

Predicting Unit Performance by Assessing Transformational and Transactional Leadership

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How do leadership ratings collected from units operating under stable conditions predict subsequent performance of those units operating under high stress and uncertainty? To examine this question, the authors calculated the predictive relationships for the transformational and transactional leadership of 72 light infantry rifle platoon leaders for ratings of unit potency, cohesion, and performance for U.S. Army platoons participating in combat simulation exercises. Both transformational and transactional contingent reward leadership ratings of platoon leaders and sergeants positively predicted unit performance. The relationship of platoon leadership to performance was partially mediated through the unit's level of potency and cohesion. Implications, limitations, and future directions for leadership research are discussed.

The pace of change confronting organizations today has resulted in calls for more adaptive, flexible leadership. Adaptive leaders work more effectively in rapidly changing environments by helping to make sense of the challenges confronted by both leaders and followers and then appropriately responding to those challenges. Adaptive leaders work with their followers to generate creative solutions to complex problems, while also developing them to handle a broader range of leadership responsibilities (Bennis, 2001).

Bass (1985) labeled the type of adaptive leadership described above *transformational*. The literature accumulated on testing transformational leadership theory has provided general support for the hypothesized relationships between transformational leadership, transactional leadership, and performance (Avolio, 1999; Bass, 1998). For example, ratings of transformational leadership

were positively correlated with supervisory evaluations of managerial performance (Hater & Bass, 1988; Waldman, Bass, & Einstein, 1987), recommendations for promotion (Waldman, Bass, & Yammarino, 1990), research and development project team innovations (Keller, 1992), and percentage of financial goals achieved in strategic business units (Howell & Avolio, 1993).

Meta-analyses conducted by Lowe, Kroeck, and Sivasubramaniam (1996) and Patterson, Fuller, Kester, and Stringer (1995) have confirmed the positive relationship between transformational leadership and performance reported in the literature. Yet most of the studies included in these two meta-analyses were based on leadership and performance data collected at the same point in time, and typically from the same source. Lowe et al. reported that the effects of common source bias inflated the relationship between transformational leadership and performance reported by many previous authors. Although the estimated true score correlation was still positive, Lowe et al. indicated that it was considerably lower when ratings of leadership and performance were collected from different sources.

DeGroot, Kiker, and Cross (2000) completed a third meta-analysis of the transformational and transactional leadership literature, reconfirming the positive relationship between ratings of charismatic–transformational leadership and performance reported earlier. They also reported that the relationship between charismatic leadership and performance varied when leadership and performance were examined at an individual versus group level, concluding that “results show an effect size at the group level of analysis that is double in magnitude relative to the effect size at the individual level” (DeGroot et al., 2000, p. 363).

Although the literature on transformational and transactional leadership has grown rapidly over the past 15 years, only a handful of studies have examined how transformational and transactional leadership predict performance. For example, Howell and Avolio (1993) reported that transformational, but not transactional, leadership of financial managers positively predicted unit performance

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over a 1-year period. Geyer and Steyrer (1998) evaluated the leadership of managers heading Austrian branch banks, reporting a stronger positive relationship between transformational leadership and long- versus short-term performance. Geyer and Steyrer speculated the stronger relationship between transformational leadership and long-term performance may have been due to transformational leaders creating a more inspired, committed, and cohesive culture in their banks.

Emergence of transformational leadership depends in part on the context in which the leader and followers interact. For example, Bass (1985) argued that "transformational leadership is more likely to reflect social values and to emerge in times of distress and change while transactional leadership is more likely to be observed in a well-ordered society" (p. 154). Most prior research has examined transformational and transactional leadership in units that operated within relatively stable conditions. Consequently, one major focus of this study was to examine how transactional and transformational leadership predicted performance in units operating under conditions of high levels of uncertainty, challenge, and stress. Leadership ratings were collected in U.S. Army platoons during normal operational assignments. These leadership ratings were then used to predict the performance of the platoon units operating in a 2-week complex simulation that was designed to test the unit's performance effectiveness under high levels of stress and uncertainty.

In addition, some researchers have argued that research on transformational and transactional leadership has not fully examined important mediating variables that link leadership style to performance (Yukl, 1999). Therefore, we also evaluated how ratings of transformational and transactional leadership were mediated by levels of unit cohesion and potency in predicting platoon performance in near-combat conditions.

Theoretical Background and Research Model

Distinguishing Transactional and Transformational Leadership

Prior to the introduction of charismatic-transformational leadership theory into the literature (Bass, 1985; Burns, 1978; House, 1977), most researchers referred to transactional contingent reinforcement as the core component of effective leadership behavior in organizations. Exhibiting transactional leadership meant that followers agreed with, accepted, or complied with the leader in exchange for praise, rewards, and resources or the avoidance of disciplinary action. Rewards and recognition were provided contingent on followers successfully carrying out their roles and assignments (Podsakoff, Todor, & Skov, 1982). Transactional contingent reward leadership clarifies expectations and offers recognition when goals are achieved. The clarification of goals and objectives and providing of recognition once goals are achieved should result in individuals and groups achieving expected levels of performance (Bass, 1985). In its more corrective form, labeled *active management by exception*, the leader specifies the standards for compliance, as well as what constitutes ineffective performance, and may punish followers for being out of compliance with those standards. This style of leadership implies closely monitoring for deviances, mistakes, and errors and then taking corrective action as quickly as possible when they occur. In its more passive form, the leader either waits for problems to arise before taking

action or takes no action at all and would be labeled *passive-avoidant* or *laissez-faire*. Such passive leaders avoid specifying agreements, clarifying expectations, and providing goals and standards to be achieved by followers.

Previous research has shown transactional contingent reward style leadership to be positively related to followers' commitment, satisfaction, and performance (Bycio, Hackett, & Allen, 1995; Hunt & Schuler, 1976; Podsakoff, Todor, Grover, & Huber, 1984). Goodwin, Wofford, and Whittington (2001) reported a positive relationship between transactional contingent reward leadership and organizational citizenship behavior, distinguishing transactional leadership that was more recognition based from that based on setting basic expectations and goals. Goodwin et al. showed that the recognition-based transactional leadership, which they labeled *implicit contracting*, was more positively related to followers displaying organizational citizenship behaviors than was a transactional leadership based on explicit contracts or a quid pro quo exchange between the leader and follower.

The components of transformational and transactional leadership have been identified in a variety of ways, including through the use of factor analyses, observations, interviews, and descriptions of a follower's ideal leader. Using the Multifactor Leadership Questionnaire (MLQ-Form 5X; Avolio & Bass, 2002), Avolio, Bass, and Jung (1999) and Antonakis (2001) identified the distinct components of transformational leadership. The four components of what Avolio et al. referred to as a higher order construct of transformational leadership include the following:

Idealized influence. These leaders are admired, respected, and trusted. Followers identify with and want to emulate their leaders. Among the things the leader does to earn credit with followers is to consider followers' needs over his or her own needs. The leader shares risks with followers and is consistent in conduct with underlying ethics, principles, and values.

Inspirational motivation. Leaders behave in ways that motivate those around them by providing meaning and challenge to their followers' work. Individual and team spirit is aroused. Enthusiasm and optimism are displayed. The leader encourages followers to envision attractive future states, which they can ultimately envision for themselves.

Intellectual stimulation. Leaders stimulate their followers' effort to be innovative and creative by questioning assumptions, reframing problems, and approaching old situations in new ways. There is no ridicule or public criticism of individual members' mistakes. New ideas and creative solutions to problems are solicited from followers, who are included in the process of addressing problems and finding solutions.

Individualized consideration. Leaders pay attention to each individual's need for achievement and growth by acting as a coach or mentor. Followers are developed to successively higher levels of potential. New learning opportunities are created along with a supportive climate in which to grow. Individual differences in terms of needs and desires are recognized.

Transformational Leadership, Commitment, Cohesion, and Potency

With the introduction of transformational leadership theory into the literature, greater attention has now been paid to understanding how certain leaders are better equipped to elevate a follower's motivation and performance to the higher levels of accomplish-

ment (Bass, 1985). Shamir, House, and Arthur (1993) suggested that charismatic-transformational leaders transform the self-concepts of their followers. They build personal and social identification among followers with the mission and goals of the leader and organization. The followers' feelings of involvement, cohesiveness, commitment, potency, and performance are enhanced. Other authors have suggested that transformational leadership is an important antecedent to building the collective confidence or potency required of groups to be successful when dealing with difficult challenges. According to Guzzo and his colleagues (Guzzo, Yost, Campbell, & Shea, 1993), group potency is a function of group design (e.g., task interdependence), process (e.g., leadership), and context (e.g., operating conditions). When a group's task is designed to facilitate highly interdependent work among group members and the leadership of the group provides encouragement for members to work together, group members' collective confidence is expected to be higher. Zaccaro, Blair, Peterson, and Zazanis (1995) suggested that "leadership actions that persuade and develop subordinate competency beliefs may be as critical a determinant of collective efficacy as the group's prior performance experiences, if not more so" (p. 317). Transformational leadership as defined above develops followers to believe in themselves and their mission.

Carless, Mann, and Wearing (1995) reported that follower ratings of transformational and transactional leadership predicted the financial performance of Australian banks, and that leadership style was mediated in terms of its relationship to performance through the level of group cohesion associated with each bank unit. Sosik, Avolio, and Kahai (1997) examined the impact of transformational leadership on the level of creative output generated by teams interacting through computer networks, reporting that ratings of transformational leadership had both direct and indirect relationships with performance. Level of group potency mediated the relationship between ratings of transformational leadership and performance. Prior evidence supports positive links between transformational leadership, cohesion, potency, and performance. Yet relatively few studies have examined how leadership is mediated by potency and cohesion in predicting performance.

Why Study Transactional and Transformational Leadership in a Military Context?

Transformational leadership is at the core of what constitutes adaptive leadership, according to U.S. Army doctrine Field Manual 22-100. Adaptive leaders are trained to exemplify the highest levels of ethical and moral conduct. They are required to gain the confidence of their followers so that the followers will make appropriate sacrifices for their unit. They are asked by senior leaders to continuously focus on their own leadership development and the development of their followers, to address the range of challenges confronting U.S. military forces.

In military engagements, leadership, morale, cohesion, and commitment have long been identified as critical ingredients to unit performance (Bass, 1998; Gal, 1985). Military units demonstrating a high level of esprit de corps and morale have frequently produced the best results (Shamir, Zakay, Breinin, & Popper, 1998). Shamir et al. (1998) reported that among Israeli Defense Force companies, unit morale, cohesiveness, and potency were each positively correlated with the level of trust that followers had in their unit's leadership and their willingness to make sacrifices

on the leader's behalf. Curphy (1992) reported the transformational and transactional leadership of U.S. Air Force squadron leaders positively predicted the motivation, cohesion, and performance levels of their squadrons. In a true field experiment setting where participants were randomly assigned to transformational leadership training, Dvir, Eden, Avolio, and Shamir (2002) demonstrated that Israeli platoon commanders with enhanced transformational leadership led platoons that received significantly higher performance scores 6 months later.

In sum, transformational leaders are expected to enhance the performance capacity of their followers by setting higher expectations and generating a greater willingness to address more difficult challenges (Avolio, 1999; Bass, 1998). Transactional contingent reward leadership should also relate positively to performance in that such leaders clarify expectations and recognize achievements that positively contribute to higher levels of effort and performance. On the basis of prior research, there is sufficient justification to propose and test the direct and indirect linkages between transactional contingent reward leadership, transformational leadership, unit potency (cohesion), and performance, as presented in Figure 1. Figure 1 shows which path coefficients were expected to positively or negatively predict unit cohesion, potency, and performance. Thus, the specific hypotheses tested in this study include the following:

Hypothesis 1a: Ratings of transformational leadership for platoon leaders (ordinarily lieutenants) and platoon sergeants will positively predict unit performance.

Hypothesis 1b: Ratings of transactional contingent reward leadership for platoon leaders and platoon sergeants will positively predict performance but to a lesser degree than transformational leadership.

Hypothesis 2: Ratings of transformational leadership for platoon leaders and platoon sergeants will be positively related to ratings of unit cohesion and potency.

Hypothesis 3: Unit cohesion and potency will mediate the relationship of transformational and transactional contingent reward leadership with unit performance.

Method

The core leadership in a platoon rests with the platoon sergeant (a noncommissioned officer) and the platoon leader (usually a commissioned second lieutenant). We measured the leadership of the platoon sergeant and platoon leader and the platoon's potency and cohesiveness on post approximately 4 to 6 weeks before each platoon participated in a 2-week combat simulation at Fort Polk's Joint Readiness Training Center (*joint readiness* refers to operating in concert with other forces to achieve success in the simulation).

Samples and Procedures

A total of 72 platoons, each made up of three rifle squads and a heavy weapons squad, participated in the joint readiness training exercise. Because the average number of light infantry combat soldiers in a platoon (all men) is typically around 30, the total number of participants rating the platoon leaders and platoon sergeants was 1,340 and 1,335, respectively. Most of the nonparticipating soldiers were on special assignments or on

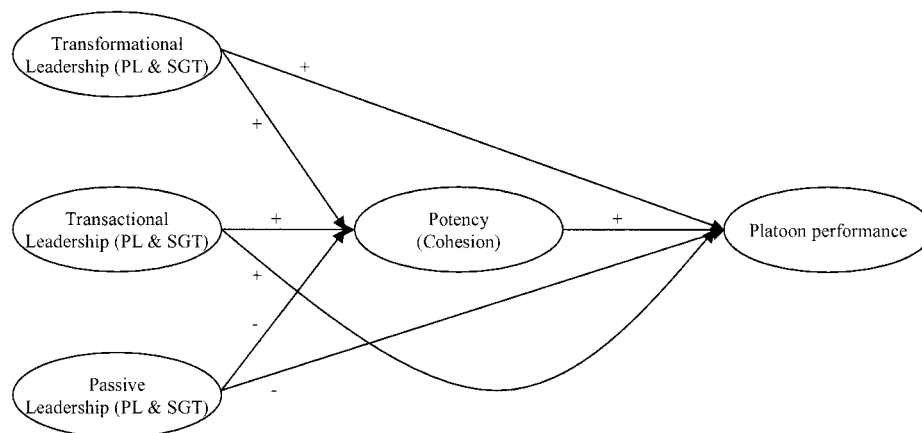


Figure 1. Direct and indirect effects of leadership styles among platoon leaders (PL) and sergeants (SGT) on platoon performance. Plus signs indicate a positive relationship; minus signs indicate an expected negative relationship.

leave when the surveys were collected. The total number of raters for unit cohesion and potency was 1,594.

The procedures and design for this study followed prior work on the determinants of platoon performance (Siebold & Lindsay, 1991). Similar to Siebold and Lindsay (1991), we examined how individual leadership, unit potency, and cohesion each predicted performance scores generated by expert observers, who judged platoon mission performance in the joint-readiness training exercises.

Measures

All surveys were collected in large classroom settings on four different Army posts. Participants were scheduled to attend a data collection session during a 3- to 4-day period on the basis of their individual schedules. After explaining the purpose of the study and the protections for anonymity, we gave all participants the option of sitting quietly and not participating in the study. Only 10 respondents chose this option.

All survey scale items used in the current study were first examined and suitably modified in discussion with expert Army consultants. However, relatively few changes were required to the original survey instruments, including the MLQ—Form 5X; in which only two items were changed on the Management by Exception Scale (i.e., “Concentrates full attention on dealing with mistakes, complaints and failures” and “Directs attention toward failures to meet standards”). There were 36 leadership items measured in each MLQ—Form 5X survey.¹ Participants rated one of their respective leaders, who was either a platoon leader or a sergeant, on a 5-point frequency scale ranging from 0 (*not at all*) to 4 (*frequently, if not always*).

There were four general components of transformational leadership. These components and a sample item from the MLQ—Form 5X were as follows: *Idealized Influence* (e.g., “Talks about the importance of the Army ethics and values”), *Inspirational Motivation* (e.g., “Emphasizes the importance of having a collective sense of mission”), *Intellectual Stimulation* (e.g., “Seeks different points of view when solving problems”), and *Individualized Consideration* (e.g., “Helps platoon members to develop their strengths”).

Transactional leadership occurs when the leader sets expectations, standards, or goals to reward or discipline a follower depending on the adequacy of a follower’s performance: *Contingent Reward* (e.g., “Rewards us when we do what we are supposed to do”) and *Management by Exception* (active and passive forms, represented in the items “Directs attention toward failures to meet standards” and “Delays responding to urgent problems,” respectively).

The six-factor model that was reported by Avolio et al. (1999) was confirmed in this study with an initial sample of 18 platoons using confirmatory factor analysis. The resulting fit indices were as follows: goodness-of-fit index (GFI) = .90, adjusted goodness-of-fit index (AGFI) = .87, root-mean-square residual (RMSR) = .04, and normed fit index (NFI) = .90. The six-factor model was retested using data collected from the target sample of 72 platoons. Results were as follows: GFI = .93, AGFI = .91, RMSR = .004, and NFI = .94. Although producing an adequate model fit, the reliability for the Active Management by Exception scale was below acceptable standards, at .56. Hence, this scale was eliminated from subsequent analyses, owing to problems with the new items.

Potency. The unit of analysis for this survey was the platoon. The Guzzo et al. (1993) operational definition and scale were used to assess the degree of potency exhibited by 72 platoons, prior to their participation in the 2-week Joint Readiness Training Center exercises. Their measure of potency provided an assessment of how platoon members felt about taking on difficult and unexpected problems and being successful in addressing those challenges. The potency measure contained eight items (e.g., “Our platoon has confidence in itself”).

Cohesion. Three items were used to measure the level of cohesion among platoon members. The measure of unit cohesion was developed for the current study (e.g., “Members of the platoon pull together to get the job done”).

Controlling for Same-Source Ratings and Order Effects

MLQ—Form 5X survey data were gathered for the platoon leaders and sergeants from separate personnel randomly chosen in each of the 72 light infantry rifle platoons. Ratings of unit potency and cohesion were collected in a separate survey. To control for order effects, we gave half of the respondents who reported to the platoon leaders and sergeants two questionnaires in a folder and directed them to complete the questionnaires in the order presented. These surveys were placed in alternating order in the folders, with either the questionnaire for the platoon leader or for the platoon sergeant first. A second, randomly selected group received in a folder the potency and cohesion survey first. Half of each platoon’s subordinates rated either the platoon leader or the platoon sergeant using the MLQ—Form 5X. The remaining members of the platoon rated the level

¹ Information on using the MLQ—Form 5X for research purposes can be obtained by contacting info@mindgarden.com or by calling Robb Most at (650) 261-3500.

of potency and cohesion before completing the MLQ—Form 5X survey for either the sergeant or the platoon leader. For the final data set used in this study, the survey data used to assess leadership, potency, and cohesion were all completed by separate sources.

Field Performance Data Collection From Expert Observers

Approximately 4 to 6 weeks after the survey data were collected, four brigades containing 18 platoons each engaged in 11 tactical mission exercises at Fort Polk. For the four data sets of 18 platoons each, ratings were obtained for each platoon from two highly trained observers. A retired colonel on our research team met with the observers several days prior to their moving into the field with their platoons to brief the observers. He explained the type of performance data we wanted to collect from the observers after the 2-week simulation was completed. He assured the observers that no one's data would be identified or used for anything other than research purposes. At the end of three respective phases, totaling 11 missions (after the first, middle, and last missions), the observers completed ratings of platoon performance on scorecards created for this study. Generally, the 11 missions included defense, movement to contact, and attack.

The 126 observers for all 72 platoons were experienced tactical instructors with the ranks of captain, master sergeant, or sergeant first class. All observers received training on how to complete their evaluations. Each instructor observed a particular platoon for the first time, but all instructors had performed observational duties in the past. Their prior experience was recorded on the field data scorecards. Their experience ranged from 3 to 30 prior rotations, where one rotation meant they followed an individual platoon for 11 missions. The average number of prior platoon rotations was 11.9 for the group of observers participating in this study. Observers remained with these 72 platoons day and night. The overall interrater agreement for the pairs of observers was .75. We averaged their performance scores to obtain a total performance score for each platoon. Two overall scales of each platoon's performance were used in this study. The first assessed the platoon's performance. Raters evaluated how well the platoon had accomplished its missions on a 5-point scale ranging from 0 (*much less well than could have been expected*) to 4 (*much more than could have been expected*). In the second scale, the rater was asked to compare the platoon's performance with the performance of all other platoons the rater had observed in this field setting. A 5-point scale was used here to measure the platoon's performance. These performance ratings were highly correlated ($r = .68$) and therefore were combined in subsequent analyses. The total number of ratings across the 11 missions for all 72 platoons was 415 (1–2 raters $\times$ 3 overall ratings $\times$ 72 platoons).

Data Aggregation and Analysis

For the measures of leadership, potency, and cohesion, the sample size was 72. Tests for aggregating survey ratings to the platoon level were conducted using James, Demaree, and Wolf's (1984) r_{wg} procedure. Specifically, an r_{wg} value was calculated for each scale within each of the 72 platoons. Between 70% and 80% of the r_{wg} values for all survey scales fell above the .70 cutoff suggested by James et al. for aggregating ratings from an individual to a group level of analysis. Results of the r_{wg} analyses were as follows: The mean r_{wg} value for ratings of the platoon leader's transformational leadership was .80; for the platoon leader's contingent reward ratings, .87; for the platoon leader's passive-avoidant ratings, .84; for the platoon sergeant's transformational ratings, .78; for the platoon sergeant's contingent reward ratings, .82; for the platoon sergeant's passive-avoidant ratings, .88; for unit potency, .90; and for unit cohesion, .88.

We examined how three constructs of leadership related to potency, cohesion, and platoon performance. The first higher order construct represented the transformational leadership factors reported by Avolio et al. (1999). We chose to combine the transformational factors on the basis of prior evidence that they represented a higher order construct, and to reduce the number of parameters being estimated given the small sample size of 72 platoons. The second construct represented transactional contingent reward leadership, and the third was passive-avoidant leadership.

Results

Results presented in Table 1 include descriptive statistics, scale reliabilities, and zero-order correlations among leadership, potency, cohesion, and unit performance. All of the reliability estimates for the leadership and group process scales were above .70. For both platoon leaders and sergeants, transformational leadership was positively correlated with transactional contingent reward leadership and negatively correlated with passive-avoidant leadership. Both transformational and transactional contingent reward leadership were positively correlated with ratings of platoon potency and cohesion. Ratings of passive-avoidant leadership for both platoon leaders and sergeants were negatively related to evaluations of unit potency and cohesion.

Ratings of leadership for the platoon leader and sergeant were moderately intercorrelated. For example, platoon leaders who were rated more transactional worked with platoon sergeants in their platoon who were rated more transactional ($r = .24, p < .05$) and less passive-avoidant ($r = -.23, p < .05$). The transformational

Table 1
Means, Standard Deviations, Alpha Coefficients, and Intercorrelations Among Constructs

Construct	M	SD	Intercorrelations								
			1	2	3	4	5	6	7	8	9
1. Platoon leader TF	2.60	0.37	(.96)								
2. Platoon leader TA	2.36	0.43	.85**	(.86)							
3. Platoon leader PA	0.85	0.32	-.77**	-.74**	(.89)						
4. Sergeant TF	2.51	0.38	.15	.17	-.09	(.96)					
5. Sergeant TA	2.38	0.38	.26*	.24*	-.20	.84**	(.84)				
6. Sergeant PA	0.91	0.35	-.14	-.23*	.19	-.74**	-.69**	(.91)			
7. Potency	2.86	0.34	.41**	.37**	-.37**	.47**	.47**	-.40**	(.95)		
8. Cohesion	2.76	0.45	.48**	.46**	-.43**	.55**	.55**	-.43**	.72**	(.95)	
9. Performance	2.49	0.64	.30**	.31**	-.30**	.07	.09	-.044	.04	.08	(.81)

Note. Values on the diagonal represent estimates of internal consistency. TF = transformational leadership; TA = transactional leadership; PA = passive-avoidant leadership.

* $p < .05$. ** $p < .01$.

and transactional contingent reward leadership of the platoon leaders was significantly and positively related to platoon performance, whereas passive-avoidant leadership was negatively related to platoon performance. However, ratings of transformational and transactional leadership for the platoon sergeants were not significantly related to the platoon's performance.

The hypothesized model shown in Figure 1 was tested using a structural equation modeling procedure called partial least squares (PLS; see Wold, 1985). PLS generates estimates of standardized regression coefficients (beta values) for the model's paths, which are then used to measure relationships among latent variables. PLS also generates factor loadings for measurement items, which are interpretable similarly to loadings generated by principal-components factor analysis (Bookstein, 1986). PLS does not make assumptions about (a) data distributions to estimate model parameters, (b) observation independence, or (c) variable metrics (Bar-

clay, Higgins, & Thompson, 1995). Because of its less restrictive assumptions, PLS is considered more appropriate for testing hypothesized models when working with smaller samples. (For a more detailed description of PLS, please refer to Howell & Avolio, 1993.)

Table 2 displays the factor loadings, composite scale reliabilities, and average variance extracted for constructs in the model that contained two or more items. We first analyzed the model presented in Figure 1 including potency as a mediator. We then reran the model taking potency out and including cohesion as a mediator. Values shown in parentheses in Tables 2 and 3 reflect the model that included cohesion as the mediator variable.

As shown in Table 2, all of the constructs demonstrated sufficiently high item-factor loadings and composite scale reliabilities. Table 3 displays average variance extracted by each construct and correlations between constructs, which provide estimates for con-

Table 2
Factor Loadings, Weights, Composite Scale Reliability, and Average Variance Extracted to Assess Reliability of Constructs With Potency (Cohesion)

Construct	Measure	Factor loading	Weights of measures	Composite scale reliability	Average variance extracted
Platoon leader	TF	II/INSP	.96 (.96)	.97 (.97)	.92 (.92)
		IS	.96 (.96)		
		IC	.96 (.96)		
	TA	TA1	.90 (.90)	.92 (.92)	.79 (.79)
		TA2	.80 (.82)		
		TA3	.95 (.95)		
	PA	PA1	.88 (.87)	.92 (.92)	.70 (.70)
		PA2	.90 (.89)		
		PA3	.76 (.78)		
		PA4	.81 (.82)		
		PA5	.81 (.81)		
Sergeant	TF	II/INSP	.96 (.96)	.97 (.97)	.92 (.92)
		IS	.95 (.95)		
		IC	.97 (.97)		
	TA	TA1	.85 (.88)	.84 (.84)	.76 (.76)
		TA2	.82 (.78)		
		TA3	.94 (.94)		
	PA	PA1	.88 (.87)	.93 (.93)	.73 (.73)
		PA2	.90 (.91)		
		PA3	.84 (.83)		
		PA4	.80 (.81)		
		PA5	.85 (.86)		
Potency	Potency1	.91	.21	.97	.86
	Potency2	.92	.20		
	Potency3	.94	.23		
	Potency4	.93	.23		
	Potency5	.94	.21		
Cohesion	Cohesion1	.94	.35	.97	.91
	Cohesion2	.97	.35		
	Cohesion3	.96	.34		
Performance	A1	.67 (.67)	.22 (.22)	.81 (.81)	.51 (.51)
	A2	.73 (.71)	.27 (.25)		
	A3	.57 (.59)	.07 (.08)		
	B1	.72 (.73)	.23 (.24)		
	B2	.84 (.83)	.34 (.32)		
	B3	.71 (.73)	.24 (.27)		

Note. Values in parentheses were calculated with cohesion included and potency left out. TF = transformational leadership; TA = transactional leadership; PA = passive-avoidant leadership; II = idealized influence; INSP = inspiring; IS = intellectual stimulation; IC = individualized consideration; A and B = platoon performance.

Table 3

Average Variance Extracted by Constructs and Correlations Between Constructs to Assess Convergent and Discriminant Validity

Construct	1	2	3	4	5	6	7	8
1. Platoon leader TF	.92 (.92)							
2. Platoon leader TA	.73 (.74)	.79 (.79)						
3. Platoon leader PA	.59 (.59)	.48 (.50)	.70 (.70)					
4. Sergeant TF	.02 (.02)	.04 (.04)	.01 (.01)	.92 (.92)				
5. Sergeant TA	.06 (.07)	.06 (.06)	.04 (.04)	.77 (.76)	.76 (.76)			
6. Sergeant PA	.02 (.02)	.06 (.05)	.03 (.03)	.56 (.56)	.51 (.49)	.73 (.73)		
7. Potency/cohesion	.17 (.29)	.14 (.26)	.14 (.24)	.22 (.34)	.21 (.34)	.18 (.22)	.86 (.91)	
8. Performance	.07 (.07)	.07 (.06)	.06 (.05)	.00 (.00)	.01 (.01)	.00 (.00)	.00 (.01)	.51 (.51)

Note. Values on the diagonal represent average variance extracted; remaining values are correlations. Values in parentheses were calculated with cohesion included and potency left out. TF = transformational leadership; TA = transactional leadership; PA = passive-avoidant leadership.

vergent and discriminant validity, respectively. In PLS, convergent and discriminant validity are assessed using criteria similar to a multitrait-multimethod analysis (Wold, 1985). The construct representing items should share more variance with its own items than with other constructs in the model (Carmines & Zeller, 1979). Because the diagonal values (convergent validities) in Table 3 exceed the values in each of the respective columns (discriminant validity), evidence for convergent and discriminant validity was obtained.

Direct Effects of Leadership Styles for Platoon Leaders and Sergeants

Figure 2 displays results of the PLS analysis using potency (and cohesion) as mediating variables for platoon leaders. Values in parentheses are for the PLS results when we included cohesion in the analysis and removed potency. Results show that the platoon leaders' transformational and transactional leadership each had positive and direct relationships with platoon performance; passive-avoidant leadership was negatively related to platoon performance. The platoon leaders' transformational leadership positively related to both potency and cohesion, which was also positively related to performance. However, platoon leaders' contingent reward leadership did not produce a significant relationship with

cohesion. Passive-avoidant leadership was negatively related to ratings of potency and cohesion. For platoon leaders, six of the seven path coefficients were significant and in the expected direction.

The results for platoon sergeants are presented in Figure 3. Results for platoon sergeants mostly paralleled findings for the platoon leaders. The platoon sergeants' transformational leadership was significantly and positively related to potency, cohesion, and platoon performance. Sergeants' transactional leadership was positively related to cohesion and performance. Sergeants' passive leadership had strong negative relationships with potency, cohesion, and performance.

In sum, some support was provided for Hypotheses 1a, 1b, and 2. Transformational leadership was predictive of unit performance for both platoon leaders and sergeants, and it correlated positively with ratings of unit potency and cohesion. However, contrary to Hypothesis 1b, both transformational and transactional leadership similarly predicted unit performance.

Indirect Effects of Leadership Styles Mediated Through Potency and Cohesion

Using procedures recommended by Baron and Kenney (1986), we tested Hypothesis 3 using separate analyses to examine

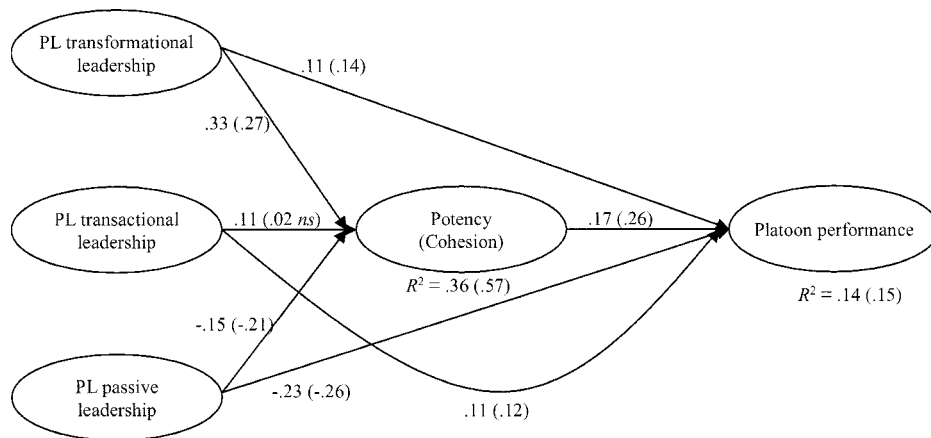


Figure 2. Results of partial least squares analysis for platoon leaders (PL). Values in parentheses represent the structural model that included cohesion as a mediating variable ($n = 72$). All path coefficients are statistically significant at $p < .001$ unless indicated otherwise.

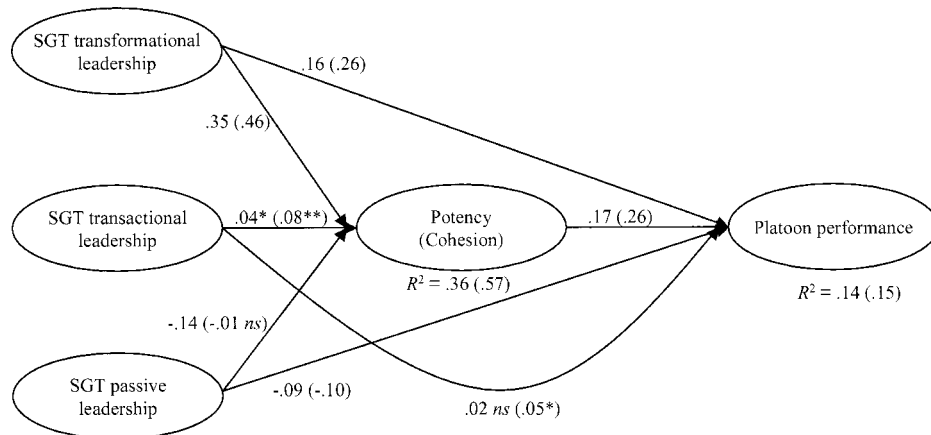


Figure 3. Results of partial least squares analysis for platoon sergeants (SGT). Values in parentheses represent the structural model that included cohesion as a mediating variable ($n = 72$). All path coefficients are statistically significant at $p < .001$ unless indicated otherwise. * $p < .05$. ** $p < .01$.

whether potency and cohesion mediated the effects of leadership on performance. Evidence for *partial mediation* is present when the following conditions are met: A path from the independent variable (i.e., leadership style in our study) to the dependent variable (i.e., platoon performance) and paths from the independent variable to the mediator (i.e., potency) and from the mediator to the dependent variable are all significant (Wold, 1985). *Full mediation* is present when the path from the independent variable to dependent variable is not significant but the remaining paths are significant. Including potency as a mediator for the platoon leader, the indirect effects of transformational, contingent reward, and passive-avoidant leadership on platoon performance were .06 ($.33 \times .17$), .02 ($.11 \times .17$), and $-.03 (-.15 \times .17)$, respectively. For the platoon sergeant, potency mediated the relationship between all three leadership styles and platoon performance. The indirect effects of transformational, contingent reward, and passive-avoidant leadership on platoon performance were .06 ($.35 \times .17$), .01 ($.04 \times .17$), and $-.02 (-.14 \times .17)$, respectively. The only fully mediated effect we found was with the sergeants' transactional contingent reward leadership; the remaining tests using potency as a mediator provided evidence for partial mediation effects.

We then replicated the tests for mediation using cohesion instead of potency in our analyses. Again, our results indicated that cohesion partially mediated the relationships of the platoon leaders' transformational and passive-avoidant leadership with platoon performance. Indirect effects of these two leadership styles were .07 ($.27 \times .26$) and $-.05 (-.21 \times .26)$, respectively. The effects of the platoon sergeants' transformational and contingent reward leadership on platoon performance also appeared to be partially mediated through group cohesion. The indirect effects for these two leadership styles were .12 ($.46 \times .26$) and .02 ($.08 \times .26$), respectively. We did not test for mediation using passive-avoidant leadership because it was not significantly associated with cohesion.

In sum, leadership style exhibited both direct and indirect relationships with platoon performance, partially supporting Hypothesis 3. Evidence was provided for partial mediation between leadership and performance through levels of potency

and cohesion. Leadership style accounted for approximately 36% and 57% of the variance in ratings of platoon potency and cohesion, respectively. Approximately 14% (and 15%) of the variance in platoon performance for platoon leaders and sergeants was accounted for by leadership style and potency (and cohesion).

Exploring the Augmentation Effect

Prior research has shown that transformational leadership augments transactional leadership in predicting performance (Waldman et al., 1990). Here we explored whether the platoon leader's (sergeant's) transformational leadership augmented contingent reward leadership in predicting unit performance. Because PLS does not provide individual R^2 values to determine the unique contribution of each variable in predicting an endogenous variable, we used hierarchical regression to test the augmentation effect of transformational leadership. The results indicated that the transformational scale did not augment transactional contingent reward leadership for either the platoon leader ($\Delta R^2 = .03$), $F(1, 69) = 2.56$, $p = .11$, or the sergeant ($\Delta R^2 = .003$), $F(1, 69) = 0.24$, $p = .63$, in predicting platoon performance.

Using Goodwin et al.'s (2001) work as a guide, we reexamined the items contained in the contingent reward scale. Goodwin et al. argued that some of the transactional items are of a lower order type and are associated with more explicit contracting with followers. The remaining items are more of the higher order transactional type and generally are associated with recognition and forming of implicit contracts. Two of the contingent reward items in this study appeared to represent more of the lower order transactional items: "Rewards us when we do what we are supposed to do" and "Makes clear exactly what platoon members will get if performance goals are met." We reran the regression analyses to test for the augmentation effect using only these two contingent reward items. Results for the platoon leader were consistent with prior research showing that transformational leadership augmented transactional leadership in predicting platoon performance. The R^2 value for transactional contingent reward leadership was .11; however, when transformational leadership was included, R^2 in-

creased significantly, to .16, $F(1, 69) = 3.94, p < .05$. Results testing the augmentation effect for the platoon sergeant were not significant.

Discussion

We conducted this study to examine how transactional contingent reward and transformational leadership of both platoon leaders and sergeants correlates with unit potency and cohesion, and how each predicts unit performance operating in challenging and uncertain conditions. It seems fair to say that it took both active transactional and transformational leadership to be successful in this performance context. Being a passive leader waiting for problems to arise and then correcting them was obviously counterproductive in terms of predicting unit performance.

Bass (1985) argued that transactional contingent reward leadership builds the foundation for relationships between leaders and followers in terms of specifying expectations, clarifying responsibilities, negotiating contracts, and providing recognition and rewards for achieving expected performance. Transformational leadership enhances the development of followers, challenging them to think in ways in which they are not accustomed to thinking, inspiring them to accomplish beyond what they felt was possible, and motivating them to do so by keeping in mind the values and high moral standards that guide their performance (Avolio, 1999).

In contrast with earlier research, both contingent reward and transformational leadership of the platoon leader equally predicted performance. Results with the platoon sergeant were more in line with prior research. There are several possible explanations for the findings with the platoon leader. First, the complexity of the tasks taken on by these platoons requires a great deal of coordination and clarity concerning who is responsible for achieving specific targets and goals. By articulating clear standards and expectations for performance and showing recognition to platoon members for specific milestones achieved, platoon leaders may establish a basis for working together that prepares the unit to function in an environment where knowing what to do, when to do it, and with whom is essential to successful performance. Specifically, the performance context may elevate the importance of the role transactional leadership plays in contributing to effective leadership. Environments requiring the execution of many complex procedures may have a higher threshold for the type of transactional leadership required to be effective, as compared with less complex environments. Establishing this base for effective leadership in no way negates the importance of leading a unit to respond creatively to unique or unexpected contingencies, knowing what its members' strengths and weaknesses are, and sustaining performance by inspiring higher levels of motivation. Indeed, our results with platoon leaders indicated that both are required for predicting effective performance.

Second, because of the rapid turnover that typically occurs in U.S. Army platoons today, transactional leadership may have provided a stable base for effective platoon performance. Specifically, providing the type of structure and clarity of expectations that comes with transactional contingent reward leadership may have been even more essential because of turnover rates in these platoons.

As cited in our introduction, earlier research on transformational leadership has shown that it augments transactional leadership in

predicting performance. In the current setting, we explored whether transactional leadership provided the base that transformational leadership would augment in predicting performance and found that it did not initially augment transactional leadership in predicting performance. However, we explored this idea further by partitioning the contingent reward scale into higher and lower transactional leadership on the basis of the work of Goodwin et al. (2001). Transformational leadership did augment transactional leadership for platoon leaders when the transactional items were based on explicit contracts or quid pro quo exchanges. These findings provide an interesting avenue for future research to pursue. Specifically, transactional leadership that deals more with intrinsic motivators and recognition may overlap more with transformational leadership, as shown in the work of Goodwin et al. This type of transactional leadership may be a bridge to transformational leadership, especially where recognition is more individualized. Future research now needs to explore the distinction between the higher and lower order forms of contingent reward leadership and their relationship to motivation and performance.

Burns (1978) initially described transactional leadership as representing the lower order type that transformational leadership should add to in predicting performance. He conceived of transactional and transforming leadership as being at opposite ends of the same continuum. Bass (1985) may have elevated transactional contingent reward leadership closer to transformational by including in its definition implicit contracts and recognition, thus closing the gap between these two styles in terms of effects on motivation and performance.

The distinction we have raised here regarding transactional leadership has implications for both measurement and development. From a measurement perspective, we expect that it will be easier to separate measures of transactional leadership that represent the lower order kind from measures of transformational leadership, thus enhancing the discriminant validity of survey measures. With respect to leadership development, trainers can make more useful distinctions between different levels of transactional leadership and the individualized consideration comprising transformational leadership that focuses on recognizing individual needs, aspirations, and abilities.

It is also interesting to note that the sergeant's transformational leadership was more predictive of unit performance than the platoon leader's transformational leadership, although this difference was not significant. There are several plausible explanations for this result. First, sergeants in the U.S. Army typically have more daily contact with platoon members and would likely have a greater effect on platoon members' training and perhaps their overall performance. Second, sergeants typically have greater tenure in the Army than platoon leaders, as well as more experience in combat. In combination, this may result in sergeants receiving greater respect from members of the platoon and, in turn, having more of an impact on the platoon's performance. Third, sergeants come up through the ranks, and members of the platoon may have identified with them more easily as compared with the platoon leader, increasing their motivation to perform at the Joint Readiness Training Center. Finally, sergeants are given more authority to act in today's U.S. Army as compared with the past, also potentially contributing to how predictive the sergeant's leadership was of unit performance.

Implications and Future Directions

It is difficult to imagine how one could develop the leadership required to successfully perform in the performance context described in this study or in any dynamic, complex, turbulent environment without taking into consideration the characteristics of the performance context. Moreover, such dynamic environments today, and into the foreseeable future, are not unique to military contexts. Consequently, our findings may offer some initial insights regarding the type of leadership styles that positively contribute to enhancing a unit's level of cohesion, potency, and performance when preparing to address uncertain challenges and well-trained competitors. It appears that transactional leadership is needed to establish clear standards and expectations of performance. Transactional leadership can build a base level of trust in the leader as he or she reliably executes what has been agreed to over time. When clarity exists around expectations and performance objectives, followers come to learn that their leaders and peers, when asked to execute a task, do so reliably.

Transformational leadership may build on these initial levels of trust by establishing a deeper sense of identification among followers with respect to the unit's values, mission, and vision (Shamir et al., 1998). This internally based trust is associated with the personal identification that Shamir et al. (1993) argued that followers exhibit when working with charismatic-transformational leaders. It may be this level of trust and identification that sustains the performance of units operating over longer periods of time. Indeed, transactional leadership may have been as predictive of performance as transformational leadership, given the short duration of the performance tasks used here, which is consistent with results presented by Geyer and Steyrer (1998). Geyer and Steyrer reported that transactional leadership predicted the short-term financial performance of bank branches, whereas transformational leadership exhibited stronger predictions over a longer period of time.

Bass (1985) argued that transformational leadership energizes groups to persist when conditions are unpredictable, difficult, and stressful. In this study, maintaining high standards of performance against opposition forces who were better trained and more experienced appeared to require both transformational and transactional leadership. Although it was not hypothesized, we were also able to show that sitting back and waiting for things to go wrong and then taking action was not a very effective leadership style in terms of either motivating units before going off to compete or predicting unit performance. This finding is consistent with earlier research that has shown passive-avoidant leadership to be typically negatively related to unit commitment, satisfaction, and performance effectiveness (Bass, 1998).

Reviews of the training literature consistently conclude that there is a scarcity of meaningful research on how the best leadership can be identified and then developed (e.g., Day, 2000; Yukl, 1999). Most leadership development interventions have also ignored that leadership constitutes a complex interaction between leaders, followers, and the context in which they operate (Fiedler, 1996). Day made a useful distinction between leader development and leadership development. Leader development has the primary goal of enhancing an individual's capacity and potential (Day, 2000), such as self-awareness, self-regulation, and self-motivation. Leadership development focuses on the interaction of the leader

within a social-organizational context, an area repeatedly neglected in past leadership research (Fiedler, 1996).

Although relatively little is known about the conditions that lead to the development of transformational leadership, recent progress has been made in exploring its emergence and development. For example, one field experiment conducted within a Canadian banking institution was able to link transformational leadership training to enhanced follower commitment and organizational performance (Barling, Weber, & Kelloway, 1996). Another field experiment conducted with Israeli platoon leaders demonstrated that transformational leadership could be developed for positive impact on unit performance 6 months after the close of training (Dvir et al., 2002). Leaders who went through the experimental transformational training program led platoons that exhibited significantly higher levels of effort and performance.

After nearly 60 years of developing theoretical models and empirical research, the field of leadership can now focus on how to develop both transactional and transformational leadership. Developing leaders to use a full range of styles prior to, during, and following highly stressful events seems like an appropriate course of action to pursue in future research on leadership. We also need to get a better handle on how leadership influences unit potency and cohesion. There is clear evidence that leadership correlates with these process measures, but the specific actions and timing of leadership in terms of optimizing levels of potency and cohesion require further study using experimental interventions.

Limitations of Our Study

One of the limitations of this study was that we had no control over who was in each of the platoons. Some platoons had a higher percentage of new members who had been brought in to meet the manpower levels required for participation in the 2-week simulation. We took this limitation into consideration by rerunning all of our analyses and eliminating any members who had been with their platoon for less than 3 months. Their elimination from our analyses had no effect on the pattern of results presented above. Additionally, following this elimination the mean transformational leadership rating for platoon leaders was 2.63, which was not significantly different from the overall mean of 2.61 based on all samples. Nevertheless, having less experienced members in a platoon could have influenced the platoon's performance during the joint readiness training exercises. Simply not having sufficient time to practice the procedures required for each of the 11 missions could have disadvantaged a platoon. As noted above, the turnover in personnel may have also highlighted a greater need for transactional leadership behavior.

We also conducted a careful review of all of the qualitative comments made by the observers on their scorecards to examine the influence of experience on performance. Our review of their comments revealed frequent references to inexperience as being a contributing factor to failing to achieve a mission. Future leadership research will need to take a closer and more systematic look at how experience factors into predicting performance in settings where there are extreme challenges and uncertainties.

A second limitation of this study involves the criterion measure used for performance. Our observers were trained to provide "after-action" reviews to their respective platoons during the course of the 11 missions. These after-action reviews were used to enhance the platoons' performance in subsequent missions. The

platoon leaders and members did receive developmental feedback from their observers, which may have affected their success in subsequent missions. However, the feedback was based not on their scorecard results but rather on the observers' notations of critical behaviors, actions, and failures to execute certain procedures or processes. Nevertheless, to the extent these feedback interventions were successful, they could have reduced the variance in platoon performance while raising performance levels over time. This pattern was observed across the three sets of 11 total missions. To the degree that developmental feedback improved performance from the 1st to the 11th mission, the current findings may provide a conservative estimate of using transactional and transformational leadership to predict performance.

A third limitation of this study concerns the collective leadership of the platoon leader and sergeant. As judged by our review of the qualitative notes generated by the observers, those platoons that were more successful had platoon leaders and sergeants who appeared to exhibit better working relationships. On a very basic level, the more effective platoons appeared to have leaders and sergeants who talked more to each other and who listened to what each other had to say during the platoon's 2-week involvement in this simulation. Unfortunately, we did not measure the collective leadership of the platoon's leader and sergeant before they attended the joint readiness training center simulation. Looking back at our results, we believe it would have been worthwhile to measure the collective leadership of the platoon leader and sergeant and to use this measure as an additional predictor of the platoon's overall performance. In any unit where a high degree of coordination among top leaders is required, the collective leadership of those top leaders ought to be included in one's overall assessment of leadership.

A fourth limitation involved the collection of ratings of potency and cohesion at the same point in time from the same source, which led us to analyze each variable separately in our main analyses because of a high correlation between these two scales ($r = .72$). Future research should collect these ratings at separate points in time and/or from separate sources to obtain a better estimate of their respective relationships with unit performance.

In sum, this study adds to a growing body of evidence that shows that the measurement of transformational and transactional leadership can be used to predict subsequent performance (see Dvir et al., 2002). How such leadership specifically develops higher levels of potency, cohesion, trust, identification, and performance are fruitful areas for future leadership research to begin exploring.

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