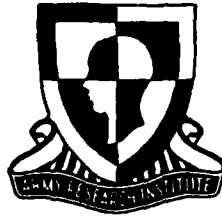


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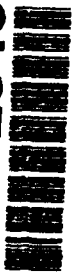
Relationships of Leadership Competence With Leader and Unit Performance Effectiveness

Trueman R. Tremble, Jr.
U.S. Army Research Institute

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13. ABSTRACT (Maximum 200 words) This report integrates findings on platoon leaders' (PLs) and platoon sergeants' (PSSs) performance on the leadership competencies that U.S. Army doctrine sets forth for guiding leader development. Platoon members rated their leaders' competencies before platoons deployed to a U.S. Army Combat Training Center (CTC). Leaders were also rated by observer/controllers (OCs) on their competency performance during the CTC exercises. The CTC OCs and/or platoon members later rated the performance of platoons in mission accomplishment and the overall effectiveness of PLs and PSSs as leaders during the CTC exercises. Ratings indicated that PLs and PSSs need some improvement, especially in the leadership shown at the CTCs. Competency performance both at the home station and during CTC exercises was consistently correlated with platoon effectiveness in mission accomplishment. While these results suggest the validity of the competencies for leader development, other results show the need for methods yielding ratings that are specific both to leadership components and to leaders in a unit.			
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Research Report 1625

**Relationships of Leadership Competence
With Leader and Unit Performance Effectiveness**

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FOREWORD

A primary mission of the Leadership and Organizational Change Technical Area of the U.S. Army Research Institute for the Behavioral and Social Sciences (ARI) is to enhance small unit readiness and performance through research to improve leadership, cohesion, and motivation. The research described in this report is part of a project focusing on the impact of factors at a unit's home station on subsequent performance of the unit at the U.S. Army Combat Training Centers (CTCs). This research project, entitled "Determinants of Small Unit Performance," is part of a wider program of research carried out by several ARI technical areas and field units on the determinants of unit preparedness for combat performance.

This report provides an integrated summary of findings on performance of the leadership competencies that U.S. Army doctrine sets forth for guiding leader development. Findings describe the quality of leadership competency performance before and during a unit's deployment to a CTC. They also provide empirical evidence on whether the effectiveness of leaders and of their units is greater when the leaders are rated higher on the competencies. These findings have implications for the validity and usefulness of the leadership competencies in leader development programs. Findings from the determinants project were briefed to representatives of the Center for Army Leadership and the Combined Arms Center--Training in December 1990 and again to the Center for Army Leadership in August 1991.

The sponsor for the research presented in this report is the Center for Army Leadership, U.S. Army Command and General Staff College, Fort Leavenworth, Kansas. Research is conducted under a Memorandum of Agreement between the U.S. Army Command and General Staff College and the U.S. Army Research Institute dated 15 November 1990, subject: "Program of Research in Support of the Center for Army Leadership." The research presented in the report was initiated under a 1987 Memorandum of Agreement between the same parties.



EDGAR M. JOHNSON
Technical Director

RELATIONSHIPS OF LEADERSHIP COMPETENCE WITH LEADER AND UNIT PERFORMANCE EFFECTIVENESS

EXECUTIVE SUMMARY

Requirement:

U.S. Army doctrine has defined a set of leadership competencies to guide developmental assessment of Army leaders. The appropriateness of the competencies for leader development is indicated by their derivation and compatibility with previous research on organizational leadership. However, empirical evidence substantiating that the performance effectiveness of leaders or of their units is greater when the leaders rate higher on the competencies has been lacking. In support of the Center for Army Leadership, the U.S. Army Research Institute for the Behavioral and Social Sciences (ARI) has accumulated data on the relationships of leadership competence with the performance effectiveness of platoons and their leaders in exercises at the U.S. Army Combat Training Centers. This report integrates these data for judgments about the validity and usefulness of the competencies for leadership assessment and development.

Procedure:

This report integrates data collected for two projects on leadership and unit performance in simulated combat that took place at U.S. Army Combat Training Centers (CTCs). For one project, platoon-level observer/controllers (OCs) at the National Training Center (NTC) judged performance of the leadership competencies by platoon leaders and platoon sergeants during NTC exercises. For the other project, data on leadership competency performance were collected on the platoons in five battalions undergoing training at either the NTC or the Joint Readiness Training Center (JRTC). For this second project, platoon members (squad members through platoon leaders) rated the leadership competencies of their platoon leaders and platoon sergeants before deployment to a CTC; those platoon leaders and platoon sergeants who deployed to the JRTC were again rated by the JRTC OCs for their performance during the JRTC rotation. For both projects, doctrinal definitions provided the framework for measuring leadership competence. For both projects, the CTC OCs and/or platoon members also rated the performance of a platoon in accomplishing its missions and the overall effectiveness of the platoon leader and platoon sergeant as a leader during the CTC rotation.

Findings:

Ratings by OCs indicate that platoon leaders and platoon sergeants need some improvement in the leadership shown at the CTCs. The quality of competency performance both at the home station and during CTC exercises was consistently correlated with platoon effectiveness in mission accomplishment. Such correlations suggest that the leadership competencies, when used together, provide a meaningful basis for leader development. However, the results also showed moderate to strong correlations between ratings of the separate leadership competencies and between the competencies of the two leaders rated in a platoon. Trainers and developers need to take these overall patterns of relationships into account in planning use of the competencies in leader development.

Utilization of Findings:

These findings provide support for focusing leader development activities around the competencies identified in U.S. Army doctrine on leader development. Findings also point out considerations for use of the competencies in the assessment of leadership in complex performance settings like those at the U.S. Army Combat Training Centers.

RELATIONSHIPS OF LEADERSHIP COMPETENCE WITH LEADER AND UNIT PERFORMANCE EFFECTIVENESS

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RELATIONSHIPS OF LEADERSHIP COMPETENCE WITH LEADER AND UNIT PERFORMANCE EFFECTIVENESS

INTRODUCTION

PURPOSE OF REPORT

This report integrates findings by the U.S. Army Research Institute for the Behavioral and Social Sciences (ARI) on relationships between (1) leader performance of the leadership competencies defined in U.S. Army doctrine for leadership development and (2) leader and unit combat effectiveness in simulated combat missions (tactical training exercises) at the U.S. Army's Combat Training Centers (CTCs). It also examines implications of these findings for the validity and usefulness of the competencies in the development of leaders.

BACKGROUND

The Center for Army Leadership (CAL), the U.S. Army's proponent for leadership assessment doctrine, has identified a set of nine leadership competencies to guide the developmental assessment of Army leaders. The competencies are (Headquarters, Department of the Army, 1990): communication, supervision, teaching and counseling, soldier-team development, technical and tactical proficiency, decision making, planning, use of available systems, and professional ethics. The appropriateness of the competencies for leader development is indicated by their derivation from and compatibility with previous research on organizational leadership (Clement & Ayres, 1976). CAL requested research from ARI to further validate the competencies for combat leadership effectiveness.

In response to this request, ARI designed and conducted research to accumulate empirical data on the quality of leader performance as measured in terms of the leadership competencies. This research also linked the measures of leadership competence to leader and unit performance effectiveness in exercises at the CTCs. Such data have implications about the usefulness of the competencies for identifying strengths and weaknesses in leadership performance. Relationships of leadership competence with leader and unit effectiveness are also indicative of the validity of the competencies for leader development. That is, the competencies are essentially a doctrinal model of the leadership capabilities important to leader effectiveness. Positive relationships between leadership competence and the effectiveness of leaders and their units in simulated combat thus provide evidence that focusing leader development initiatives on the leadership competencies will have the expected benefits of improved leader and unit performance.

ARI's initial research focused on leader performance and unit effectiveness in exercises at the U.S. Army National Training Center (Twohig & Tremble, 1991). The objectives of this project were to develop and assess measures of leadership performance during combat exercises. In the NTC research, observer/controllers (OCs) at the National Training Center (NTC) made observations of the leadership performances of platoon leaders and platoon sergeants. Training and observation guides focused OCs' observations on performances that represented leadership competencies. Based on their observations, OCs judged competency performance for "performance relative to expected standards."

ARI's more recent research on determinants of small unit performance included units scheduled for training at either the NTC or the Joint Readiness Training Center (JRTC). This project concentrated on unit conditions prior to deployment that accounted for or determined subsequent quality of unit performance at the CTCs. To accomplish this, members of platoons completed questionnaires that included items for measuring the leadership competencies of platoon leaders and platoon sergeants in the pre-deployment, home station environment. For the sample that trained at the JRTC, the JRTC OCs also rated the competency performance of platoon leaders and platoon sergeants during the JRTC exercises. The determinants research thus increased the amount of data available on leadership competence during simulated combat. In addition, it also yielded data on leadership competence prior to (simulated) combat.

This report integrates findings from these two projects to provide a cumulative description of relationships between leadership competence and small unit (platoon) effectiveness at the CTCs. More specifically, it summarizes findings to describe (1) the quality of leadership performance as measured in terms of the leadership competencies and (2) the strength of relationships between leadership competence and leader and unit effectiveness in simulated combat.

METHOD

LEADERSHIP AND UNIT PERFORMANCE AT THE NTC¹

Sample

Data were collected on the combat and combat specialty platoons in the armor/mechanized infantry task forces in three rotations at the NTC. The task force organizations were such that the maximum potential sample was 33 platoons per rotation.

¹ The report by Twohig and Tremble (1991) contains a complete description of the methods and their development.

Measures of Leadership and Platoon/Unit Performance

The OC for a platoon during force-on-force missions rated the leadership competency of the platoon leader (PL) and platoon sergeant (PS). OCs made two types of competency ratings. First, OCs rated performance during each mission. These "per mission" ratings were made at the end of each mission. Second, OCs made summary ratings of performance during the rotation as a whole. These "overall rotation" ratings were made at the end of the rotation after a platoon had completed all missions. OCs used a scale describing four levels of "performance relative to standard" to rate performance both per mission and for the overall rotation. The four performance levels were "exceeds standard", "meets standard", "below standard", and "far below standard".

Per mission, OCs rated the competencies of "planning", "communication", "supervision", "soldier/team development", and "initiative". In the current doctrinal description, "initiative" is a component of other competencies as opposed to a separate competency. Overall rotation ratings were made of the competencies rated per mission plus several additional competencies. For comparability with the determinants data, the additional competencies covered in this report are "decision making", "teaching-counseling", "technical-tactical proficiency" and "motivation of others". The latter is now a component of "soldier-team development".²

Competency ratings were assigned values of 1 - 4, with higher values given to more favorable ratings. For each PL and PS rated, a per mission score for each competency was computed as the average rating of the competency in the missions that the competency was rated. These averages per competency were again averaged to compute a summary score of "per mission leadership competence". A summary "overall leadership competence" score was also computed for each PL and PS as the average of the competency ratings made for the overall rotation.

Per mission, OCs also responded to items that elicited ratings of the effectiveness of (1) a PL and a PS as a leader and (2) the platoon as a unit in accomplishing its mission. Leadership and unit/platoon effectiveness were rated on a scale with four alternatives labelled as "excellent", "good", "fair", and "poor". At the end of each rotation, OCs used the same scale to rate the overall effectiveness of a platoon as a unit in

² The NTC research was conducted with a competency list considerably longer than the list in FM 22-100. The test list included competencies specifically targeted on air-land battle doctrine. Thus, the list distinguished competencies like initiative, motivating, flexibility, etc.

accomplishing its missions during the rotation as a whole. The overall leadership effectiveness of a PL and PS during a rotation was rated at the end of two of the three rotations. All effectiveness ratings were scored from 1 ("poor") to 4 ("excellent"). The per mission scores for leadership effectiveness and for unit/platoon effectiveness were computed as the average of the ratings made for each mission.

DETERMINANTS OF SMALL UNIT PERFORMANCE³

In the determinants research, data were collected in battalions that, during the course of the research, trained at the NTC or JRTC. The data reported here were collected at three data collection periods. Just prior to a unit's deployment to a CTC (pre data collection), members of platoons completed questionnaires on conditions in their units. After a battalion completed its training missions, platoon OCs rated performance during the rotation. About two weeks after a rotation, platoon members responded to a short post-rotation questionnaire. These three phases yielded data on pre-rotation leadership competence, JRTC leadership competence, and unit/platoon performance effectiveness during missions at the CTC.

Sample

The sample for this report was the line and the combat specialty (scout, mortar, and anti-tank) platoons in five light infantry battalions, for a total of 60 platoons. The composition of a platoon varied somewhat by platoon type but generally consisted of the platoon leader (PL), platoon sergeant (PS), squad/section leaders (SLs), and squad members (SMs).

In the pre-rotation data collection, 54 PLs and 49 PSs responded to questionnaires. A total of 166 SLs was sampled. This number yielded an average of 2.7 SLs per platoon, with the actual number per platoon ranging from zero (in one platoon) to six (in one platoon) soldiers reporting themselves as SLs. The total pre sample of SMs was 1012. The number of SMs per platoon ranged from 9 - 28 and 3 - 18 for the line and the specialty platoons, respectively, with an overall platoon average of about 16 SMs per platoon.

Mission plans allowed research participation by the OCs at the JRTC only. OCs ratings were thus obtained on 23 of the 24 target platoons in the two battalions that trained at the JRTC.

³ Tremble & Alderks (1991) provided a more complete description of the data collection in the small units determinants project.

Members of 58 platoons, who had trained with their unit at the JRTC or NTC, responded to the post-rotation questionnaire. Sampling plans and respondent loss produced some variation in the number and types of platoon members sampled. Questionnaires were obtained from 49 PLs and 41 PSs. An average of about two SLs was obtained in each of 50 platoons. SMs were sampled in 32 platoons, with an average of about four SMs per platoon. The company commanders (CCs) of 14 of the potentially 20 companies also responded to post rotation questionnaires. These CCs provided ratings of 42 of the sampled platoons.

JRTC Leadership Performance

The JRTC platoon OCs completed questionnaires at the end of a rotation that yielded ratings of the leadership competencies of the PLs and PSs that they had observed. The competencies rated were planning, soldier-team development, communication, supervision, and initiative. As shown in Appendix A, a PL and PS was rated separately on each competency for "how well" the leader had performed the competency during the "combat operations" in a rotation. Ratings were made separately for offensive and defensive operations on a four-alternative scale. The alternatives were labelled "excellent", "good", "fair", and "poor". An alternative of "can't rate" was also provided. Since they were made at the end of a rotation, the JRTC ratings were "overall rotation" ratings of competency performance (as opposed to "per mission" ratings).

Ratings were assigned values ranging from 1 ("poor") to 4 ("excellent"). For each PL and PS, a score was then computed for each competency by averaging ratings of the competency in offensive and defensive missions. These scores for the separate competencies were again averaged to form an overall leadership competence score for each leader.

The OC instrument also included an item for rating how often a PL and PS had been observed to be "an effective leader". These leadership effectiveness ratings were made using a five-alternative scale labelled (and scaled) as follows: "almost always" (5), "usually" (4), "sometimes" (3), "not usually" (2), and "almost never" (1). A "can't rate" alternative was also provided.

Home Station Leadership Performance

Platoon members rated their leaders for how well they performed tasks selected to reflect the following leadership competencies: planning, communication, supervision teaching-training, initiative, and two aspects of soldier-team development. The two aspects of the latter were team development and soldier motivation. As described elsewhere (Tremble & Alderks, 1991), a team of ARI researchers had selected the tasks

(see Appendix B) for their fit with the competency definitions and from research indicating that the tasks were performed by leaders in the positions rated. Platoon members rated a leader's task performance on a 5-point scale, with alternatives labelled "best of all", "excellent", "good", "fair", and "poor".

Different types of platoon members rated their PL and PS to minimize questionnaire length. PLs were rated by their PSs and SLs. PSs were rated by SMS, SLs, and PLs. Most of the tasks rated for the PL and PS were the same for all raters. However, there was some variation in the tasks rated to account for differences both in the leadership requirements of PLs and PSs and in the likely observational opportunities of the raters (see Appendix B).

Task ratings were scaled from 1 to 5, with higher values for more favorable ratings. For each PL and PS, a scale score for each competency was computed as the average rating of the tasks representing the competency for the leader. Separately for the SMS and for the SLs in a platoon, a platoon-level score for each competency of each PL and PS was then computed by averaging the competency scores of the SMS or SLs in the platoon. Finally, the ratings by PLs and PSs and the platoon-level scores by SMS and SLs were used to form, for each type of rater, an overall home station leadership competence score. The overall leadership competence score of a PL or PS was calculated as the average of the rater's separate competency scores for the leader.⁴

CTC Unit Performance

The OC measure of platoon performance was structured around the types of missions/operations most frequently trained at a CTC: movement to contact, hasty attack, deliberate attack, raid, ambush, reconnaissance and security, defend, and retrograde. For each of those missions, the JRTC platoon OCs rated the performance of their platoons in the three phases of a combat operation: planning, preparation, and execution. Performance was rated on a four-level scale as follows: "trained", "needs a little training", "needs a lot of training", and "untrained".

⁴ Tremble and Alderks (1991) has additional information on the properties of the scales formed to measure the separate competencies. Only two scales had alpha coefficients below .80, and the alpha coefficients for even those two scales were .74 or higher. For each leader rated by each platoon member, correlations between ratings of the competencies were high (correlations of .68 to .95) with very few exceptions. The overall home station leadership competence scores were computed for the analyses in this report.

A fifth rating option of "not observed" was provided for OCs unable to rate all or some phase of a mission.

The post-rotation questionnaire items used by unit members (SM through CC) to rate platoon performance were identical to those completed by OCs with one major exception. Rather than rating each mission per phase, unit members made one overall rating for each mission.

Mission ratings were scored from 1 to 4, with higher values assigned to more favorable ratings. Three separate measures were developed from these ratings, one for the ratings of each of the OCs, the CCs, and the platoon members. Each measure was computed as the average of the ratings of performance on the missions that were rated for a platoon.

For the OC measure, a rating for each mission type was first computed as the average of the ratings of the three phases for the mission. These averages per mission were then again averaged to serve as the OC measure.

CCs rated their platoons for their overall performance of a mission (as opposed to mission phases). The CC performance measure was computed as the average rating of the missions rated for a platoon.

For each platoon, the platoon-member measure of performance (PLT) was computed on the basis of the ratings of all platoon members sampled for the platoon and, thus, included variation associated with differences in the samples obtained per platoon. The PLT measure was formed by first computing for each platoon member the average rating of the missions rated by the platoon member. For each platoon, the average of the ratings of each of the SMs and the SLs in the platoon were then computed. The final PLT measure was computed as the average of the ratings made by the PL, PS, the average SL, and the average SM. Thus, the PLT measure equally weighted the ratings of each type of platoon member that rated a platoon.⁵

⁵ Tremble and Alderks (1991) more thoroughly describe the development and statistical properties of the performance measures, to include correlations among ratings by each type of platoon member and the PLT, CC, and OC measures. The OC, CC, and PLT measures were significantly correlated ($p \leq .05$); however, the magnitudes of these correlations were at best moderate (.34 to .50) so that analyses were conducted and are reported separately for each measure.

FINDINGS

LEADERSHIP PERFORMANCE

Quality of Leadership

CTC Finding--The OCs' ratings indicated that PLs and PSs needed some improvement in the leadership shown in exercises at the NTC and JRTC.

Basis for finding. The NTC OCs used a four-alternative scale to rate the leadership competencies, and the category "meets standards" was assigned a value of 3. Table 1 presents the mean per mission and the mean overall rotation ratings obtained. All means--for each competency and for both the PLs and PSs--were about 2.5. Such ratings suggest that on average, PLs and PSs were somewhat "below standard" in their performance of the leadership competencies at the NTC.

Table 2 contains the average overall rotation ratings by the JRTC OCs of the leadership competencies. The JRTC OCs used a five-alternative scaled score from one ("poor") to five ("excellent"). Mean ratings ranged from 1.6 to 2.3, with most averages at about 2.0. Such averages indicate judgments that leadership competency performance was "fair", as opposed to either a more favorable (e.g., "good") or less favorable ("poor") judgment. This judgment characterized the ratings of the leadership of both PLs and PSs.

All competencies at the NTC or at the JRTC received a similar rating. It is noteworthy, however, that the competency with the relatively highest rating and the competency with the relatively lowest rating were the same at the two CTCs. These were soldier-team development (highest) and planning (lowest).

Home Station Finding--Platoon members favorably rated the home station performance of the leadership competencies by their PLs and PSs.

Basis for finding. Table 3 summarizes platoon members' ratings of the leadership competencies of their PLs and PSs at home station prior to a CTC rotation. The average ratings of all competencies ranged from 3.2 - 3.4 on the five-point scale used by platoon members (where 1 = "poor", 3 = "good", and 5 = "best of all"). Such averages indicate ratings of somewhat better than "good" for both PLs and PSs. PLs' ratings of PSs and PSs' ratings of PLs were even higher.

These home station ratings by platoon members appear considerably higher than those made by OCs at the NTC or JRTC. However, the ratings by SMs, SLs, and (to a lesser extent) PLs

Table 1

Observer/Controller Ratings of Leadership Competency Performance at the NTC

<u>Leadership Competency</u>	<u>Platoon Leader</u>		<u>Platoon Sergeant</u>	
	<u>Per Mission^a</u>	<u>Overall Rotation^b</u>	<u>Per Mission^a</u>	<u>Overall Rotation^b</u>
Planning	2.3(.5)	2.1(.7)	2.2(.5)	2.2(.7)
Communication	2.5(.5)	2.4(.7)	2.5(.5)	2.4(.7)
Supervision	2.4(.5)	2.2(.8)	2.4(.5)	2.3(.8)
Initiative	2.5(.6)	2.3(.8)	2.4(.6)	2.3(.8)
Soldier/Team Development	2.6(.6)	2.5(.8)	2.6(.6)	2.6(.8)
Decision Making	_____	2.3(.8)	_____	2.3(.8)
Teaching/Counseling	_____	2.2(.8)	_____	2.3(.8)
Teaching/Tactical	_____	2.3(.7)	_____	2.3(.8)
Motivate Subordinates	_____	2.6(.9)	_____	2.6(.9)

Note. Means (and, in parentheses, standard deviations) of ratings of competency performance during each mission (per mission) or during the rotation as a whole (overall rotation).

^a N = 79-81 for platoon leaders and 71-76 for platoon sergeants.

^b N = 82-85 except for motivate subordinates for which N was 29 and 28 for platoon leaders and platoon sergeants, respectively.

Table 2

Observer/Controller Ratings of Leadership Competency Performance at the JRTC.

<u>Leadership Competency</u>	<u>Mean Rating</u>	
	<u>Platoon Leader</u>	<u>Platoon Sergeant</u>
Planning	1.6 (.60)	1.8 (.60)
Communication	2.0 (.53)	2.0 (.67)
Supervision	1.9 (.84)	1.8 (.84)
Initiative	2.0 (.84)	2.0 (.82)
Soldier/Team Development	2.3 (.72)	2.0 (.72)

Note. Standard deviations in parentheses. N = 20 for both platoon leaders and platoon sergeants.

Table 3

Ratings of Leadership Competency Performance at Home Station

Leadership Competency	Platoon Leader Rated by		Platoon Sergeant Rated by		
	Squad Leaders (N=58-59)	Platoon Sergeant (N=46-48)	Squad Members (N=60)	Squad Leaders (N=59)	Platoon Leader (N=46-50)
Planning	3.4 (.72)	3.7 (.83)	3.3 (.73)	3.3 (.90)	3.6 (1.0)
Communication	3.3 (.80)	3.8 (.81)	3.2 (.76)	3.2 (.95)	3.6 (1.0)
Supervision	3.3 (.76)	3.7 (.77)	3.4 (.64)	3.4 (.69)	3.5 (1.1)
Initiative	3.3 (.87)	3.9 (.81)	3.3 (.77)	3.3 (.88)	3.7 (1.3)
Motivating Subordinates	3.3 (.80)	3.6 (.78)	3.2 (.75)	3.4 (.86)	3.6 (1.3)
Team Development	3.2 (.76)	3.7 (.78)	3.2 (.75)	3.4 (.77)	_____
Teaching/Training	3.3 (.84)	3.7 (.87)	3.2 (.74)	3.3 (.93)	3.4 (1.2)

Note. Mean ratings (and standard deviations in parentheses) across platoons by the squad members, the squad leaders, platoon sergeant, or platoon leader in a platoon.

were just above the middle of the rating scale used; that was also where the NTC OCs' average ratings were generally located (2.5 on a four-point scale).

Independence of Leadership Competencies

CTC Finding--A PL's (or PS's) rating on one leadership competency was strongly related to the rating received on the other competencies.

Basis for finding. Table 4 summarizes correlations that indicate the strength of association between the rated CTC performance of the separate competencies for a PL or PS. The first column presents average correlations between the OCs' ratings of the separate competencies of PLs. The first row of the column contains the average correlation between the NTC per mission ratings, and second row gives the average correlation between the NTC overall rotation ratings. The third row has the average correlation between the JRTC overall rotation ratings. The second column contains the same information computed for correlations between ratings of PSs' performance.

The average correlations between the overall rotation ratings (at each CTC) were relatively high for both PLs and PSs, that is, average correlations of .56 to .68. Correlations between the NTC per mission ratings were even higher, with an average per mission correlation of about .75. All correlations on which the averages were based were statistically significant ($p \leq .05$). Such correlations indicate that, for both the PL and PS, ratings of the separate leadership competencies at the CTCs were highly associated with each other.

CTC Finding--OCs' ratings of the competency performance of the PL and the PS in a platoon were highly associated.

Basis for finding. The third column in Table 4 summarizes correlations between the rated performance of the same competency by the PL and PS in a platoon. Average correlations between the overall mission competency ratings (second and third rows) and between the per mission ratings at the NTC (first row) were high. In fact, average correlations between the two leaders were as high as the comparable average correlations between performance ratings of different competencies by the same leader (that is, first and second columns). This indicates that the ratings of the two leaders in a platoon were closely associated, indeed as closely associated as ratings of the different competencies of the same leader. This pattern questions whether the CTC competency ratings reflected performance indicators unique to each leader or whether some other factor drove the ratings. Results presented later bear on these questions.

Table 4

Average Correlations between Observer/Controller Ratings of the Leadership Competencies at the NTC and JRTC

Competency Rating	Correlations Between Ratings of			Same Competency by PL&PS
	Competencies of Platoon Leaders (PLs)	Competencies of Platoon Sergeants (PSs)		
NTC ^a				
Per Mission	.75	.74		.85
Overall Rotation	.60	.56		.65
JRTC ^b				
Overall Rotation	.57	.68		.67

Note. Entries are means of the correlations between OC ratings of the performance of (1) the different competencies by either the PL (first column) or by the PS (second column) and (2) the same competency by the PL and PS.

^a Correlations between each competency were statistically significant ($p \leq .05$) and are reported in Twohig and Tremble (1991), Tables 5 and 6.

^b Correlations between the separate competency ratings for same leader ranged from .40 to .86. Correlations between ratings of same competency by PL and PS ranged from .53 to .81. All correlations were statistically significant ($p \leq .05$).

Home Station Finding--Like at the CTCs, home station ratings of the performance of any single competency by a PL or PS were associated with ratings of the other competencies. Home stations competencies of the PL and PS in a platoon were moderately associated.

Basis for finding. Table 5 presents average correlations between the home station ratings of competency performance. The averages were computed from the tables in Appendix C.

The first and second columns in Table 5 contain average correlations between ratings of the competencies of the PL and PS, respectively. The third column has average correlations between ratings of the competencies of the PL and PS in a platoon. Thus, the first and second columns indicate correlations between ratings of the performance of the same leader (either PL or PS), and the third column summarizes correlations between ratings of different leaders (the PL and PS in a platoon). The rows in Table 5 sort the averages by whether the correlations were between ratings of the same competency or between ratings of different competencies. The first and third rows are averages of correlations between ratings of the same competency, and the second and fourth rows are averages for different competencies. The rows also sort the averages in a column by whether the correlations averaged were based on ratings made by the same rater (first and second rows) or different raters (third and fourth rows).

Comparisons of the correlations in Table 5 provide evidence on three aspects of independence. One is the independence of the ratings of the different competencies, that is, the extent to which ratings of different competencies were associated or correlated (comparisons of correlations between ratings of the same competencies--first and third rows--with correlations between ratings of different competencies--second and fourth rows). A second is the extent of association between ratings of the performance of the two leaders (PL and PS) in a platoon (comparisons of correlations internal to a leader--first and third columns--with correlations of ratings of the competencies of the two different leaders--third column). The third aspect concerns the correspondence of the ratings made by different raters (comparisons of correlations between ratings by the same rater--first and second rows--with correlations between ratings by different raters--third and fourth rows).

Ratings of the different competencies were highly associated (Table 5). That is, correlations internal to a leader and by the same rater were extremely high (an average of .84 or higher). Moreover, average correlations of ratings of a leader by different raters were practically identical (.35) for ratings of the same competency and for ratings of different competencies.

Table 5

Average Correlations between Home Station Leadership Ratings for Combinations of Same or Different Rater, Leadership Competency, and Leader Rated

Rater	Competencies Correlated	Leader Rated		
		Platoon Leader (PL)	Platoon Sergeant (PS)	PL versus PS
Same	Same	N/A	N/A	.36 ^e
	Different	.84 ^a	.90 ^b	.35 ^e
Different	Same	.35 ^c	.36 ^d	.12 ^f
	Different	.35 ^c	.34 ^d	.13 ^f

Note. Entries are means of correlations between ratings of home station leadership performance for all available combinations of (1) same or different rater, (2) same or different competency, and (3) same or different leader rated (i.e., PL and/or PS). PL was rated by the squad leaders and PS in a platoon. PS was rated by the squad members, squad leaders, and PL in a platoon. N/A = Ratings were not available for correlation.

- ^a Computed from correlations in Table C-1.
- ^b Computed from correlations in Tables C-2 and C-3.
- ^c Computed from correlations in Table C-4.
- ^d Computed from Correlations in Tables C-5, C6, and C-7.
- ^e Computed from correlations in Table C-8.
- ^f Computed from correlations in Tables C-9 through C-13.

SLs rated both their PLs and PSs. Correlations between their ratings of the PLs and their ratings of PSs were moderately strong and statistically significant (Table C-8). As Table 5 suggests, however, correlations between ratings of the PL and ratings of the PS were generally nonsignificant when the ratings had been made by different members of the platoon.

These patterns altogether suggest that the competencies as measured by the home station questionnaire were not independent. Rather, the perceived quality of the performance of one competency was associated with the perceived quality of the performance of the other competencies. Further, the leadership competence of the two leaders was linked so that the perceived quality of the performance of one leader was associated with the perceived quality of the performance of the other leader.

Different raters' ratings of the same leader were also associated. The average correlation between different raters' ratings of a leader was about .35, and most of these correlations were statistically significant (see Tables C-4 through C-7). Within this pattern, however, correlations were generally higher and more frequently significant for raters in successive positions in the organizational hierarchy of a platoon. For example, the number of statistically significant correlations and the average correlation magnitude varied as follows for each pair of raters of the PS: (1) for ratings by SMs and SLs, all 49 correlations statistically significant, with an average correlation of .51; (2) for ratings by PLs and SLs, 33 of the 42 correlations statistically significant, with an average correlation of .28; and (3) for ratings by PLs and SMs, 18 of the 42 correlations statistically significant, with an average correlation of .22.

Factor analyses of ratings of the leadership tasks used to measure the leadership competencies also suggested that the competencies were closely associated. As reported more thoroughly elsewhere (Tremble & Alderks, 1991), five separate factor analyses (principal components analyses with varimax rotation) were performed on the pre-rotation ratings of either the PLs' performance or the PSs' performance. For ratings of PSs, a single factor was obtained. This suggests that PSs' ratings reflected one, common leadership dimension. Two common factors were found in the analyses of ratings of PLs. One PL factor was generally defined by the items measuring planning, supervision, initiative, and elements of communication. The other factor was defined by items measuring motivating subordinates, teaching-training, team development, and elements of communication. These two factors suggest that ratings of PLs reflected dimensions related to: (1) how well they performed assigned tasks/missions and (2) how well they developed their soldiers as individuals and as groups/teams.

LEADERSHIP COMPETENCE AND COMBAT EFFECTIVENESS

As just presented, ratings of the separate competencies of a PL or a PS were highly correlated, and this was obtained for both the ratings by OCs and the home station ratings by platoon members. Given this pattern, the overall leadership competence scores (computed as the average of the ratings of the separate leadership competencies) were used to address the issues of the relationships of leadership competence with leader and unit effectiveness.

Leadership Competence and Leadership Effectiveness

CTC Finding--For both PLs and PSs, ratings of leadership competence and of leadership effectiveness in CTC exercises were strongly associated; moreover, the competence of one leader tended to be associated with the effectiveness of the other leader.

Basis for finding. Table 6 contains correlations between OCs' ratings of leader effectiveness at the CTCs and the measures of leadership competence computed from their ratings of the separate competencies.

The correlations in Table 6 indicate that at both CTCs, the leadership competence of a PL or PS was strongly and significantly correlated with the rated effectiveness of the same leader. At the NTC, the leadership competence of one leader was also significantly associated with the effectiveness of the other leader. However, the NTC correlations internal to a leader were significantly larger than the correlations between the two leaders (Twohig & Tremble, 1991). At the JRTC, the correlations between the competence of one leader and the effectiveness of the other leader were positive but not statistically significant given sample sizes.

These results provide support for the premise that the leadership competencies are important for leadership effectiveness. They also have implications for results presented earlier. That is, earlier results indicated that correlations between the competencies of one leader at a CTC were no stronger than correlations between the competencies of the two leaders (see Table 4). Such a pattern questions whether the competency ratings had been based on the leadership performance of the leader rated or whether some other factor had been the basis of the ratings. The stronger correlations internal to the same leader provide evidence that despite any measurement error in the competency ratings, an OC's ratings of a leader's competency was linked to the perceived effectiveness of the particular leader under assessment by the OC.

Table 6

Correlations between CTC Leadership Competence and CTC Leadership Effectiveness: NTC and JRTC Observer/Controller Ratings

<u>Leadership Competence</u>	<u>Leadership Effectiveness</u>			
	<u>Platoon Leader</u>		<u>Platoon Sergeant</u>	
	<u>Per Mission</u>	<u>Overall Rotation</u>	<u>Per Mission</u>	<u>Overall Rotation</u>
<u>NTC</u>				
<u>Platoon Leader</u>				
Per Mission	.83 (75)	.75 (46)	.60 (71)	.44 (46)
Overall Rotation	.84 (96)	.75 (55)	.49 (66)	.40 (55)
<u>Platoon Sergeant</u>				
Per Mission	.63 (67)	.50 (69)	.77 (67)	.58 (42)
Overall Rotation	.42 (42)	.41 (33)	.74 (65)	.76 (53)
<u>JRTC</u>				
<u>Platoon Leader</u>	—	.79 (20)	—	.30 (18)
<u>Platoon Sergeant</u>	—	.42 (20)	—	.79 (18)

Note. Sample per correlation in parentheses. All correlations were statistically significant ($p \leq .05$) except for the two JRTC correlations of .42 and .30.

Home Station Finding-- Ratings of leadership competence were not reliably related to CTC leadership effectiveness.

Table 7 presents correlations between home station leadership competence (averages of the competency ratings) and the JRTC OCs' ratings of leadership competence and effectiveness in JRTC exercises. The correlations in Table 7 were generally positive. However, only one correlation was statistically significant. There was also no apparent difference in the magnitudes of the correlations internal to a leader and the correlations between the two leaders.

Leadership Competence and Unit Performance

CTC Finding--With greater leadership competence in missions at the CTCs, there were higher ratings of platoon mission effectiveness.

Basis for finding. Table 8 presents correlations between OCs' ratings of leadership competence and unit/platoon effectiveness. All correlations were high and statistically significant. These correlations indicate a strong relationship between perceptions of unit effectiveness and leadership competence. The magnitudes of the correlations were such that they raise suspicions about the independence of the OCs' ratings. Together with the strong correlations between ratings of PL performance and PS performance, they suggest that all correlations between OCs' ratings were inflated by the halo of some factor common to the ratings (such as the same OC for a platoon as the rater of both leadership competence and unit performance).

Home Station Finding--There was a consistent trend such that with greater home station leadership competence, there were higher ratings of platoon performance effectiveness at the CTCs.

Basis for finding. Table 9 contains correlations between home station leadership competence and ratings of unit/platoon performance by OCs, CCs, and platoon members (PLT). Correlations are presented separately for each type of platoon member that rated the competence of a PL or PS. Thus, unlike the CTC correlations in Table 8, the correlations do not reflect ratings made exclusively by the same raters. This applies even to the PLT measure of platoon performance since it was an average of the ratings of all types of platoon members having rated their platoon.

Of the five correlations with ratings by platoon members (PLT), five were positive and statistically significant ($p \leq$

Table 7

Correlations between Home Station Leadership Competence and CTC (JRTC) Leadership Competence and Effectiveness

Leader	Rater	CTC Ratings of					
		Platoon Leader		Platoon Sergeant		Platoon Sergeant	
		Competence	Effectiveness	Competence	Effectiveness	Competence	Effectiveness
Platoon Leader	Squad Leader	.15 (20)	.02 (20)	.20 (20)	.09 (18)		
	Platoon Sergeant	.29 (15)	.14 (15)	.29 (15)	.21 (14)		
Platoon Sergeant	Squad Member	.36 (20)	.45* (20)	.32 (20)	.34 (18)		
	Squad Leader	.31 (20)	.13 (20)	.27 (20)	.22 (18)		
	Platoon Leader	.01 (17)	-.12 (17)	.22 (17)	.40 (16)		

Note. Entries are correlations (and sample per correlation in parentheses) between average home station ratings of a platoon leader's or platoon sergeant's competencies and OC average ratings of leadership competence and leadership effectiveness at the JRTC.

* $P \leq .05$

Table 8

Correlations between CTC Leadership Competence and CTC Unit/
Platoon Effectiveness: NTC and JRTC Observer/Controller Ratings

<u>Leadership Competence</u>	<u>Platoon Effectiveness</u>	
	<u>Per Mission</u>	<u>Overall Rotation</u>
<u>NTC</u>		
<u>Platoon Leader</u>		
Per Mission	.61 (57)	.63 (70)
Overall Rotation	.59 (51)	.74 (83)
<u>Platoon Sergeant</u>		
Per Mission	.59 (52)	.56 (63)
Overall Rotation	.66 (51)	.66 (81)
<u>JRTC</u>		
<u>Platoon Leader</u>	—	.71 (20)
<u>Platoon Sergeant</u>	—	.75 (20)

Note. Sample per correlation in parentheses. All correlations were statistically significant ($p \leq .05$).

Table 9

Correlations between Home Station Leadership Competence and CTC Unit/Platoon Effectiveness

<u>Home Station Competence</u>		<u>CTC Effectiveness Ratings by</u>		
<u>Leader</u>	<u>Rater</u>	<u>OC</u>	<u>Company Commander</u>	<u>Platoon Members</u>
Platoon Leader				
	Squad Leader	.28* (23)	.41** (41)	.37** (57)
	Platoon Sergeant	.32* (18)	.28* (33)	.26** (47)
Platoon Sergeant				
	Squad Member	.44** (23)	.17 (42)	.37** (58)
	Squad Leader	.33* (23)	.37** (41)	.50** .57
	Platoon Leader	-.04 (20)	.24* (38)	.15 (52)

Note. Entries are correlations (and sample per correlation in parentheses) between average home station ratings of a platoon leader's or platoon sergeant's competencies and ratings of platoon effectiveness at a CTC (JRTC only for OCs).

* $P \leq .10$

** $P \leq .05$

.05). Only three of the 10 correlations with platoon performance ratings by CCs and OCs were statistically significant given sample sizes; however, another five approached significance ($p \leq .10$). Thus, the correlations in Table 9 suggest a consistent tendency for positive associations between home station leadership competence and CTC platoon performance.

Altogether, the correlations in Table 9 correct somewhat for the possible rater bias in OCs' ratings and, thus, strengthen the evidence of a relationship between leadership competence and unit effectiveness. They also suggest the importance of leadership competence prior to a unit's deployment for combat performance.

DISCUSSION

This report summarizes findings on leadership competencies and on their relationships with leader and unit performance effectiveness in combat simulations at the Army's CTCs. Findings indicate a need for improvement and the potential payoffs from focusing leader development practices on the leadership competencies. Use of the competencies needs to take into account the strong relationships among the performance variables examined: the separate competencies of a leader, the competencies of different leaders in a unit, and leadership competence and unit performance.

NEED FOR IMPROVEMENT

There is a need for some improvement in the leadership skills of PLs and PSs. Average ratings of CTC leadership performance indicated performance "below standard" at the NTC and only "fair" at the JRTC. The home station ratings were more favorably appearing, but they also indicated room for improvement. The ratings of SMS and SLs, in particular, fell at the middle of the rating scale.

The trend for more favorable ratings by platoon members in higher positions (that is, PLs and PSs) seems to argue against a need for improvement in leadership skills. This trend is a frequent research finding and is often attributed to a need for positive self presentation. However, this trend may have other implications. It could indicate, for example, that there are differences in the leadership requirements for home station and combat and that platoon-level leaders are actually more skilled in their home station requirements. This interpretation would fit with the nonsignificant correlations between home station leadership competence and CTC leadership effectiveness.

Any difference in the CTC and home station competency requirements would underscore the need for training experiences, like those at the CTCs, that exercise the leadership skills

required for combat. Differences in requirements would also make it important to understand the performance standards needed for both garrison and combat leadership since the data here suggested that home station leadership competence as well as CTC leadership competence was consistently associated with platoon unit effectiveness.

VALIDITY OF THE COMPETENCIES FOR LEADER DEVELOPMENT

The leadership competencies provide a meaningful foundation for focusing leader development. That is, at the CTCs, ratings of the competencies were highly associated with leadership effectiveness and with overall unit performance effectiveness. There was also a consistent trend for positive correlations between home station leadership competence and platoon performance effectiveness. Such findings (especially those based on OC ratings alone) are correlational and, therefore, are not necessarily evidence of cause-effect relationships. The findings nevertheless fit with and confirm U.S. Army doctrine about the importance of leadership for combat effectiveness. Given this fit, the findings support that the competencies together meaningfully define the types of leadership skills required for combat effectiveness.

Two sets of findings appear to contradict this conclusion about the validity of the leadership competencies. These were the findings indicating (1) nonsignificant relationships between home station leadership competence and CTC leadership and (2) strong patterns of interconnectedness among factors rated by the CTC OCs.

The correlations of home station leadership competence with CTC leadership competence and effectiveness were nonsignificant. The nonsignificant relationships do not appear to support the meaningfulness of the competencies for leader development. However, this may not be the appropriate inference. That is, the consistent associations between home station leadership competence and platoon CTC performance suggest that the quality of unit deployment performance did somehow reflect the quality of leadership competence during the earlier train-up period. Given this, the appropriate inference may be that there is no simple, direct relationship between the quality of leadership performance in the home station and combat settings. This interpretation points again to the possibility discussed earlier of differences between the home station and CTC settings in the leadership skills required for leadership effectiveness.

OCs' ratings showed patterns of strong association among all of the following: the competency performance of PLs, the competency performance of PSSs, and mission performance of platoons. The magnitudes of the correlations were high enough to suggest that all ratings represented the halo of a single factor,

as opposed to the separate factors as intended. If accepted, this suggestion would imply that the data have no meaning for leadership or for leader development.

Other findings suggest that while correlations between OCs' ratings may have been inflated, there was nevertheless a meaningful relationship between rated unit performance and leadership competence. Most suggestive were the significant correlations between home station leadership competence and platoon CTC performance. Those correlations were not as highly contaminated by the method biases inherent to the correlations between ratings by OCs.⁶ Also, correlations between OCs' ratings of leadership competence and leadership effectiveness were significantly stronger when based on ratings of the same leader. The stronger correlations within a leader, as opposed to between leaders, are evidence of the intended differentiation in the OCs' ratings. Such differentiation argues against an interpretation that all ratings by the OCs represented only one factor.

USE OF THE COMPETENCIES IN LEADER DEVELOPMENT

The findings generally suggest that training and development focused on leadership competence will produce better prepared and better performing units. Use of the competencies in the present framework, however, needs to take into account the strong patterns of interconnectedness among the leadership factors measured in this research.

Correlations between the competency ratings were, at the lowest, moderately high. This was obtained for ratings produced by two different measurement procedures: direct ratings of a competency (the CTC procedure) and ratings of tasks that represented a competency (the home station procedure). Strong relationships among separate components of leadership do not argue against use of the total set of competencies for leadership development. However, the strong interconnectedness among the competency ratings did not allow this research to identify differences in the contributions of the competencies to

⁶ CTC leadership and platoon performance were made concurrently and by the same rater. The home station leadership ratings were made 2 - 4 weeks before a CTC rotation. Platoon members rated platoon performance no sooner than two weeks after a rotation. Thus, the ratings were not made concurrently. In addition, the PLT measure was a composite score formed by averaging the ratings of all types of platoon members that rated their platoon. Thus, in the findings reported here, there was not total overlap in the raters of home station leadership and in the raters included in the PLT measure of CTC platoon performance.

leadership and unit effectiveness. Also, measures that differentiate performance levels are a requirement for diagnosing problem areas for development. As reported earlier, factor analyses indicated that for ratings of PLs⁷, two dimensions were reflected in ratings of the home station, pre-rotation leadership competencies. ARI research (Steinberg, 1991) has used analytic techniques other than factor analysis to examine the dimensions reflected in platoon members' ratings.

Twohig & Tremble (1991) sought to account for the NTC patterns of (1) strong association--or lack of differentiation--in the ratings of competency performance and platoon unit performance and (2) differentiation in the leadership competence-effectiveness relationships. They reasoned that these patterns are explained by a judgment process based on perceptions of unit effectiveness and of leaders' contributions to unit effectiveness. That is, rather than judging the performance of leaders as individuals, OCs based their judgments on perceptions of the quality of the organizational functions or processes that the competencies represent or contribute to and that are important to unit effectiveness. Within perceptions of function/process effectiveness, OCs then assessed PLs and PSs on observations of how the two leaders in their separate roles had contributed to the processes. To the extent that the processes are ingredients of unit effectiveness, perceptions of unit effectiveness would drive the ratings of all competencies and result in strong linkages among ratings of platoon unit effectiveness, the different competencies, and the competencies of the two leaders. Judgments based on the perceived quality of the PLs' and PSs' role contributions to the processes would also yield differentiation in the correlations between leadership competence and the leadership effectiveness of PLs and PSs.

This explanation suggests an approach for teasing out assessments of the leadership competencies of individual leaders. This approach would build on linkages in perceptions of leadership and unit performance. That is, the assessment approach would be based on specification of the organizational functions that are both important to unit performance effectiveness and that heavily involve effective leadership. The roles of leaders in accomplishing these functions would then be delineated. Leaders would actually be assessed on performances indicating effectiveness in accomplishing expected roles. In this approach, the competency framework would be the basis for identifying the performance factors actually assessed.

⁷ As reported by Tremble and Alderks (1991), the two factors were also found for ratings made of PSs on questionnaires administered several months before a rotation.

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APPENDIX A
JRTC MEASURE OF LEADERSHIP COMPETENCIES

During the combat operations in this rotation, how well did the Platoon Leader (PL) and the Platoon Sergeant (PSG) you observed perform the leader tasks presented next? Use this scale:

A = EXCELLENT; B = GOOD; C = FAIR; D = POOR; E = CAN'T RATE

PLANNING: Planning alternative courses of action, making needed changes in plans, making best use of resources.

OFFENSE	DEFENSE
___ PL ___ PSG	___ PL ___ PSG

SOLDIER TEAM DEVELOPMENT: Motivating soldiers, developing teamwork, delegating tasks/decision making.

OFFENSE	DEFENSE
___ PL ___ PSG	___ PL ___ PSG

COMMUNICATION: Ensuring subordinates understood orders, listening effectively/actively, giving critical information to superiors.

OFFENSE	DEFENSE
___ PL ___ PSG	___ PL ___ PSG

SUPERVISION: Specifying tasks, making checks, taking corrective action.

OFFENSE	DEFENSE
___ PL ___ PSG	___ PL ___ PSG

INITIATIVE: Taking needed actions without being told, figuring out on his own how to carry out orders/tasks.

OFFENSE	DEFENSE
___ PL ___ PSG	___ PL ___ PSG

APPENDIX B

QUESTIONNAIRE ITEMS FOR RATING
HOME STATION LEADERSHIP COMPETENCIES

	Platoon Sergeant Rated by		Platoon Leader Rated by	
	SM	SL	PL	PS
<u>Motivating Subordinates</u>				
Sets a good example.	✓	✓	✓	✓
Recognizes subordinates' accomplishments.	✓	✓	✓	✓
Holds the platoon to high standards.	✓	✓	✓	✓
Motivates subordinates to carry out the mission.	✓	✓	✓	✓
<u>Soldier Team Development</u>				
Encourages subordinates to rely on one another.	✓	✓	✓	✓
Asks for input from subordinate leaders on what should be trained.	✓	✓	✓	✓
Develops teamwork for accomplishing platoon goals.	✓	✓	✓	✓
Encourages subordinates to take initiative.	✓	✓	✓	✓
Delegates decision making to subordinates.	✓	✓	✓	✓

Note. "/s" identify the items completed by a rater when rating a platoon leader or platoon sergeant. SM = squad member. SL = squad leader. PS = platoon sergeant. PL = platoon leader.