<td>24</td>
<td>I know what is expected of me.</td>
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<td>25</td>
<td>There is open and honest communication between groups of people across the organization.</td>
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<td>26</td>
<td>The people I work with respect each other.</td>
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</tbody>
</table>
The people I work with confront issues in a constructive way.

Overall, I am satisfied with my job.

Leadership development is valued at organization.

I get a real sense of accomplishment from my job.

The average level of work motivation in my work group is high.
**Part 2:** Please answer the following questions honestly by indicating how strongly you agree or disagree with the statement. If the statement does not apply to you please check N/A.

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>32</td>
<td>I am confident in organization's future.</td>
<td>Strongly Disagree</td>
<td>Disagree</td>
<td>Neither Agree nor Disagree</td>
</tr>
<tr>
<td>33</td>
<td>I have opportunities to do what I do best on a daily basis.</td>
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<tr>
<td>34</td>
<td>My supervisor actively manages my career development.</td>
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<td>35</td>
<td>Opportunities for education and growth are provided at organization.</td>
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<td>36</td>
<td>I understand the mission of organization.</td>
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<td>37</td>
<td>&quot;People&quot; skills are developed parallel to technical skills.</td>
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<td>38</td>
<td>At organization, employees help each other learn.</td>
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<td>39</td>
<td>The goals of my work group are clearly stated.</td>
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<tr>
<td>40</td>
<td>The goals of my work group are achievable.</td>
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<tr>
<td>41</td>
<td>I have the tools I need to do my job.</td>
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<tr>
<td>42</td>
<td>Our work processes are clearly defined.</td>
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<tr>
<td>43</td>
<td>The goals of my work group are tied to appropriate measures.</td>
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<td>44</td>
<td>Our work processes are efficient.</td>
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<td>45</td>
<td>I understand the strategic direction of organization.</td>
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<tr>
<td>46</td>
<td>The facilities are well designed so that we may operate in a safe manner.</td>
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<td>47</td>
<td>Technical documentation is easy to use.</td>
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<td>48</td>
<td>My work group's schedule is realistic.</td>
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<tr>
<td>49</td>
<td>I understand the values of organization.</td>
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<tr>
<td>50</td>
<td>Organization's organizational structure allows us to minimize the time it takes to deliver on our projects.</td>
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<tr>
<td>51</td>
<td>In my area, people openly discuss mistakes in order to learn from them.</td>
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<tr>
<td>52</td>
<td>In my work group, there are sufficient people to get the work done in a quality manner.</td>
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<tr>
<td>53</td>
<td>Roles and responsibilities are clearly defined.</td>
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<tr>
<td>54</td>
<td>In my work group, there are sufficient people to get the work done in a safe manner.</td>
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<tr>
<td>55</td>
<td>I am given time for additional learning and development.</td>
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<tr>
<td>56</td>
<td>New discoveries and methods are shared efficiently across the organization.</td>
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<tr>
<td>57</td>
<td>Employee motivation levels are valued in my work group.</td>
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<tr>
<td>58</td>
<td>Organization supports employee learning and development.</td>
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<tr>
<td>59</td>
<td>Employees at organization value diversity.</td>
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<tr>
<td>60</td>
<td>Meetings in my department are useful.</td>
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<tr>
<td>61</td>
<td>Communications in my department are timely.</td>
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<tr>
<td>62</td>
<td>I receive specific feedback on the quality of my work.</td>
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</tbody>
</table>
Part 3: Please answer the following questions honestly by indicating how strongly you agree or disagree with the statement. If the statement does not apply to you please check N/A.

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neither Agree nor Disagree</th>
<th>Agree</th>
<th>Strongly Agree</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>63</td>
<td>I am satisfied with the progress I have made in my job.</td>
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<td>64</td>
<td>Performance problems are addressed.</td>
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<td>65</td>
<td>Deserving individuals are recognized for their achievements.</td>
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<td>66</td>
<td>Within my work group, people are rewarded according to their job performance.</td>
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<tr>
<td>67</td>
<td>People who insist on reinforcing safety practices are rewarded at organization.</td>
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<tr>
<td>68</td>
<td>Leaders at organization listen to the ideas of the workforce.</td>
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<tr>
<td>69</td>
<td>We spend the appropriate time learning from our successes and failures.</td>
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<td>70</td>
<td>Continuous improvement is emphasized in my work group.</td>
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<td>71</td>
<td>Procedures for reporting mission safety-related concerns are clear.</td>
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<td>72</td>
<td>Overall, my level of work motivation is high.</td>
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<tr>
<td>73</td>
<td>My supervisor is generally familiar with my performance on the job.</td>
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<tr>
<td>74</td>
<td>In general, I respect my supervisor's opinions about my job performance.</td>
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<td>75</td>
<td>The feedback I receive from my supervisor helps me do my job.</td>
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<tr>
<td>76</td>
<td>My supervisor does not provide feedback in a timely manner.</td>
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<tr>
<td>77</td>
<td>When my supervisor gives me performance feedback, he or she is considerate of my feelings.</td>
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<td>78</td>
<td>I seldom receive praise from my supervisor.</td>
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<td>79</td>
<td>I frequently receive positive feedback from my supervisor.</td>
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<td>80</td>
<td>On those occasions when my job performance falls below what is expected, my supervisor lets me know.</td>
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<tr>
<td>81</td>
<td>Feedback is valued in my work group.</td>
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<td>82</td>
<td>My supervisor is usually available when I want performance information.</td>
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<tr>
<td>83</td>
<td>The only time I receive performance feedback from my supervisor is during my performance review.</td>
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<td>84</td>
<td>I feel my supervisor is often annoyed when I directly ask for feedback.</td>
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<td>85</td>
<td>I feel comfortable asking my supervisor for feedback about my work performance.</td>
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<tr>
<td>86</td>
<td>At work, I feel full of energy.</td>
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<tr>
<td>87</td>
<td>I am invigorated by my environment at work.</td>
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<td>88</td>
<td>I am enthusiastic about my job.</td>
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<td>89</td>
<td>I am immersed in my work.</td>
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<td>90</td>
<td>I find my job challenging.</td>
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<tr>
<td>91</td>
<td>It is difficult to detach myself from my job.</td>
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<tr>
<td>92</td>
<td>Sometimes I’m overwhelmed by the amount of work I have to do.</td>
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<tr>
<td>93</td>
<td>Compared with the local job market, I feel I am adequately compensated for the work I do.</td>
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Part 4
Please answer the following questions by indicating which answer describes you most accurately. Please provide us written comments in the places provided. These questions will not be used to try and identify any particular person; they will be used to look at overall trends.

94. As of today, how long do you plan to stay with organization?
   1) Until I retire
   2) More than 5 years
   3) 3-5 years
   4) 1-2 years
   5) Less than 1 year

95. Please indicate your age group
   1. <20
   2. 20-30
   3. 30-40
   4. 40-50
   5. 50-60
   6. 60-70
   7. 70+
Hypothesis 19a

- > 80% Male: Std. Beta = -.599
- > 80% Female: Std. Beta = -.441

Hypothesis 19c

- > 80% Male: Std. Beta = -.434
- > 80% Female: Std. Beta = .316
REFERENCES


Barnes, L. B. (1960). *Organizational systems and engineering groups*.


