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Relationships[1] Among Applications of Tacit Knowledge and Transformational/Transactional Leader Styles: An Exploratory Comparison of the MLQ and TKML

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Relationships[1] Among Applications of Tacit Knowledge and Transformational/Transactional Leader Styles: An Exploratory Comparison of the MLQ and TKML

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Abstract

Purpose: The purpose of this research is to examine intercorrelational relations among the self-report behavioral construct Multifactor Leadership Questionnaire (MLQ) 5X transformational and transactional subscales and the Tacit Knowledge for Military Leaders Inventory (TKML) leader-level specific situational judgment test scenarios.
Design/methodology/approach: Two leadership measures, the behavioral construct Multifactor Leadership Questionnaire (MLQ) and the cognitive construct Tacit Knowledge for Military Leaders Inventory (TKML) assess different aspects of how a leader functions and were administered to 125 active U.S. Army officers representing three leader levels: platoon, company, and battalion. We examine the intercorrelational relationship between these two measures.
Findings: Results show a correlational pattern that contours the evolution of a leader's skills (from novice platoon leader to expert battalion leader), with the strongest correlation at the higher leader levels.
Research limitations: The decision to restrict the number of TKML scenarios provided to respondents and to administer the MLQ and TKML to the same sample.
Practical implications: Pairing the MLQ and TKML makes use of self-reported leader behaviors with maximal assessment scales that directly assess respondents' understanding of what the best approaches to good leadership are.
Social implications: Response patterns from both measures permits direct counseling on the misconceptions about leadership to create better leaders.
Originality/value: No previous research has examined correlative relations among the scales/subscales of the MLQ and TKML.

Keywords: transformational leadership, transactional leadership, tacit knowledge, practical intelligence, problem-solving, leader levels

[1] The views, opinions, and/or findings contained in this article are solely those of the authors and should not be construed as an official Department of the Army or DOD position, policy, or decision, unless so designated by other documentation. This research was conducted while all the authors were associated with the US Army Research Institute for the Behavioral and Social Sciences.

Introduction

The U.S. Army is the United States' "professional managers of violence" (Huntington, 1957), and because of this high risk role the organization plays on the world stage, the development of Army leaders is, arguably, of extremely high importance. Army leader doctrine serves as a framework to guide military leaders on what they must be, know, and do (HQDA, 2006), and is continuously refined to reflect the latest research findings on effective leadership. Effective leaders possess traits, attributes, skills, knowledge, and abilities that have been linked to desired outcomes. For the U.S. Army, desired outcomes mean leaders and Soldiers who perform together to successfully execute an assigned mission in a lethal environment. Thus, the nature of effective leadership in the military involves direct and indirect command and control of individuals, as well as small and large teams in a complex, rapidly evolving environment, where identifying leader and leadership development tools that can shape and develop effective leaders is critical.

What Defines an Effective Leader?

Definitions of what it means to be a good or great leader as well as approaches to understanding how great leaders come to be have varied widely over the years, with an initial emphasis on understanding who a good leader must be and what a good leader must do. A useful starting point is the Great Leader Theory, popular in the 19th century (Carlyle, 1888; Galton & Eysenck, 1869) which held that great leaders are born with inherited traits that predispose them for greatness. This line of thinking set the stage for the Trait Theory of Leadership. While not attributable to any one individual, studies done by different researchers, summarized by Stogdill (1948), both supported and challenged the argument that superior leaders possessed selected distinguishing traits. Conflicting results in Trait Theory research contributed to the development of Behavioral Theory, reflected in the work of McGregor (1960), who emphasized focusing on human relationships, performance and output (Bolden, Gosling, Marturano, & Dennison, 2003). The Behavioral Model influenced the development of the Contingency or Situational Approaches (Fiedler, 1967), Blake and Mouton's Managerial Grid (1964), and the conceptual development of Transformational and Transactional theories of leadership (Burns, 1978). Burns was the first to put forth the concept of the transforming leader who motivates followers in such a way as to inspire them to achieve tasks as a form of self-actualization as opposed to achievement being the result of a transacted contract (Burns, 1978). Bass (1985) continued to develop Burns' transformational leader concept, and paired transformational leader behaviors with transactional leader behaviors, arguing that the appropriate application of each is related to the context in which the leader is functioning (Bass, 1985, 1998). A transformational leader moves the follower to high achievement by motivating the individual to move beyond self-interest through: Charisma, Inspiration, Intellectual Stimulation and Individualized Consideration (Bass, 1999). A transactional leader motivates followers by identifying rewards or consequences (Contingent Reward) in return for behavior consistent with individual self-interest (Bass, 1999).

As research examining what makes a leader effective and competent evolved, Bass (1988) was among the first to note that little attention was being paid to understanding how the knowledge a leader brought with him or her to the situation influenced how that leader led. Horvath, et al., (1994) found little research identifying what leaders know and how that knowledge might affect their performance. Professional knowledge can be acquired through formal training and education (explicit knowledge), or on-the-job experience (implicit or tacit knowledge) (Antonakis, Hedlund, Pretz, & Sternberg, 2002). According to Sternberg (1988), who built upon the work of Polanyi (1966) and others, tacit knowledge is the manifest indicator of practical intelligence, which enables individuals to adapt, select, and shape real-world environments in pursuit of personally relevant goals and is generally related to experience (Hedlund, Sternberg, & Psotka, 2000). Tacit knowledge measures have been found to be predictive of job performance in a variety of domains, and generally increase with experience, with more and less-experienced military leaders distinguished from each other by their metacognitive problem-solving abilities and tacit knowledge (Hedlund, et al., 2000). Leaders differed in how they identified problems, formulated solutions, considered information about the problem, etc. (Antonakis, et al., 2002). Metacognitive ability plays an important role in one's ability to problem-solve and should be factored in when predicting leader behavior and performance (Atwater & Yammarino, 1992). Sternberg's research has influenced the work of many researchers who have examined the role experience plays in the development of leader tacit knowledge (Hedlund, et al., 2003; Hedlund, et al., 2000; Hedlund, Sternberg, Horvath, Forsythe, & Snook, 1999; Antonakis, et al., 2002; Cianciolo Antonakis, & Sternberg, 2001). Relevant leader tacit knowledge may be organizational, interpersonal, or intrapersonal in nature and shapes how a leader solves problems (Hedlund, et al., 1999a,b,c).

How Do We Develop Leaders Who Can Apply Effective Leadership?

In the research described above, the unit of analysis is the individual, and the assumption is that aspects unique to that individual will be the primary contributor to the leader's success. However, Fiedler (1996) observed that leadership is the result of an interaction between the leader and the leader's environment. Once the leader is placed within the leader-follower setting, the focus becomes the interaction between the leader and others, and the term leadership development defines this area. With respect to individual leaders, efforts to organize leader styles traits and attributes into a unifying framework have resulted in a model of leader self-development (Boyce, Wisecarver, & Zaccaro, 2005). Carpenter and Wisecarver (2004) developed a leader behavioral taxonomy model of interpersonal requirements for jobs. Other researchers have examined the role interpersonal skills play in leadership (Carpenter & Wisecarver, 2004; Zbylut & Ward, 2004a), and if leader styles can be taught (Avolio & Yammarino, 2003). Specific military leader competencies have been identified, including self-awareness (Bass & Avolio 1990, 1995) and critical thinking skills (Riedel, Morath, & McGonigle, 2001). Hannah, Jennings and Nobel (2010) argue that because of the breadth of roles, tasks, skills, and attributes a military leader must possess, then leader development must recognize that adaptive expertise encompasses not only knowledge structures, but also metacognitive skills.

Despite the work that has been accomplished, leadership development is considered under-explored (Avolio, 2007; Day, Harrison, & Halpin, 2009) and no unifying theory is available to guide leader development interventions (Avolio, 2007; Day, 2000). Further, there are conceptual frameworks that have been set forth that treat leader development (based on enhancing human capital) and leadership development (the creation of social capital in organizations) in similar (but separate) ways (Day, 2000). Avolio (2007) argues that leadership theory and research should evolve to where the context and level in which leaders and followers function is integrated.

Leadership Levels

The transformational leader style has been found to be a power tool that facilitates the accomplishment of a shared, positive ideal (Hunt, Osborn, & Boal, 2009). However, the degree to which a transformational style is employed over a transactional style (or vice versa) may be related to leader level, and while the principles of leader style apply at all levels (Bass, 1996) specific application of a leader style is associated with relational, contextual or other conditions (Kane & Tremble, 2000).

Research examining leadership among novice leaders, such as those at a platoon level, found that both the transactional Contingent Reward style and the transformational leadership style predicted performance equally because when the tasks at hand are complex and require a lot of coordination and clarification regarding who is responsible for achieving specific goals, the transactional style is found to be more effective (Bass, Avolio, Jung, & Berson, 2003). Additionally, there is typically a great deal of frequent personnel turnover at the platoon level. The Contingent Reward style may serve to provide necessary structure and clarity of expectations that serve to orient new arrivals (Bass, et al., 2003).

One area of research oriented towards expert leaders, such as those at battalion level, argues that older adults, who have attained more advanced stages of moral development, are more likely to employ transformational behaviors (Kuhnert & Lewis, 1987). This has been supported by empirical data that increased transformational behaviors were found among senior Army leaders (Kane & Tremble, 2000). Leadership skill requirements are different depending upon the level at which the leader functions, with higher level jobs having the greater skill requirements, and cognitive and interpersonal skills being needed the most (Mumford, Campion, & Morgerson, 2007; Carpenter & Wisecarver, 2004).

Leadership doesn't happen in a vacuum, meaning that no military leader functions autonomously impervious to the influence of superior and subordinate leaders, and all leaders at all levels actively motivate and shape behavior (DeChurch, Hiller, Murase, Doty, & Salas, 2010). Thus the selection of a transformational, transactional, or laissez-faire leader style must inevitably influence other leaders in that organization. The transactional Contingent Reward as well as the transformational leader style, equally predict performance (Bass, et al., 2003); however, leaders who apply the transformational or transactional leader styles as appropriate are considered most effective (Bass, 1999, 1996; Bass & Avolio, 1990; Waldman, Bass, & Yammarino, 1990), particularly when the transformational augments the transactional style.

Mapping the Interrelationships Between the Transformational/Transactional Leadership Measure (MLQ) and the Tacit Knowledge for Military Leaders (TKML) Measure

As we discussed in the beginning of this paper, the job of a military leader is incredibly complex and involves a combination of individual knowledge, skills, ability and experience. The skill a military leader needs to perform effectively in a variety of situations differs depending on the task and the context (Motowidlo, Borman, & Schmit, 1997). Thus the notion that an individual leader's potential for success can be measured with a single instrument seems inadequate.

The Multifactor Leader Questionnaire (MLQ) (Bass & Avolio, 1993; Avolio & Bass, 2002) is an established index used to determine leadership ability within the U.S. Army, and is used as a record of current leadership style as well as a predictor of anticipated leadership style. It is the most widely respected assessment tool that is the product of leader style research, and is a self-report behavioral construct instrument that is considered an appropriate tool for capturing the range of leader behaviors naturally used in different leader styles that leaders demonstrate at various organizational levels (Kane & Tremble, 2000). The scale measuring transformational leadership includes five subscales: (1) Attributed Charisma (AC); (2) Idealized Influence (II); (3) Inspirational Motivation (INSP); (4) Intellectual Stimulation (IS); and (5) Individualized Consideration (IC). Transactional leadership is measured by three subscales: (1) Contingent Reward (CR); (2) Management-by-Exception Active (MBEA); and (3) Management-by-Exception Passive (MBEP). One scale deals with non-leadership Laissez Faire (LF) behaviors. The MLQ uses a 5-point Likert rating scale (0 = *not at all*, 4 = *always*) that ranges from "not at all" to "always" to indicate how frequently certain behaviors occur. While the MLQ is an established, respected measure, it has sustained criticism because it is a self-report measure and one can never be completely confident that the respondent is being honest about the behaviors being reported (Atwater & Yammarino, 1992, Yammarino & Atwater, 1997; Paunonen & O'Neil, 2010).

The situational judgment test (SJT) is a frequently used method to elicit and measure tacit knowledge. SJTs typically take the form of a problem scenario which represents professional domain-specific situations the respondent is likely to encounter accompanied by knowledge response options. The ability to problem solve has been linked to leader effectiveness (Connelly, et al., 2000). SJTs predict performance because they measure job knowledge (Motowidlo, et al., 1997), practical intelligence (Sternberg, Wagner, & Okagaki, 1993), or general cognitive ability (McDaniel, Hartman, Whetzel, & Grubb, III, 2007). Knowledge response options rely heavily on cognitive skills and are considered to be a maximal performance test (Cronbach 1949, 1984), because respondents make judgments about what constitutes effective, or maximal, performance (McDaniel, et al., 2007). Maximal performance measures are less susceptible to the impression management issues associated with self-report measures (e.g., the MLQ).

The tool that has been developed to measure tacit knowledge among military leaders is the Tacit Knowledge for Military Leaders (TKML) inventory, which has been found to be an accurate predictor of leader effectiveness (Hedlund. et.al., 1998) and is unique in that it can serve as either an assessment of typical or maximal performance (McDaniel, et al., 2007). It is an SJT (Sternberg, et al., 1993) based cognitive construct that provides an Army leader the opportunity (via analog scenarios) to demonstrate experience-based problem-solving knowledge. The TKML utilizes knowledge response instructions that ask respondents to rate the effectiveness of each response option provided for the scenarios (McDaniel & Nguyen, 2001) as cited in (McDaniel, et al., 2007). The inventory is composed of a variety of scenarios written to represent knowledge considered central to leader effectiveness at three leader levels (platoon, company, and battalion). The scenarios are low – fidelity simulations of real life situations drawn from the on-the-job experiences of higher level officers. They assess tacit, experiential knowledge as opposed to knowledge that would be acquired during formal institutional training. When taking the TKML, participants read typical situations encountered by military leaders, and rate multiple options for handling the situation using a 9-point scale ranging from "extremely bad" to "extremely good." Some alternatives are poor or novice responses; while others are good or expert response alternatives and can be aggregated into "better" or "worse" options based on whether their average rating is equal or greater than the mean or is less than the mean, respectively, when rated by the standardizing senior officer group. The TKML scenarios at each leader level were organized into categories that reflect the type of problems leaders at that level are concerned with: Platoon (Motivating Subordinates; Influencing the Boss; Managing Self; Establishing Trust; Establishing Credibility; and Taking Care of Soldiers). Company (Taking Care of Soldiers; Directing and Supervising Subordinates; Cooperating with Others; Establishing Trust; Managing Self; Communicating; Motivating Subordinates; Developing Subordinates; Balancing Mission and

Troops; and Influencing the Boss). Battalion: (Developing Subordinates; Protecting the Organization; Motivating Subordinates; Taking Care of Soldiers; Communicating; Managing Self; and Dealing with Poor Performers) (Hedlund, et al., 1999a,b,c).

TKML responses were traditionally scored based on how far their ratings diverge, on average, from a group of designated experts who completed the questionnaire in an earlier standardizing effort. This distance scoring method also includes a standard deviation component as is described in Hedlund, et al., 1998. Using this method, the closer a platoon leader's ratings are to the experts, the greater is his or her tacit knowledge of military leadership. Several alternative and more convenient scoring methods have been suggested (Psotka & Legree, 2010). One method correlates the ratings on each response alternative with the consensual means of the groups: this leads to correlation scores that are indistinguishable from the expert-based scoring standard (Legree, Psotka, Tremble, & Bourne, 2005). In another method, Taylor, Higley, and Grabarczyk, (2008) aggregated TKML response options into "better" and "worse" categories and found that there was greater deviation among the 'worse' choice options suggesting less respondent confidence for those problem solution options. Psotka and Legree (2010) agreed with this approach and also subdivided the TKML into "expert" and "novice" components by taking those alternative answers that were rated greater or less than the mean, respectively and making new subtests. With those subtests, the means or factor scores were the best measures of leadership. Organizing responses into better and worse choice options is arguably sound because of the differences in how novices and experts make errors (Hunter, Tate, Dzieweczynski, & Bedell-Avers, 2001).

Even a superficial examination of the MLQ and TKML measures suggest many possible interrelations. The relationship between these two instruments is undoubtedly as complex as our leadership constructs, but one way of looking at the issues involved would relate the global goals in the MLQ to the similar specific goals and behaviors of the TKML. For instance the goal of creating respect in the MLQ could find a related counterpart in the TKML's problem scenario involving creating credibility in a platoon when one first becomes a new platoon leader. For military leaders transactional and transformational leader styles are manifested during situations requiring effective problem-resolving leader behaviors. From that perspective the situationally dependent context discussed above provides the setting in which a leader successfully or unsuccessfully employs a selected leader style.

To fully understand and map the intrapersonal dynamics and landscape of leadership these leadership-measuring instruments, ideally, should assess mutually supporting, yet distinct (orthogonal) aspects of an individual leader's behavior and cognitive processes. Our contention here is to suggest that pairing a cognitive measure, such as the TKML with the MLQ behavioral measure can assist in mapping out the leadership dynamic as well as offset MLQ self-report issues. Together, these two measures can also strengthen the utility of these instruments when applied within a leader development context throughout the course of a leader's career. The best way of establishing a baseline for these relationships is simply to correlate the responses on the two instruments. We expect that there will be both positive and negative correlations between the two instruments, since the rating on the MLQ can be correlated with both "worse" and "better" options on the TKML: i.e.; LF (laissez-faire) and MBE (management-by-exception) styles on the MLQ generally seem to correspond with "worse" rather than "better" options on the TKML.

In the present study, we hypothesize that the measures are mutually supportive (thus correlate) because a leader's style will be governed by (in other words, be situationally dependent on) the context in which the leader behavior takes place, and as such, a leader's style will determine which options will be considered in problem-solving situations. Further, we hypothesize that the selection of a specific leadership style will be related to the experience level and command level of the leader so that the correlations between the MLQ and TKML would be higher for more experienced officers, such as Lieutenant Colonels (LTCs), Majors, (MAJs) and Captains (CPTs) over inexperienced officers such as Lieutenants (LTs). Specific hypotheses are outlined below:

Hypothesis 1a: Ratings of transformational leadership for platoon leaders (ordinarily Lieutenants), company level commanders (ordinarily Captains) and senior officers (Majors and Lieutenant Colonels) will correlate positively with overall and "better" response option TKML scores across all command levels and within each of the three command levels.

Hypothesis 1b: Ratings of transactional contingent reward leadership for the three leadership levels will correlate with overall and "better" response option TKML measures but to a lesser degree than transformational leadership.

Hypothesis 1c: Ratings of laissez faire leadership for the three leadership levels will correlate negatively with overall and "better" response option TKML measures.

Hypothesis 2a: Ratings of transformational leadership for platoon leaders (ordinarily Lieutenants), company level commanders (ordinarily Captains) and senior officers (Majors and Lieutenant Colonels) will correlate negatively with "worse" response option TKML scores across all command levels and within each of the three command levels.

Hypothesis 2b: Ratings of transactional contingent reward leadership for the three leadership levels will correlate negatively with "worse" response option TKML measures but to a lesser degree than transformational leadership.

Hypothesis 2c: Ratings of laissez-faire leadership for the three leadership levels will correlate positively with overall and "worse" response option TKML measures.

Hypothesis 3a: Ratings of MLQ leadership will increase with command level for the three leadership levels.

Hypothesis 3b: Since the TKML uses different questions with only approximate equivalence, we can anticipate a similar increase, but the results are more ambiguous.

Hypothesis 3c: Ratings of transformational leadership will correlate more positively with overall and "better" response option TKML scores at higher command levels.

Method

Officers in a yearly activity conducted by the Army were made available for research purposes. In this activity 56 Lieutenants, 36 Captains, and 33 Majors and Lieutenant Colonels were tested in separate peer groups at their home Army installations. They filled out a confidentiality form, biographic information, and an appropriate level of either the TKML subtests previously identified in analytic research or the MLQ Form 5X, in randomly counterbalanced order.

Measures

MLQ-5X.

The MLQ has undergone many revisions, but from version to versions, what has been included or excluded are scales of items, primarily having to do with the transactional sub-scales. The 5X-short version contains 45 items, responses to which are combined into transformational, transactional, laissez faire, extra effort, and satisfaction with the leader scales used to differentiate leadership style and was selected for use in this study because scales representative of all dimensions were present, and the measure itself was not overly long (Avolio & Bass, 2002). The MLQ requires about 30 minutes, and is scored by computing the mean for each scale and subscale.

TKML Inventory.

In the original TKML, there were 15 Platoon scenarios developed; 19 Company and 13 Battalion. For this study, five for each of the Platoon, Company and Battalion scenarios were chosen consisting of questions that contained mainly "better" options with a few "worse" options included to encourage raters to use the full scale in their ratings. Internal analyses of existing data showed that these questions were not significantly different from the whole instrument and correlated highly with it. The rationale for choosing these scenarios was based on the theory that the better response options reflected greater expertise. The rationale for reducing the number of questions was to reduce the length of time for the survey so that more officers would participate. The power of a statistical analysis involves the combined influence of four variables: sample size, significance criterion, effect size, and statistical power (Cohen, 1992). The elements are also influential contributors to the risk of Type I and II errors. Cohen (1992) proposed a power level of .80 as a convention for general use, based on the rationale that this established a balance between mitigating the risk for a Type II error with a sample size achievable for most researchers. Thus, for the correlation measures, an N of 41 was needed for sufficient power of .80 at the .01 level of significance, and an N of 28 at the .05 level of significance were required. For mean difference measures, an N of 64 was required for sufficient power at the .05 level of significance.

Results

Overall, significant differences were found among three leader levels on all the MLQ dimensions/subdimensions (Hypothesis 3a). Additionally, significant correlations were found between the MLQ dimensions/subdimensions and the selected TKML scenarios (Hypothesis sets 1 and 2), with correlations increasing in magnitude and frequency at higher leadership levels from the platoon to the battalion leader level (Hypothesis 3b). Thus, aspects of all sets of hypotheses were supported. Results by measure are presented below.

MLQ

Table 1 presents the MLQ dimension means across all leader levels. Because of the documented multicollinearity problem among the MLQ transformational factors, a single transformational factor was computed (Bass, 1999) for the transformational dimension. Significant differences were found among the three levels of leadership on the dependent measures, Pillai's Trace = 0.270, $F(18,230) = 1.991$, $p = 0.011$. Interesting to note is that the means for the Transformational Factor and the Transactional CR generally increase as leader/rank level increases, confirming Hypothesis 3b. This suggests a higher frequency of related behaviors occurring, as a leader gains experience. The exception is the MLQ MBEA means which decrease as rank increases.

[Insert Table 1 about here]

TKML

For each of the three TKML subtests (platoon, company and battalion), response options were aggregated into 'better' (ratings > 5) and 'worse' (ratings < 5) choice categories and means computed. From the Platoon TKML, five scenarios were used for a total of 55 alternative answers (46 better (Cronbach's alpha=0.98)/9 worse (Cronbach's alpha=0.57). From the Company TKML five scenarios were used for a total of 41 alternative answers (30 better (Cronbach's alpha=0.91)/11 worse (Cronbach's alpha=0.35). From the Battalion TKML five scenarios were used for a total of 46 alternative answers (40 better (Cronbach's alpha=0.94)/6 worse (Cronbach's alpha=0.50).

The contention of this paper is that the better choice options for each TKML scenario reflect the maximal leader style choice appropriate to best solve the problem in the scenarios that represent expertise categories. Overall, the worse alternatives are present to maintain a full range of ratings for the Likert scales, and so there are fewer of them. In this way the entire scale can be scored and predominantly represent the better alternatives in a simple procedure that sums all the question alternatives. Because of the small number of worse response option items per scenario, as well as the unacceptable Alpha values, correlation analysis will be based on Overall and better response option means, which reflect expert leadership knowledge and behavior, but overall results, using both better and worse options, will be provided for comparison. Table 2 shows the overall means for the better and worse response options across all the problem scenarios. The three scales have not been standardized across leadership levels, so it is not possible to compare the means in a meaningful way.

[Insert Table 2 about here]

Table 3 presents the results of the intercorrelations among the MLQ scales and the overall better response options aggregates at each leader level. Note that Hypothesis 1a is confirmed at the Battalion and Platoon level, and suggested at the Company level. Hypotheses 1b and 1c are supported but not confirmed. Hypothesis set 2 is given some support with the negative correlations in Table 3, but these are mainly not significant and have little power to avoid Type II errors. To assess the difference in magnitude between the correlations in Table 3, a Fisher's z test was computed. Results were significant between Platoon and Battalion levels ($z = -2.3$, $p < .05$) and Company and Battalion ($z = -2.00$, $p = .05$), but not between Platoon and Company. Please note that the N for all of these comparisons is large enough only to detect large effect sizes without high Type II error. We cannot be certain that the correlational relationships between the MLQ scale dimensions and the TKML increased in magnitude and frequency as leaders gained rank (confirming Hypothesis 3c) but the data are suggestive. These results suggest that as one gains in experience and rank, the correlation between the MLQ leader style behavior measure and the TKML leader knowledge measure strengthens. This is also evident from the result shown that all Battalion correlations between TKML and MLQ are significant, but not for the Platoon and Company levels.

[Insert Table 3 about here]

Tables 4a, b, and c present next level significant correlation results among MLQ scales/subscales and the selected TKML scenarios. Overall the pattern shows that more questions provide significant correlations at the Battalion level where officers have developed broad leadership skills; whereas the lower levels have much narrower leadership skill areas. Although the N for all comparisons are fairly small, they are large enough to detect large effect sizes with power of .80 (Cohen, 1992).

[Insert Table 4a about here]

[Insert Table 4b about here]

[Insert Table 4c about here]

The pattern of correlations at platoon level suggest that the focus on the application of leader style appears to be aimed at one's self, with the energy spent in learning how to be a leader. As a leader is getting him or herself established as a leader, it makes sense that one would want to build confidence by trying out different leader styles in response to problems platoon leaders are typically called upon to resolve. At company level, leader style is still focused on one's self, but the leader is learning how to solve a variety of problems using a variety of leader styles. Company level command is where the 'rubber meets the road' in that leaders at this level command groups of Soldiers ranging in size from 30 to 300. Company Commanders interact through noncommissioned officers but have frequent direct contact with Soldiers. The preferred leader style appears to be contractual in nature, with the company level leader utilizing a style where specific desired behaviors and outcomes are expected and in return. Soldiers are given precise information about what to expect. Thus, the Transactional Contingent Reward style is strongly represented as the leader at this level negotiates behavior and performance with soldiers. At battalion level, leaders have developed a varied repertoire of leader styles to employ to solve problems, with the focus more outward (as opposed to inward towards one's self) based on communicating and taking care of soldiers. For all three TKML scales, selected "better' and "worse' aggregated response options correlated significantly with the MLQ scores. The Battalion level correlations were higher than Platoon or Company level correlations. Results suggest that, consistent with the hypotheses, the selection of a leader style depends upon the context in which that style must be applied, and as a leader gains in experience his or her repertoire of leader styles grows concurrent with problem-solving ability.

Discussion

The correlations among all three TKML instruments and their respective MLQ self ratings confirms the basic hypotheses of this research; namely, that the TKML and MLQ both assess Army leadership and that the relationship is stronger as the leader gains in experience. The correlations are considerably higher than the correlations between the TKML and 360 degree assessments of leadership abilities among similar populations (Psotka & Legree, 2010).

Both instruments are easy to administer and easy to score. The TKML has the distinct advantage that it is a maximal measure, not a self rating, and therefore less susceptible to attempts at faking "looking 'good", and so more suitable for high stakes assessment.

The correlations among specific situations and response options at the three levels are suggestive of how the TKML and MLQ overlap and provide mutually informative perspectives on each other. These perspectives and insights derived from them could be made more informative if more specific TKML questions were generated focusing on all of the multiple dimensions of the MLQ. However, the existing subset of questions only sample a few dimensions, and so the comparisons are tentative and have to be cautious, because other factors and dimensions may show stronger or weaker relationships.

Self-rating measures of leadership appear to have limited usefulness, constrained by social desirability effects on the one hand, and ignorance and ambiguity on the other. It seems inconsistent to expect responders to be fully aware of how their behaviors lead to good leadership; for if they had this self-awareness to begin with, then much of the rationale for using these instruments for feedback would disappear: why would they not improve their leadership if they were really aware of which behaviors representative of distinct leadership styles to selectively employ in

response to a situation requiring a skilled leader response? Yet, if they are not aware of their leadership knowledge, skills, and attitudes, how is it that they can be expected to rate themselves on these attributes? Although this conceptual contradiction seems undeniable, it is probably true that asking respondents to examine their own actions along carefully analyzed patterns is a helpful self–reflective act that could promote self-awareness, if seriously carried forward with professional advice and counseling.

However, a better approach to leadership self-development and counseling, and one consistent with research that frames the military leader's complex role, would be to pair the MLQ and the TKML, and make use of maximal assessment scales with objectively correct answers (derived from experts or consensus) that directly assess respondents' understanding of what the best approaches to good leadership are. This can be done with scenarios involving specific leadership issues and problems as in the TKML or more general statements describing leaders' actions of varying degrees of quality as in the MLQ. When asked implicitly or relatively about the quality or frequency of leader behaviors, respondents reveal their understanding or misconceptions about good leadership that should directly reflect on the quality of their leadership. This removes any inconsistency in the assessment instrument and permits direct counseling on the misconceptions about leadership to create better leaders.

The correlation patterns among the different leadership levels support the second hypotheses of this paper in that the selection of a specific style appears to be related to the maturity level of the leader, with the battalion level leaders most frequently employing a combination of transformational and transactional leader styles in response to the problem scenarios presented in the TKML. This information is useful because it helps identify at what leader level to focus a leader development intervention. In summary, it may be simplest to capture the main force of these correlations between the MLQ and the TKML by recognizing that both instruments measure how well an officer understands what the best leadership behaviors are at his or her level of command. The MLQ does this in a more general way with important self awareness questions; and the TKML does this in a more specific way with individual scenarios that are routinely encountered throughout the Army.

Limitations of Our Study

One limitation of the study is the decision to restrict the number of TKML scenarios provided to respondents and to administer the MLQ and TKML to the same sample. To counterbalance the effects of anticipating the response options, one method would be to administer the instruments to separate groups, which might have strengthened the findings.

A second limitation of our study was that the TKML questions are not identical across the levels of command the way the MLQ is. This prevents a comparison of TKML scores to determine the changes with levels of command. On the one hand, since the scenarios were created in the same way, there is a rough approximation in their level of difficulty. However, on the other hand, each set of scenarios were specifically created to reflect the common problems at a particular command level. Although Hedlund, et al., (2000) found a rough equivalence in pilot efforts, the particular questions used in this experiment have not been standardized.

A third limitation to the study is the small number of officers used, especially the senior officers. The original plan called for 100 in each group to create sufficient power to detect large effect sizes in all comparisons. Although the final N was sufficient for the correlation analyses, it was not sufficient for the statistical difference tests that would have enlightened several hypotheses. While our research plan specified larger sample sizes, the exigencies of deployment constrained the full implementation of that plan. However, sufficient numbers were available for high power assessment of large effect sizes to reduce Type I and II errors to .05 and .20, respectively, for Pearson product moment correlation tests.

In conclusion, useful and effective tools have been developed for the purpose of quantifying and understanding the construct of leadership which have provided information about how leaders function that has expanded understanding of the dynamic of leadership. The MLQ and the TKML are each examples of such tools. However, just as physicians do not base diagnostic decisions on one single measure, but rather wisely conduct assessments using a combination of measures; so might we consider adopting a synthesis of measuring tools in our approach to expanding our understanding of how leaders function in their role. Assessments of health and medical conditions take into consideration myriad factors, which includes what the patient reports but also the context in which symptoms occur. Assessments of leaders might appropriately include self-report as would be evidenced in the MLQ,

but also representative behavioral action in context which would be evidenced in the TKML which when taken together provide a more comprehensive story. Thus, one logical next step to continue this research could involve using MLQ/TKML combined assessment measures as potential predictors of performance or production criteria for with a much larger sample of leaders who function at multiple organizational levels, using the entire TKML for each leader level. This would address two of the limitations of the present study. Another very different approach might be to investigate the relation between MLQ/TKML scores and performance problems associated with toxic leadership. While this might constitute a very different research direction, in depth assessments of leadership should, arguably thoroughly examine both the negative and positive aspects of leadership.

Author Biographies

Teresa Taylor presently teaches basic and advanced inferential statistics at Boise State University. She earned a Ph.D. in Adult and Organizational Learning from the University of Idaho. The focus of her research has explored how tacit knowledge influences the development of expertise among active and reserve commissioned and noncommissioned officers, as well as within the police profession. She previously worked for the U.S. Army Research Institute for the Behavioral and Social Sciences. Prior to that, she served in the military for 21 years.

Joseph Psotka is a retired research psychologist from the Army Research Institute specializing in training technology and leadership assessment. He earned a Ph.D. degree in cognitive psychology from Yale University in 1975. He is Co-Editor of the journal of "Interactive Learning Environments". He has published two books and more than 200 papers.

Peter Legree is a Senior Research Psychologist at the U.S. Army Research Institute for the Behavioral and Social Sciences, Alexandria, VA. He received his B.A. in Psychology from McGill University, and his Ph.D. in Psychology from Case Western Reserve University. He has over 25 years of experience in the development and validation of new testing, survey and training technologies. His expertise centers on the development of knowledge tests to measure cognitive aptitudes for emerging knowledge domains. He has published over 40 journal articles, technical reports and professional publications, reviews manuscripts for a number of professional journals and is on the editorial board of *Intelligence.*

References

Antonakis, J., Hedlund, J., Pretz, J. E., & Sternberg, R. J. (2002). *Exploring the nature and acquisition of tacit knowledge for military leadership* (ARI Research Note 2002-04). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences. (DTIC No. ADA400486)

Atwater, L. E., & Yammarino, F. J. (1992). Does self-other agreement on leadership perceptions moderate the validity of leadership and performance predictions? *Personnel Psychology*, *45*, 141-164.

Avolio, B.J. and Bass, B.M. (2002). *Manual for the Multifactor Leadership Questionnaire (Form5X)*. Redwood City: Mind Garden.

Avolio, B.J., & Yammarino, F.J. (2003). *Development of officer leadership for the Army: preliminary results.* (ARI Contractor Report 2004-01). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences

Avolio, B.J. (2007). Promoting more integrative strategies for leadership theory- building. *American Psychologist, 62*, 25-33.

Bass, B. (1985). *Leadership and Performance Beyond Expectations*. New York: Free Press.

Bass, B.M. (1988). *Bass and Stogdill's handbook of leadership: Theory, research, and managerial applications*. New York: The Free Press.

Bass, B.M. (1996). *A New Paradigm of Leadership: An Inquiry into Transformational Leadership*. Alexandria, VA: US Army Research Institute for the Behavioral and Social Sciences.

Bass, B. M. (1998). *Transformational leadership: Industry, military, and educational impact.* Mahwah, NJ: Erlbaum.

Bass, B.M. (1999). Two decades of research and development in transformational leadership. *European Journal of Work and Organizational Psychology*, *8*(1), 9-32.

Bass, B. M., & Avolio, B. J. (1990). *Manual for the multifactor leadership questionnaire*. Palo Alto, CA: Consulting Psychologist Press.

Bass, B.M., & Avolio. B.J. (1993). Transformational leadership: A response to critiques. In M.M. Chemers & R. Ayman (Eds.), *Leadership theory and research: Perspectives and directions*. New York: Academic Press.

Bass, B.M., & Avolio, B.J. (1995). *MLQ Multifactor Leadership Questionnaire Manual*. Redwood City, CA: MindGarden.

Bass, B.M., Avolio, B.J., Jung, D.I., & Berson, Y. (2003). Predicting unit performance by assessing transformational and transactional leadership. *Journal of Applied Psychology, 88*(2), 207-218.

Blake, R.R. & Mouton, J.S. (1964). *The managerial grid*. Houston, TX: Gulf.

Bolden, R., Gosling, J., Marturano, A., & Dennison, P. (2003). *A review of leadership theory and competency frameworks.*(Edited Version of a Report for Chase Consulting and the Management Standards Centre). Retrieved from University of Exeter, Center for Leadership Studies website: http://www2.fcsh.unl.pt/docentes/luisrodrigues/textos/Lideran%C3%A7a.pdf

Boyce, L. A., Wisecarver, M. M., Zaccaro, S. J. (2005). *Understanding, predicting, and supporting leader self-development* (ARI Technical Report 1173). Arlington, VA: U.S. Army Research Institute for the Behavioral and Social Sciences. (DTIC No. ADA442647)

Burns, J.M. (1978). *Leadership.* New York: Harper & Row.

Carlyle, T. (1888). *On Heroes, Hero-Worship and the Heroic in History*, New York: Fredrick A. Stokes & Brother.

Carpenter, T. D., & Wisecarver, M. M. (2004). *Identifying and validating a model of interpersonal performance dimensions* (ARI Technical Report 1144). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences. (DTIC No. ADA421920)

Cianciolo, A. T., Antonakis, J., & Sternberg, R. J. (2001). *Developing effective military leaders: Facilitating the acquisition of experience-based, tacit knowledge* (ARI Research Note 2001-11). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences. (DTIC No. ADA400614)

Cohen, J. (1992). A power primer. *Psychological Bulletin 112*(1), 155-159.

Connelly, M.S., Gilbert, J.A., Zaccaro, S.J., Threlfall, K.V., Marks, M.A., Mumford, M.D. (2000). Exploring the relationship of leadership skills and knowledge to leader performance. *The Leadership Quarterly, 11*(1), 65-86.

Cronbach, L.J. (1949). *Essentials of psychological testing.* New York: Harper & Row. Cronbach, L.J. (1984). *Essentials of psychological testing.* (4th ed.) New York: Harper & Row.

Day, D.V. (2000). Leadership development: A review in context. *Leadership Quarterly, 11*, 581-613.

Day, D.V., Harrison, M.M., & Halpin, S.M. (2009). *An integrative approach to leader development: connecting adult development, identity, and expertise*. New York: Psychology Press.

DeChurch, L.A., Hiller, N.J., Murase, T., Doty, D., & Salas, E. (2010). Leadership across levels: Levels of leaders and their levels of impact. *The Leadership Quarterly, 21*, 1069-1085.

Fiedler, F.E. (1967). *A Theory of Leadership Effectiveness*. NewYork: McGraw-Hill.

Fiedler, F. E. (1996). Research on leadership selection and training: One view of the future. *Administrative Science Quarterly, 41*, 241–250.

Galton F., & Eysenck, H.J. (1869). *Hereditary genius.* London, England: Macmillan.

Hannah, S.T., Jennings, P.L., & Nobel, O.B. (2010). Tactical military leader requisite complexity: Toward a referent structure. *Military Psychology, 22*(4), 412-449.

Hedlund, J., Forsythe, G.B., Horvath, J.A., Williams, W.M., Snook, S., & Sternberg, R.J. (2003). Identifying and assessing tacit knowledge: Understanding the practical intelligence of military leaders. *The Leadership Quarterly, 14*(2), 117-140.

Hedlund, J., Horvath, J. A., Forsythe, G. B., Snook, S., Williams, W. M., Bullis, R.C., Dennis, M., and Sternberg, R. J., (1998). *Tacit knowledge in military leadership: Evidence of construct validity* (ARI Technical Report 1080). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.

Hedlund, J., Sternberg, R.J., Horvath, J.A., Forsythe, G.B., & Snook, S. (1999). *Tacit Knowledge for military leaders: Lessons learned across organizational levels.* (ARI Research Note 99-29). Alexandria, VA: U.S. Army Research Institute for The Behavioral and Social Sciences.

Hedlund, J., Sternberg, R. J., & Psotka, J. (2000). *Tacit knowledge for military leadership: Seeking insight into the acquisition and use of practical knowledge* (ARI Technical Report 1105). Alexandria, VA: U.S. Army Research Institute.

Hedlund, J., Williams, W.M., Horvath, J.A., Forsythe, G.B., Snook, S., Wattendorf, J., McNally, J.A., Sweeney, P.J., Bullis, R.C., Dennis, M. & Sternberg, R.J. (1999a). *Tacit knowledge for military leaders: Company commander questionnaire* (Research Product 99-08). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.

Hedlund, J., Williams, W.M., Horvath, J.A., Forsythe, G.B., Snook, S., Wattendorf, J., McNally, J.A., Sweeney, P.J., Bullis, R.C., Dennis, M. & Sternberg, R.J. (1999b). *Tacit knowledge for military leaders: Platoon leader questionnaire* (Research Product 99-07). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.

Hedlund, J., Williams, W.M., Horvath, J.A., Forsythe, G.B., Snook, S., Wattendorf, J., McNally, J.A., Sweeney, P.J., Bullis, R.C., Dennis, M. & Sternberg, R.J. (1999c). *Tacit knowledge for military leaders: Battalion commander questionnaire* (Research Product 99-09). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.

Horvath, J.A., Williams, W.M., Forsythe, G.B., Sweeney, P.J., Sternberg, R.J., McNally, J.A., & Wattendorf, J. (1994). *Tacit knowledge in military leadership: A review of the literature.* (ARI Technical Report 1017), Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.

HQDA. (October 2006). *Field Manual 6-22, Army leadership*. Washington, DC: Headquarters, Department of the Army.

Hunt, J.G., Osborn, R.N., & Boal, K.B. (2009). The architecture of managerial leadership: Stimulation and channeling of organizational emergence. *The Leadership Quarterly, 20*, 503-516.

Hunter, S.T., Tate, B.W., Dzieweczynski, J.L., & Bedell-Avers, K.E. (2001). Leaders make mistakes: A multilevel consideration of why. *The Leadership Quarterly, 18*, 239-258.

Huntington, S.P. (1957). *The Soldier and the State: The Theory and Politics of Civil Military Relations*. Cambridge, MA: Belknap Press of Harvard University Press,

Kane, T.D., & Tremble, T. R. (2000). Transformational leadership effects at different levels of the army. *Military Psychology, 12*(2), 137-160.

Kuhnert, K.W., & Lewis, P. (1987). Transactional and transformational leadership: A constructive/developmental analysis. *Academy of Management Review, 12*, 648-657.

Legree, P.J., Psotka, J., Tremble, T.R.,Jr., & Bourne, D. (January 2005). *Applying consensus based measurement to the assessment of emerging domains* (ARI Technical Report 1153). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.

McDaniel, M.A., Hartman, N.S., Whetzel, D.L., & Grubb III, W.L. (2007). Situational judgment tests, response instructions, and validity: A meta-analysis. *Personnel Psychology, 60*, 63-91.

McDaniel, M.A., & Nguyen, N.T. (2001). Situational judgment tests: A review of practice and constructs assessed. *International Journal of Selection and Assessment, 9*(1-2), 103-113.

McGregor, D. (1960). *The Human Side of Enterprise*. New York: McGraw Hill.

Motowidlo, S., Borman, W., & Schmit, M. (1997). A theory of individual differences in task and contextual performance. *Human Performance, 10*, 71-83.

Mumford, T.V., Campion, M.A., & Morgeson, F.P. (2007). The leadership skills strataplex: Leadership skill requirements across organizational levels. *The Leadership Quarterly 18*, 154-166.

Paunonen, S.V., & O'Neill, T.A. (2010). Self-reports, peer ratings and construct validity. *European Journal of Personality, 24*, 189-206.

Polanyi, M. (1966). *The tacit dimension*. Garden City, NY: Doubleday.

Psotka, J. & Legree, P.J. (November 2010). *Consensus based assessment (CBA) Measures of 360 degree appraisals and military leadership* (ARI Interim Technical Report). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.

Riedel, S. L., Morath, R. A., & McGonigle, T. P. (Editors). (2001). *Training critical thinking skills for battle command: ARI workshop proceedings* (ARI Research Report 1777). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences. (DTIC No. ADA400824).

Sternberg, R.J. (1988). *The triarchic mind: A new theory of human intelligence*. New York: Viking.

Sternberg, R.J., Wagner, R.K., & Okagaki, L. (1993). *Practical intelligence: The nature and role of tacit knowledge in work and at school.* New Haven, CT: Yale University.

Stogdill, R.M. (1948). Personal factors associated with leadership: A survey of the literature. *Journal of Psychology, 25*, 35-71.

Taylor, T.Z., Higley, L., & Grabarczyk, D. (2008). *A U.S. army reserve noncommissioned officer (NCO) tacit knowledge inventory: Flexible structure for squad-level leader self-development* (ARI Research Product 2008-01). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.

Waldman, D.A., Bass, B.M., & Yammarino, F.J. (1990). Adding to contingent reward behavior: The augmenting effect of charismatic leadership. *Group and Organization Studies, 15*, 381-394.

Yammarino, F.J., & Atwater, L.E. (1997). Do managers see themselves as others see them? Implications of self-other rating agreement for human resources management. *Organizational Dynamics 25*(4), 35-44.

Zbylut, M. L., & Ward, J. N. (2004a). *Developing interpersonal abilities with interactive vignettes*. Poster presented at the 24th Army Science Conference, Orlando, FL.

Table 1

Means and Standard Deviations for MLQ Transformational Factor, Transactional (CR,MBEP,MBEA) and Laissez-Faire (LF) Dimension/Subdimension Self Ratings by Rank

	Transformational	Transactional			LF
Measure	MLQ Factor	MLQ CR	MLQ MBEP	MLQ MBEA	MLQ
Platoon Mean/SD n = 56	2.90/.52	2.84/.66	1.24/.59	1.89/.75	.70/.59
Company Mean/SD n = 36	3.03/.38	3.04/.53	.97/.48	1.85/.65	.47/.45
Battalion Mean/SD n = 33	3.07/.58	3.10/.54	1.38/.58	1.64/.54	.68/.54

Table 2

Means and Standard Deviations on the TKML Overall and Better and Worse Response Subscale Ratings for Each Leader Level

Command Group	TKML Overall Response Option Subscale Mean/SD	TKML Better Response Option Subscale Mean/SD	TKML Worse Response Option Subscale Mean/SD	N
Platoon	6.58/.65	7.31/.63	5.36/1.07	51
Company	5.37/.45	7.34/.64	3.39/.60	33
Battalion	5.70/.67	7.17/.61	4.23/.99	33

Table 3

Intercorrelations among the MLQ Scales and the Overall TKML Better/Worse Means for Each Leader Level

TKML MLQ	Platoon TKML Better Choice n = 51	Company TKML Better Choice n = 32	Battalion TKML Better Choice n = 33
Transformational	**.293***	.312	**.679****
Transactional	.162	.301	**.528****
Laissez-Faire	-0.67	-.315	**-.371***

*p<.05; **p<.01

Table 4a

Intercorrelations among the MLQ Transformational Factor, Transactional (CR, MBEP, MBEA), and Laissez-Faire (LF) Scales/Subscales and the Platoon TKML Scenario Better/Worse Response Option Ratings

	Transformational	Transactional			LF
Platoon TKML n = 56	MLQ Factor	MLQ CR	MLQ MBEP	MLQ MBEA	MLQ
P14 Better	.292*	.323*			
P14 Worse					-.304*
P15 Better	.373*	.323*			
P15 Worse				.417**	

*p<.05; **p<.01; P14/P15 Managing Self.

Table 4b

Intercorrelations among the MLQ Transformational Factor, Transactional (CR, MBEP, MBEA), and Laissez-Faire (LF) Scales/Subscales and the Company TKML Scenario Better/Worse Response Option Ratings

	Transformational	Transactional			LF
Company TKML n = 36	MLQ Factor	MLQ CR	MLQ MBEP	MLQ MBEA	MLQ
C8 Better					-.470**
C10 Better		.443*			
C11 Better		.404*			
C19 Better				.379*	
C19 Worse				.406*	

*p<.05; **p<.01; C8 Establishing Trust; C10 Developing/Motivating Subordinates; C11 Communicating; C19 Managing Self.

Table 4c

Intercorrelations among the MLQ Transformational Factor, Transactional (CR, MBEP, MBEA), and Laissez-Faire (LF) Scales/Subscales and the Battalion TKML Scenario Better/Worse Response Option Ratings

	Transformational	Transactional			LF
Battalion TKML n=33	MLQ Factor	MLQ CR	MLQ MBEP	MLQ MBEA	MLQ
B3 Better	.369*	.590**			-.515**
B5 Better		.481**			
B5 Worse	.393*	.446**			-.361*
B6 Better	.670**	.506**			
B6 Worse			-.373*		
B7 Better	.433*	.394*		.359*	
B8 Better	.637**	.631**			
B8 Worse				.389*	

*p<.05; **p<.01; B3 Protecting the Organization; B5/B6 Taking Care of Soldiers; B7/B8 Communicating.