

Technical Report 1199

**A Criterion-Related Validation Study of
the Army Core Leader Competency Model**

Jeffrey Horey
Jennifer Harvey
Pat Curtin
Heidi Keller-Glaze
Ray Morath
Caliber, An ICF International Company

Jon Fallesen
Center for Army Leadership

April 2007



**United States Army Research Institute
for the Behavioral and Social Sciences**

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BARBARA A. BLACK
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Technical review by

Robert E. Solick, U.S. Army Research Institute
Angela Karrasch, Center for Army Leadership

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Jon Fallesen
Center for Army Leadership

**Leader Development Research Unit
Stanley Halpin, Chief**

**U.S. Army Research Institute for the Behavioral and Social Sciences
2511 Jefferson Davis Highway, Arlington, Virginia 22202-3926**

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A CRITERION-RELATED VALIDATION STUDY OF THE ARMY CORE LEADER COMPETENCY MODEL

EXECUTIVE SUMMARY

Research Requirement:

In 2002, the Center for Army Leadership commissioned the Army Research Institute to conduct a systematic examination of the Army's existing depiction of leadership (Headquarters, Department of Army, 1999). This effort resulted in the development of a core leader model which is described in terms of eight competencies, 55 components, and over 200 sample actions and behaviors (Horey, Fallesen, Morath, Cronin, Cassella, Franks, & Smith, 2004). A series of research efforts were recently concluded to establish evidence of validity of the model and identify situational variations in the model. This report describes the criterion-related validation study of the model.

Procedure:

Target Army leaders were identified and predictor data in the form of subordinate ratings of Army leader behaviors and criterion data in the form of supervisory ratings of leader performance outcomes were collected for these target leaders. Included in the criterion measure was a rating of the extent to which the target leader influences certain performance criteria in an attempt to adjust ratings for this influence. Leader survey materials were developed and pilot tested at Ft. Drum and Ft. Hood. Procedures were implemented to attempt to obtain a random sample of Army leaders. Initial surveys of Army supervisors led to the identification of Army target leaders from the ranks of NCOs, Warrant officers and commissioned officers in the Active and Reserve components. Once target leaders were identified, subordinates of these leaders were then contacted to provide ratings of leader competencies and components. A total of 138 supervisors – subordinate match pairs provided ratings of target leaders retained for use in the criterion validation portion of the analyses. Analyses of competency and component item relationships to the criterion were conducted through multiple regressions and the best set of predictor items was identified. In addition to the core competencies of primary interest, two new competencies suggested by a recent review of the original core model and a set of leader behavior items used in previous research were also analyzed for their contribution in predicting the criterion.

Findings:

The results of these analyses provide support for the competencies and the components of the core leader model in predicting a criterion of leader performance. An R-squared of .48 between the best set of predictor items (used to measure/represent the competencies) and the criterion was observed. The addition of the two new competencies and the additional set of leader behavior items did not significantly improve the relationship to the criterion of the core leader items. Competency composites were highly correlated with one another ($r = .91$ to $.96$) suggesting that ratings on these competencies reflect a single leadership dimension.

Utilization and Dissemination of Findings:

While there have been many leadership competency models developed within organizations, there have been few if any attempts to validate these models against performance criteria. The findings from the current study provide empirical support for the competency-based core Army leadership model. These results indicate that the core model of competencies and components are tied to supervisory perceptions of leader performance. This effort serves not only to provide evidence of the validity of the model, but provides additional insight into leader effectiveness survey development which is applicable to multi-rater feedback systems as well as performance management dimensions that are often used for leader development and promotions. Additional guidance on application of the model and further research to better elucidate aspects of leadership are provided.

A CRITERION-RELATED VALIDATION STUDY OF THE ARMY CORE LEADER
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INTRODUCTION

Leadership is one of the most researched and complex psychological constructs in the behavioral science realm. Numerous theories, popular literature, websites, assessments, and competency models are dedicated to it (Northouse, 2004; Hogan & Kaiser, 2005). Leadership may be measured using multi-rater assessment instruments, developed through a wide variety of educational programs, and rewarded based on pay for performance yet depictions of what makes for good leadership vary widely in structure and content. Although leadership theory and research over the past century have evolved through power, trait, process and style themes arguably no single comprehensive model of leadership effectiveness has emerged (Chemers, 2000). In more recent times organizations ranging from religious to health care to the military services have invested considerable resources developing their own leadership competency models. Competencies have been promoted as the building blocks necessary for success in leadership positions linking the knowledge, skills, and other attributes necessary to lead effectively with behavioral outcomes. Yet despite the widespread practice of competency-modeling in the public and private sectors, there is a paucity of information regarding the validity of these models for predicting organizational outcomes. This report describes a unique effort to provide evidence of the relationship between a competency-based model of U.S. Army leadership and the criteria and outcomes of leader performance.

Horey and Fallesen (2003) found that U.S. military leadership models vary significantly in their coverage of leadership constructs. Clement and Ayres (1976) and Steinberg & Leaman (1990) conducted empirical studies to identify Army leadership dimensions; however, neither effort established the relationship of these dimensions to leader effectiveness outcomes. The present study is an attempt to link leadership behaviors as defined by a competency model with these outcomes in the form of individual and unit performance.

It is important for organizations to describe leadership using dimensions that contribute to organizational success, and perhaps nowhere is this concept more critical than in the widely and critically deployed U.S. Army. Many components of leader effectiveness, such as written and oral communication skills, are universally included in leadership models while others, such as managerial skills, are not. Despite the great emphasis placed on leadership competency modeling, both the effectiveness of leadership in organizations (Hambrick & Mason, 1984; Lieberman & O'Conner, 1972; Pfeffer & Salancik, 1978; Thomas, 1988) and the utility of competency modeling (Conger & Ready, 2004; Lievens, Sanchez, & De Corte, 2004; Reed, Bullis, Collins, & Papparoni, 2004) have been questioned. Competencies have been challenged as being arbitrarily derived, overly complex and detailed, and not providing meaningful structure for application (Reed, et al, 2004). This research addresses the potential value of a competency-based model of leadership.

In 2002, the Center for Army Leadership commissioned the Army Research Institute to conduct a systematic examination of the Army's existing depiction of leadership (Headquarters, Department of Army, 1999). This effort resulted in the development of a core leader model which is described in terms of eight competencies, 55 components, and over 200 sample actions and behaviors (Horey, Fallesen, Morath, Cronin, Cassella, Franks, & Smith, 2004). A series of efforts are now being concluded to establish evidence of validity of the model and identify situational variations in the model. This report describes the criterion-related validation study of

the model. As an introduction to this model, an overview of the definitions, importance, and modeling of leadership is provided.

What is Leadership?

Definitions of leadership vary widely in the popular literature (Northouse, 2004). Of the four U. S. military Services, only the U.S. Army and Air Force include definitions of leadership in their doctrine. Alternately, the Navy and Marine Corps use lists of 11 principles and 14 traits, respectively, to describe leadership. See Table 1 below for some examples of leadership definitions and their sources.

Table 1. *Sample Definitions of Leadership and U.S. Military Definitions*

Definitions of Leadership	Origin
Leadership is the capacity to translate vision into reality.	Warren Benis
The leader is “Provider of Resources” and “Guide” to others.	Thomas Aquinas
The only definition of a leader is someone who has followers.	Peter Drucker
Leadership is a process of giving purpose (meaningful direction) to collective effort, and causing willing effort to be expended to achieve purpose.	Jacobs & Jaques, 1990
Leadership is about articulating visions, embodying values, and creating the environment within which things can be accomplished.	Richards & Engle, 1986
Leadership is the process of making sense of what people are doing together so that people will understand and be committed.	Drath & Palus, 1994
The ability to build and maintain a group that performs well relative to its competition.	Hogan & Kaiser, 2005
Influencing people – by providing purpose, direction, and motivation – while operating to accomplish the mission and improving the organization.	U.S. Army, Field Manual 22-100, 1999
The art and science of influencing and directing people to accomplish assigned missions.	Air Force Doctrine Document 1-1, 2004
No doctrinal definition found in public access	U.S. Navy
No doctrinal definition found in public access	U.S. Marine Corps
No doctrinal definition found in public access	U.S. Joint Forces

Note: Several definitions provided by permission from Dan Shogren’s website LeadingValues.com

Because competency modeling is geared toward identifying the elements of effective leadership, it is important to consider the definition of leadership as a logical starting point for further description. Examination of the Army definition of leadership reveals the dimensions of influencing, providing purpose, providing direction, providing motivation, operating to accomplish the mission, and improving the organization. One might argue that these dimensions

describe the competencies of Army leaders. At the very least, it is logical to assume that additional modeling of Army leadership should validate these dimensions. Within this definition the stage is also set for determining the possible outcomes associated with effective leadership, specifically accomplishing the mission and improving the organization. One challenge in establishing the outcomes associated with effective leadership, which will be discussed subsequently, is collecting reliable and uncontaminated measures of these outcomes. While the definition provides the point of departure for communicating what leadership within an organization is, it can hardly convey the complexity of situations, relationships, applications and behaviors associated with it. Thus, competency models have evolved from this need for more comprehensive depictions of the construct.

Why Is Leadership Important?

There are numerous reasons to continue research on leadership and its effects on individual and organizational outcomes; three are presented here. The first is that leadership has become a distinct part of military culture, doctrine, and development. Leadership and leader development have received considerable attention in Army research and doctrine. All service members are expected to become leaders and growth in the organization is not defined in terms of technical ability as much as it is in terms of one's leadership ability. The mere fact that the construct of leadership is so well embedded in the organizational psyche of its members supports its continued study. While this may seem a self-perpetuating argument, it reflects the organizational value associated with leadership as a construct.

Beyond the cultural and doctrinal investments in leadership exists the empirical support for leadership as a distinct construct that has evolved from examinations of military job performance. Despite the central role of performance criteria in employment research, comprehensive models of job performance have been relatively late in arriving on the scene. Fortunately, three notable empirically-based research efforts have elucidated models of general job performance derived from examining military jobs (Borman, Motowidlo, Rose, & Hanser, 1987; Campbell, McCloy, Oppler, & Sager, 1993; Hedge, Borman, Bruskiwicz, & Bourne, 2004).

Borman et al. (1987) developed a model of Soldier effectiveness based upon first-tour Soldiers' performance requirements that fall outside the bounds of technical job proficiency. While it is certainly less likely for leadership to be a significant part of entry level enlisted performance, leadership was in fact found to be an important subcomponent of the teamwork construct that combined with determination and allegiance to form the three main performance components in their model.

The eight-factor model of job performance developed by Campbell and colleagues (1993) using Army data has become one standard within the behavioral science community. According to this model, supervision and leadership should be distinguished from other job performance factors such as job specific task proficiency, team and peer facilitation, management and administration, and communication. Campbell et al. describe supervision and leadership as "all behaviors directed at influencing the performance of subordinates through face-to-face interpersonal interaction and influence" (p. 48). The authors go on to state "supervisors set goals for subordinates . . . teach them more effective methods. model appropriate behaviors . . . reward and punish in appropriate ways" (p. 48).

Hedge et al. (2004) set out to develop job performance dimensions for supervisors as part of a performance rating system for the Navy. This empirically driven effort resulted in the identification of nine dimensions, one of which was leading people. The authors describe leading people as “. . . building and leading individual and team activities; persuading, inspiring, and motivating others, . . . creating a sense of enthusiasm and purpose in own team; demonstrating a positive attitude, team spirit, and personality to inspire subordinates; effectively adopting different leadership styles as appropriate to individuals and settings” (p. 237).

Lastly, there is no shortage of literature describing the contribution of leadership research to organizational functioning (see summaries provided by Chemers, 2000; Hogan, Curphy, & Hogan, 1994; Hogan & Kaiser, 2005; Kaiser & Ferrel, 2005). Additionally, meta-analyses have provided increased clarity on the relationship of various leadership aspects to individual and organizational outcomes. For example, these studies have examined such topics as the effects of consideration of others and initiating structure on follower behavior (Judge, Piccolo, & Ilies, 2004), the effects of leader-member exchange and follower satisfaction and productivity (Gerstener & Day, 1997), and transformational and transactional leadership styles on follower job and leader satisfaction, follower motivation, and group and organizational performance (Judge & Piccolo, 2004) and workgroup effectiveness (Lowe, Kroeck, & Sivasubramaniam, 1996). The bottom-line of this research indicates that leadership behavior has been related to the behavior of followers and individual, group, and organizational effectiveness. Therefore, additional attempts to describe the relationship between leader behaviors and the effect of these behaviors on individual and group performance warrants continued study.

Why Describe Leadership in Terms of Competencies?

Competency modeling has become a prevalent process for depicting effectiveness in a job, position, or role within an organization. However, the definitions, goals and methods employed in competency modeling are not consistent across organizations and applications and this has resulted in confusion regarding this practice (Briscoe & Hall, 1999; Newsome, Catano, & Day, 2003; Shippman, Ash, Battista, Carr, Eyde, Hesketh, Kehoe, Pearlman, Prien, & Sanchez, 2000). One problem with competency modeling is that attempts to describe competencies often commingle job requirements with person capabilities. Some models describe the knowledge, skills, abilities, and other characteristic (KSAO) clusters necessary to perform certain functions. Other models describe the functions themselves. The answer regarding which of these approaches is best may lie in the purpose of the competency model. Generally, behavioral scientists develop job selection assessments that tap into the KSAOs necessary for success when considering candidates for specific positions within an organization. That is, these KSAOs attempt to describe candidate capabilities necessary for achieving success in these positions. Therefore, identifying KSAOs or clusters of KSAOs assists in these efforts when prior, more specific performance by a candidate may not be available. However, when the purpose of the competency model is to inform performance assessment, training, development, and performance management systems based upon observable performance within the organization (as is the case with leaders), a model which more completely describes these performance dimensions may be better suited to this purpose.

The Army expects leadership from all its members and promotes exclusively from within. Hence, it is advisable that successful leadership performance be defined and

communicated clearly in behavioral terms that link these behaviors to individual, group and organizational outcomes. The Army core leadership model under study attempts to provide this information through leadership competencies, their subcomponents and sample actions which demonstrate effective leadership functioning. Gayvert (1999, p. 21) supports such a depiction when he argues that Army leadership ‘ought to be identified, taught and discussed as a function, or set of functions, different from management, administration or command.’ Describing the leadership domain in detail is an extension of the work of Campbell et al. (1993), Borman et al. (1987), and Hedge et al. (2004) and comparable to the work of Carpenter and Wisecarver (2004) in their recent identification of interpersonal performance dimensions. The depiction of Army leadership under examination in this study is one means for synthesizing the results of significant leadership research findings into a single model which better expresses the roles, processes, and goals of leadership within the Army.

Model Description

The Army’s Core Leader Competency model identifies eight leadership competencies, described in Table 2. Each of the competencies is further described by secondary components, presented in Table 3, and sample actions for each component (see Horey et al., 2004). The model was developed from several sources, including Army leadership doctrine, reviews of competency and leadership literature, and input from subject matter experts. It has been proposed as the framework for Army leaders in the current and future operational environments (Horey et al., 2004). It has been recommended that the Army adopt this leadership framework and incorporate it into the leader development cycle. These competencies would guide various leader development processes such as training and education, assignments, and performance assessment. Figure 5 in Horey et al., 2004 also places the competencies into what may be more easily conceptualized as a model of leadership.

Table 2. *Army Core Leader Competencies*

Competency	Description
Lead Others	A leader motivates and influences others to take initiative, work toward a common purpose, accomplish tasks, and achieve organizational objectives.
Lead by Example	Maintaining standards and providing examples of effective behaviors influences others to behave and perform similarly. All Army leaders should model Army values continuously. Modeling provides tangible evidence of desired behaviors and reinforces verbal guidance through demonstration of commitment and action.
Create a Positive Environment	A leader has a responsibility to establish and maintain positive expectations and attitudes which produce the setting for positive attitudes and effective work behaviors.
Communicate	By understanding the nature and power of communication and practicing effective communication techniques, one can better relate to others and translate goals into actions. Communication is essential to all other leadership competencies.
Develop Leaders	Assisting others to grow as individuals and teams facilitates the achievement of organizational goals and is a primary function of leadership.

Competency	Description
Prepare Self to Lead	Only through being prepared for missions and other challenges, being aware of self and situations, and the practices of career long learning and development can one fulfill the responsibilities of leadership.
Get Results	Ultimately, a leader's purpose is to provide guidance and maintain control over the work environment in order to increase efficiency and effectiveness in one's own and subordinate's activities.
Extend Influence Beyond Chain of Command	Leaders need to influence beyond their direct lines of authority and beyond chains of command; this influence may extend to joint, interagency, inter-governmental, multinational, and other groups.

Table 3. Army Core Leader Competencies and Components

Lead	Lead Others Provide intent, motivation, inspiration Enforce standards Balance mission & welfare of Soldiers	Lead by Example Display character Display confidence in adverse conditions Demonstrate competence	Communicate Listen actively Translate goals into action Ensure understanding	Extend Influence Beyond Chain of Command Build trust outside lines of authority Understand sphere, means & limits of influence Negotiate, resolve conflict, build consensus
	Develop	Create a Positive Environment Foster teamwork, cohesion, cooperation, loyalty Encourage initiative, acceptance of responsibility Demonstrate care for people	Prepare Self to Lead Be prepared for missions & other challenges Expand knowledge in cultural & geo-political areas Be self-aware, recognize impact on others	Develop Leaders Coach, counsel & mentor Build team skills & processes Assess developmental needs & foster job development
Achieve	Get Results Provide direction & guidance, set clear priorities	Develop & execute plans to accomplish missions	Accomplish missions consistently	

This model was developed to have applicability to all leaders in all situations, levels, and contexts rather than to be specific to leadership in a particular context. In another effort to examine the likely effects of situational variance on the model's validity, the model was determined to apply across rank, organizational level, operations, life-cycle and within international contexts (Aude, Baranowski, Conrad, Harvey, Mitchell, Weingart, & Fallesen, 2005). The model was not found to be missing any needed competencies but rather how the leader applies the model and which behaviors are exhibited were recommended to differ based upon leader role, mission, time constraints and other situational moderators. It was noted that various components and behaviors demonstrating the competencies may become more important than other components and behaviors according to needs of the situation.

Model Validation

Due to a perceived lack of rigor in model development, Shippmann et al. (2000) note concern that competency models may not meet necessary professional and legal requirements associated with personnel decisions. Such professional and legal requirements call for validation of assessments. Although competency models are not assessments per se, they are developed to either explain or predict performance and thus, should have demonstrated validity with job performance. Evidence of validity can be in the form of content-related, construct-related or criterion-related (Gatewood & Feild, 1998). Content-related validity indicates that the measure (or, in this case, model) is representative of the behaviors, knowledge, skills, and abilities required by the job or role (e.g., leader). Generally, competency models are assumed to be related to important performance outcomes based upon the process of model development (i.e., content validity). The Army core leadership model is useful to the extent that the behaviors representing the competencies and components lead to individual, group and organization effectiveness. Therefore, evidence of validity against a criterion of leadership effectiveness should also be demonstrated. Construct-related validity refers to evidence that an assessment actually measures the construct it is intended to measure. In other studies, content and construct-related evidence for the Army's leadership model have been documented (Aude et al, 2005; Harvey, Conrad, Morath, Keller-Glaze, & Fallesen, 2005). The focus of this study is on the criterion-related evidence of validity of the model. The concept of criterion-related validity and its application to the Army's competency-based leadership model is described below.

Criterion-Related Validity

Criterion-related validity applies when a relationship is hypothesized to exist between test scores and performance on some criterion measure, and it is that hypothesized relationship that is validated, not the test itself (Schneider & Schmitt, 1992). In terms of the Army's competency-based leadership model, it is hypothesized that there is a relationship between a person's performance of the competencies and his/her leadership effectiveness in the Army.

Criterion-related validity studies are conducted in one of two ways. In a predictive criterion-related study, scores on the test or predictors are collected and then, at a later point in time, performance is measured and the strength of the relationship between the predictor and the criterion is evaluated. The observed correlation between the predictor and the criterion is called the validity coefficient. In a concurrent criterion-related study, predictor and criterion data are collected at the same time and correlated. The current research effort seeks to validate the relationship between the Army's leadership competencies and leadership effectiveness using the concurrent design.

With criterion-related validation studies, several factors need to be considered that can affect the magnitude of the relationship observed. Given the sample size in most validity studies and the usually moderate level of validity, criterion reliability and range restriction, the probability of finding a statistically significant validity coefficient is low (Schneider & Schmitt, 1992). For this effort, range restriction is likely to be an issue to some degree. It is likely that many leaders who were poor performers or unhappy with Army life have left the Army and therefore, will not be included in the sample. Thus, the range of scores will likely be restricted and the validity estimate underestimated to some degree.

In addition, validating the Army's competency-based leadership model through a criterion-related approach is more complex than the typical criterion-related validation of a test and a criterion because the model does not represent a predictor set (e.g., knowledge, skill, ability, personality dimensions) in the traditional sense, but rather the antecedent behaviors that are believed to result in effective individual, group and organization outcomes. In some cases, there is great overlap in what might normally be considered the criterion of leadership effectiveness and the components in the Army's competency-based leadership model (e.g., performance during training exercises might be viewed by some as a criterion while it can be argued that this performance comprises the behaviors included in the competency set). Thus, a measure of the Army's leadership competencies and measures of leader effectiveness are actually on a continuum between antecedents and outcomes, rather than clearly belonging in one group or the other. For the purpose of simplification, however, the measure of the Army's leadership competencies and components will be referred to as the predictor, and the measure of leader effectiveness as the criterion.

Despite the challenges, the principles of criterion-related validation can be applied to the relationship between a set of behaviors and the effectiveness of those behaviors (see Ghiselli, Campbell, & Zedeck, 1981). To do this, a measure of the Army's competency-based leadership model to be used as the predictor was developed. Thus, this research also represents a validation study of the measure, as well as the model. As such, results must be interpreted in terms of both the measure (and the items) and the model. For example, items in the measure may not perform as adequately as other items, such that some items may not account for additional variance in the criteria. In measurement terms, these might be flagged for removal but just dropping those behaviors from the model could result in an under-identified model. Thus, while the measure for assessing the competencies may be shortened, such changes to the measure do not directly translate to necessary changes in the model. Changes to the model should be considered in light of the theoretical bases underlying its development and conceptualization.

METHODOLOGY

Predictor Measure

To measure leader performance on the competencies we used a measure of Army core leader competencies that had been used in a previous study. In the content validity study, data were collected on the importance and criticality of the competencies and components for certain ranks. Based on the results of the item analysis for that content validity study, items that were rated relatively low on importance were identified and removed. This content validity study measure also included distracter items that are not part of the competency model and most of these were also removed. Some of the distracter items were retained for the current pilot study to compare their item statistics with the competency and component items.

In addition to the eight competencies of the Army's core model, two more were added, Planning & Organizing and Problem Solving & Decision Making. Based on the results of another effort that examined the construct validity of the Army's competency-based leadership model, these new competencies were recommended as possible additions to the model. Also included were 12 items from a measure used in Ulmer, Shaler, Bullis, DiClemente, and Jacobs (2004). These new competencies and items were added to determine their potential contribution

to the prediction of leadership. The results of the analyses of these additional constructs and items will be noted separately from the results of the validation of the original eight competencies comprising the core leader competencies. However, the eight original core competencies, the two additional competencies and the Ulmer et al. additional items were all included within the "Leader Behavior Scale", which contains a total of 87 items.

Subordinates completed the instrument by identifying the extent to which the target leader is performing below, at, or above expectations for each competency component. The 7-point scale ranges from "performing well below expectations" to "performing well above expectations." This Leader Behavior Scale is presented in Appendix A.

Criterion Measure

As stated above, the objective of the criterion-related validation study was to evaluate the extent to which the leadership competencies outlined in the Army's core leadership model predict an important outcome, such as leader effectiveness. As part of the validation study, the correlations between the target leader ratings and a reliable measure of leader effectiveness were analyzed.

Although there were several potential sources of leader effectiveness that could serve as the criterion for this effort, each source has practical limitations. Consequently, several sources of leader effectiveness were ruled out for this effort. In general, these criterion sources were ruled out because data from the source were unavailable, because useful data did not exist, or because the data were confounded with extraneous variables. The use of several sources of leader effectiveness data were evaluated based on:

- Degree of subjectivity
- Criterion contamination
- Data Accessibility
- Use of existing measures versus developing new measures
- Adequate variance in the criterion.

We identified potential objective measures of leader effectiveness; however, they tended to be contaminated by other factors not under leader control. Criterion contamination occurs when factors other than those under study impact the criterion. For example, personnel retention rates, while an objective measure, are also likely to be contaminated by factors beyond the leader's control. These factors include unit type, military occupational specialty density and retention requirements, economic forces such as job market, reenlistment bonuses, and stop loss effects. Other potential measures (e.g. increase in unit budget while under leaders' control, productivity measures, and readiness measures) are also likely to suffer from contamination. Data regarding promotion and morale of a leader's unit may all be confounded by other factors as well. Many factors that are outside the control of the leader likely affect these criteria.

Research has shown that objective and subjective criterion measures produce similar validities (Nathan & Alexander, 1988; Schmitt, Gooding, Noe, & Kirsch, 1984). In a meta-analysis of validity coefficients from tests of clerical workers for five criteria – supervisor ratings, supervisor rankings, work samples, production quantity and production quality, Nathan and Alexander (1988) found that the predictabilities of subjective ratings and objective

production quantity were very similar. The criteria examined were all highly predictable regardless of the type of test used as the predictor measure, except for production quality. It consistently produced the lowest validity and did not generalize across tests. Schmitt et al. (1984) found a mean validity coefficient for performance ratings of .26, which was higher than the mean validity coefficients for the objective measures of turnover and productivity. Thus, there has accumulated a large amount of evidence suggesting that subjective measures are valid indicators of performance.

For reasons cited above and other reasons, the majority of job performance criteria used in validation efforts has focused on supervisory ratings. The Army has existing supervisory ratings of leader values, attributes, skills, actions and promotion recommendations in the form of Officer Evaluation Reports and Non-commissioned Officer Evaluation Reports and these were considered as potential criteria measures. However, these reports likely have limited value based upon their reported lack of variance on leadership dimensions and a caution by our sponsor with respect to the difficulty in obtaining these reports. Other leader effectiveness ratings that were considered come from observer-controller (O/Cs) ratings during training exercises (Joint Readiness Training Center, for example), which were used recently to validate a leader assessment measure (Bass, Avolio, Jung, & Berson, 2003). However, collecting these rating during training exercises would require the development of a set of dimensions specific to the training exercise, training raters to conduct ratings, and then collecting the data, which was not practical for this effort. This approach would have also limited the types of leaders included in the validation sample and the training environment would likely limit the range of leader behaviors exhibited. For example a short-term training environment may not be conducive to behaviors related to *Arming Self to Lead* or *Creating a Positive Climate*.

Due to the limitations described above, supervisory ratings of leader performance were selected as the criterion measure. An "Overall Performance Scale" was created that contained 17 questions pertaining to target leader performance on individual, group and unit outcomes or accomplishments. These items were successfully used as criterion items in other research efforts. For our purposes, each of these items was rated on a 5-point scale ranging from "significantly less effective than most leaders" to "significantly more effective than most leaders." This scale is shown in Appendix B. Since factors other than target leader behavior may impact ratings of the effectiveness of some of these items, a "Leader Influence Scale" was also developed so that the raters could identify the extent to which the target leader influenced certain performance items. For example, a given rater may not feel that the target leader has complete control over 'developing a unit or organization that has high cohesion.' Such things as operational pace, mission involvement, and other environmental influences may have been present which influenced unit and organization cohesion. Therefore, this scale was included as a way to adjust effectiveness ratings for the influence directly attributable to the leader. Leader influence was rated on a 3-point scale ranging from "Not at all" to "To a great extent." The Leader Influence Scale can be found in Appendix C. Note that not all items comprising overall performance were included in the leader influence scale as several of the items, e.g. are most clearly directly under the influence of the target leader.

Procedure

All scales were evaluated during pilot studies at Ft. Drum and Ft. Hood, where self-ratings were initially collected as a pilot of the leader competencies and component items. At Ft. Drum, the site of the initial pilot test, no additional instructions on completing the measure, other than the written instructions on the questionnaire, were provided. Analyses revealed a problem with range restriction, as raters tended to use the positive end of the scale. To address this, the written instructions were revised to emphasize the importance of making use of the whole scale while still providing accurate ratings. The results from the subsequent pilot test at Ft. Hood showed that item variance increased sufficiently and, therefore, the new instructions were retained. Overall, results of the pilot study showed that the competency scales had acceptable reliability. However, item statistics indicated that the distracter items were not functioning well and there was feedback from respondents that the distracter items were difficult to understand. This was likely due to the distracter items being overly complex, such as to render them meaningless in the context of leadership. Thus, all remaining distracter items were removed from the measure for subsequent administrations.

Data were collected using two methods. Army installations were visited by the researchers and Soldiers were administered a paper-and-pencil versions of the target leader overall performance and influence survey. An on-line version of the survey was also administered to a random sample of NCOs and officers, composing a majority of the sample for the study. For both methods, respondents were treated as supervisors. They were instructed to select a subordinate leader (the target leader) with a last name beginning with a certain range of letters. This was done to prevent supervisors from selecting especially high performing or low performing leaders. Supervisors provided the name and rank of the target leader, as well as contact information for a subordinate of the target leader. Supervisors were then asked to provide ratings of the target leaders' overall performance and leader influence items. At some locations, respondents were available for a longer period of time. In these cases, leader competency and component data as well as leader effectiveness data were collected.

Following data collection from supervisors, subordinates of the target leaders were contacted by e-mail, informed of the study, and asked to complete a survey. All data collection from subordinates was conducted on-line. Subordinates provided ratings of target leader competencies and components, as well as overall leader performance and influence items, although only ratings from supervisors were used as the criterion. Once leader performance data from the supervisor and competency and component data from the subordinate for the same target leader were matched in the database, all names were removed from the data.

Sampling/Participants

The sampling plan targeted NCOs, warrant officers, and officers from the active and reserve components, across combat arms, combat support, and combat service support. In total, the sample included 1725 Soldiers (i.e., the supervisors of target leaders), of whom 428 responded (i.e., identified one of their subordinates as a target leader) for a response rate of 24.81%. Table 4 describes the initial supervisory respondents by installation. Based on information provided by each of these respondents, 380 subordinates to the target leaders were contacted and asked to participate. A total of 140 subordinates of target leaders responded, for a

response rate of 32.94% creating 140 matched pairs of subordinate and supervisory ratings. Table 5 describes the target leaders' subordinate rater respondents for these matched pairs by installation. Table 6 describes the target leaders' supervisory rater respondents for these matched pairs by installation.

Table 4. *Supervisor Demographics for All Respondents*

	AKO	Riley	Lewis	Detrick	Total
Supervisor Rank					
SGT	14	2	5	2	23
SSG	28	1	3	7	39
SFC	14	0	3	7	24
MSG/1SG	2	0	2	0	4
SGM/CSM	3	0	0	0	3
LT	15	0	3	1	19
CPT	37	10	3	1	51
MAJ	30	3	6	2	41
LTC	65	13	7	0	85
COL	78	4	7	0	89
Other	2	0	0	0	2
Total	288	33	39	20	380
Supervisor Current Position					
Commander	60	3	5	1	69
Key Staff	60	4	12	6	82
Supporting Staff	28	2	4	1	35
Special Staff	26	14	2	1	43
Special Assignment	16	2	0	0	18
Institutional Position	21	8	1	0	30
Platoon Leader	10	0	3	1	14
Squad Leader	15	0	4	4	23
Other	52	0	7	6	65
Missing	0	0	1	0	0
Total	288	33	39	20	380
Supervisor Time in Current Position					
Less than month	21	*	6	2	29
1-3 months	52	*	10	3	65
4-6 months	31	*	7	4	42
7-9 months	25	*	1	3	29
10-12 months	22	*	2		24
More than a year	137	*	13	8	158
Total	288	*	39	20	347
Supervisor Time Working with Target					
Less than month	7	*	3	1	11
1-3 months	23	*	4	5	32
4-6 months	32	*	12	5	49
7-9 months	38	*	3	2	43
10-12 months	55	*	10	1	66

	AKO	Riley	Lewis	Detrick	Total
More than a year	133	*	7	6	146
Total	288	*	39	20	347

Table 5. *Supervisor Demographics for Matched Pairs*

	AKO	Riley	Lewis	Detrick	Total
Supervisor Rank					
SGT	2	2	0	0	4
SSG	4	1	1	1	7
SFC	2	0	0	1	3
MSG/1SG	0	0	0	0	0
SGM/CSM	1	0	0	0	1
LT	6	0	1	0	7
CPT	11	10	2	0	23
MAJ	10	3	2	0	15
LTC	26	13	2	0	41
COL	28	3	6	0	37
Other	2	0	0	0	2
Total	92	32	14	2	140
Supervisor Current Position					
Commander	24	3	2	0	29
Key Staff	23	3	5	0	31
Supporting Staff	11	2	3	0	16
Special Staff	6	14	1	0	21
Special Assignment	8	2	0	0	10
Institutional Position	6	8	0	0	14
Platoon Leader	1	0	1	0	2
Squad Leader	4	0	1	0	5
Other	9	0	0	2	11
Missing	0	0	1	0	1
Total	92	32	14	2	140
Supervisor Time in Current Position					
Less than month	5	*	1	0	6
1-3 months	16	*	4	0	20
4-6 months	9	*	2	1	12
7-9 months	6	*	0	0	6
10-12 months	8	*	1	0	9
More than a year	48	*	6	1	55
Total	92	*	14	2	108
Supervisor Time Working with Target					
Less than month	0	*	0	0	0
1-3 months	4	*	1	0	5
4-6 months	10	*	4	1	15
7-9 months	12	*	1	1	14
10-12 months	19	*	5	0	24
More than a year	47	*	3	0	50
Total	92	*	14	2	108

* Item not asked

Table 6. Subordinate Demographics for Matched Pairs

	AKO	Riley	Lewis	Detrick	Total
Subordinate Rank					
SGT	11	3	1	1	16
SSG	6	0	2	0	8
SFC	14	0	0	1	15
MSG/1SG	4	0	2	0	6
SGM/CSM	1	0	0	0	1
CW3	1	0	0	0	1
LT	4	5	0	0	9
CPT	24	12	7	0	43
MAJ	12	3	1	0	16
LTC	3	2	0	0	5
Other	12	6	1	0	19
Missing	0	1	0	0	1
Total	92	32	14	2	140
Subordinate Current Position					
Commander	6	13	0	0	19
Key Staff	12	4	2	1	19
Supporting Staff	24	0	6	0	30
Special Staff	6	2	1	0	9
Special Assignment	4	0	0	0	4
Institutional Position	8	0	0	0	8
Platoon Leader	1	4	1	0	6
Squad Leader	6	3	2	1	12
Other	25	5	2	0	32
Missing	0	1	0	0	1
Total	92	32	14	2	140
Subordinate Time in Current Position					
Less than month	4	1	0	0	5
1-3 months	9	3	2	0	14
4-6 months	7	8	3	0	18
7-9 months	7	5	4	0	16
10-12 months	16	4	2	0	22
More than a year	49	11	3	2	65
Missing	0	0	0	0	0
Total	92	32	14	2	140
Subordinate Time Working with Target					
1-3 months	3	*	0	0	3
4-6 months	6	*	3	0	9
7-9 months	15	*	2	0	17
10-12 months	24	*	3	2	29
More than a year	44	*	6	0	50
Missing	0	*	0	0	0
Total	92	*	14	2	108

* Item not asked

RESULTS

Item-level Statistics

A comparison of the item means by installation was performed to determine if there were any differences that would preclude using the data as a group, and no significant differences were found. Thus, all results presented include all installations. Using the subordinate ratings, Table 7 presents the means, standard deviations, and item-total correlations (this is the correlation between the item and the total scale or competency) for each item within each competency on the predictor measure. The mean of the ratings for items on the predictor measure ranged from 4.87 to 5.87, with an overall mean rating of 5.23. The standard deviations on the items ranged from 1.36 to 1.78, with an average standard deviation of 1.50. Recall from the method section that there were some target leader supervisors that also completed the predictor measure. For those supervisors who completed the predictor measure the mean ratings for the items were slightly lower, on average. The item mean ratings ranged from 4.35 to 5.29, with a mean rating overall of 4.85. Appendix D presents the means, standard deviations and item-total correlations for each item for the supervisor ratings.

Table 7. *Descriptive Statistics for Predictor Measure by Leadership Competency*

Item Text	N	Item Mean	Item SD	Item-total correlation
Lead Others				
31. Leading others to success	137	5.21	1.42	0.91
25. Establishing and communicating clear intent and purpose	135	5.10	1.57	0.85
53. Conveying the significance of the work	137	5.26	1.40	0.83
3. Maintaining and enforcing high professional standards	138	5.23	1.62	0.79
36. Balancing requirements of the mission with welfare of followers	136	5.34	1.45	0.79
6. Creating and sharing a vision of the future	138	5.11	1.56	0.83
Lead by Example				
60. Modeling sound values and behaviors	138	5.43	1.48	0.85
15. Modeling Army values consistently through actions, attitudes, and communications	138	5.34	1.53	0.88
35. Exemplifying warrior ethos	136	5.39	1.69	0.84
70. Demonstrating commitment to the Nation, U.S. Army, one's unit, and Soldiers	135	5.87	1.41	0.84
41. Displaying confidence, self-control, composure, and positive attitude	138	5.51	1.59	0.82
8. Demonstrating technical, technological, and tactical knowledge and skills	135	5.41	1.60	0.77
59. Understanding the importance of conceptual thinking skills and modeling them to others	126	5.18	1.41	0.86
45. Seeking and is open to diverse ideas and points of view	138	5.32	1.44	0.74
64. Reinforcing verbal guidance through demonstration of own actions	138	5.38	1.51	0.87
Create a Positive Environment				
42. Shaping climate	131	5.17	1.48	0.86
13. Fostering team work, cohesion, cooperation, and loyalty	137	5.32	1.63	0.83
10. Encouraging subordinates to accept responsibility	137	5.44	1.39	0.76
2. Creating a learning environment	138	5.03	1.55	0.83
52. Encouraging open and candid communications	138	5.49	1.50	0.85
23. Encouraging fairness and inclusiveness	137	5.32	1.43	0.82

Item Text	N	Item Mean	Item SD	Item-total correlation
48. Expressing and demonstrating care for people and their well-being	137	5.53	1.47	0.81
29. Anticipating people's on-the-job needs	132	4.87	1.51	0.79
26. Setting and maintaining high expectations for individuals and teams	138	5.26	1.50	0.82
57. Accepting reasonable setbacks and failures	136	5.13	1.53	0.78
Communicate				
54. Ensuring shared understanding	138	5.05	1.41	0.86
72. Listening actively	138	5.14	1.64	0.88
65. Employing engaging communication techniques	136	5.09	1.54	0.88
74. Determining information sharing strategies	135	4.98	1.53	0.89
21. Conveying thoughts and ideas to ensure understanding	138	5.25	1.49	0.81
47. Presenting recommendations so others understand advantages	135	5.19	1.40	0.88
69. Being sensitive to cultural factors in communication	126	5.29	1.50	0.76
Develop Leaders				
22. Fostering growth in others	136	5.13	1.48	0.87
50. Assessing developmental needs of subordinates	133	4.95	1.54	0.90
73. Coaching, counseling, and mentoring	138	5.16	1.78	0.87
34. Fostering job development, job challenge, and job enrichment of others	134	5.02	1.56	0.91
12. Facilitating ongoing development	134	5.20	1.45	0.83
18. Supporting institutional-based development of subordinates	133	4.95	1.50	0.84
61. Building team skills and processes	137	5.23	1.49	0.89
Prepare Self to Lead				
75. Preparing self to lead	134	5.33	1.60	0.89
38. Maintaining mental and physical health and well-being	138	5.39	1.58	0.71
67. Maintaining self awareness and recognizing impact of self on others	137	5.07	1.58	0.88
46. Evaluating and incorporating personal feedback from others	137	5.18	1.41	0.81
51. Expanding own knowledge of technical, technological, and tactical areas	129	5.32	1.54	0.84
11. Expanding own conceptual and interpersonal capabilities	131	5.15	1.44	0.83
27. Analyzing and organizing information to create knowledge	137	5.13	1.36	0.85
30. Maintaining relevant cultural awareness	128	5.05	1.60	0.76
44. Maintaining relevant geo-political awareness	119	5.23	1.41	0.73
Get Results				
24. Guiding successful operations	135	5.41	1.46	0.89
28. Prioritizing, organizing, and coordinating tasks for teams or groups	136	5.22	1.47	0.84
19. Identifying and accounting for individual and group capabilities and their commitment to task	136	5.10	1.43	0.87
55. Designating, clarifying, and de-conflicting roles	135	4.91	1.57	0.84
20. Identifying, contending for, allocating, and managing resources	136	5.19	1.48	0.81
71. Removing work barriers	133	5.14	1.52	0.86
39. Recognizing and rewarding good performance	135	5.25	1.51	0.82
1. Seeking, recognizing, and taking advantage of opportunities to improve performance	136	5.28	1.45	0.85
4. Making feedback part of work processes	138	5.17	1.51	0.79
63. Executing plans to accomplish the mission	138	5.53	1.40	0.88
7. Identifying and adjusting to external influences on the mission and organization	134	5.39	1.40	0.80
Extend Influence Beyond Chain of Command				
66. Extending influence beyond chain of command	127	5.29	1.50	0.83
56. Understanding sphere of influence, means of influence, and limits of influence	129	5.02	1.53	0.85

Item Text	N	Item Mean	Item SD	Item-total correlation
62. Building trust with those outside lines of authority	132	5.39	1.53	0.85
33. Negotiating to reach mutual understanding and to resolve conflict	135	5.09	1.42	0.81
17. Building and maintaining alliances	134	5.16	1.51	0.90

Note: A 7-point scale ranging from "1-performing well below expectations" to "7-performing well above expectations" was used for the eight competencies. Item-total correlations are based on N's of 131, 121, 126, 125, 122, 109, 120, and 115 for the competencies in order presented due to missing data on any item in the competency.

Table 8 presents the means, standard deviations and item-total correlations for the supervisor ratings of the target leaders on the criterion measures of overall performance and leader influence. The item means on overall performance ranged from 3.81 to 4.29, with an overall mean of 4.12. The standard deviations on the overall performance items ranged from .88 to 1.01, with an average standard deviation of .95. The item means on leader influence ranged from 2.32 to 2.74, with an overall mean of 2.57. The standard deviations on the overall performance items ranged from .46 to .58, with an average standard deviation of .53.

Table 8. *Descriptive Statistics for Criterion and Covariate Measures*

Item Text	N	Item Mean	Item SD	Item-total correlation
Overall Performance				
1. Earning Soldiers' trust in his/her combat judgment.	110	4.25	.97	0.83
2. Training Soldiers, unit, or organization	134	4.16	.97	0.79
3. Ensuring Soldiers, unit, or organization accomplish their missions.	137	4.28	.88	0.86
4. Making recommendations that improve unit or organization effectiveness.	138	4.22	.89	0.76
5. Ensuring that his or her team's equipment is operationally ready	125	4.06	.94	0.70
6. Developing a unit or organization that has high cohesion.	138	4.12	1.01	0.85
7. Developing Soldiers into leaders.	133	3.98	.96	0.84
8. Earning Soldiers' trust	137	4.21	.97	0.82
9. Improving the morale of Soldiers in his or her unit.	138	4.06	1.01	0.87
10. Improving Soldiers' task accomplishment.	137	3.99	.89	0.83
11. Increasing the likelihood that Soldiers in his or her unit will remain in the Army.	129	3.81	.98	0.83
12. Helping Soldiers in his or her unit grow as leaders.	134	3.98	.95	0.85
13. Earning the trust of his or her superior officers/supervisors.	137	4.22	1.01	0.85
14. Contributing to Army readiness.	136	4.18	.93	0.82
15. Showing concern for Soldier's families.	135	4.13	.89	0.68
16. Succeeding in all of his or her assignments.	138	4.29	.94	0.85
17. Making team members better Soldiers.	136	4.17	.98	0.92
Leader Influence				
2. Training my Soldiers, unit, or organization	134	2.57	.50	0.56
3. Ensuring my Soldiers, unit, or organization accomplish their missions.	135	2.71	.47	0.60
5. Ensuring that my team's equipment is operationally ready	129	2.51	.55	0.47
6. Developing a unit or organization that has high cohesion.	137	2.59	.54	0.66
7. Developing Soldiers into leaders.	134	2.52	.53	0.71
9. Improving the morale of Soldiers in my unit.	137	2.55	.58	0.65
10. Improving my Soldiers' task accomplishment.	137	2.55	.51	0.66
11. Increasing the likelihood that Soldiers in my unit will remain in the Army.	132	2.32	.58	0.51

Item Text	N	Item Mean	Item SD	Item-total correlation
12. Helping Soldiers in my unit grow as leaders.	134	2.51	.52	0.75
14. Contributing to Army readiness.	136	2.61	.55	0.61
16. Succeeding in all of my assignments.	138	2.74	.46	0.68
17. Making my team members better Soldiers.	136	2.61	.52	0.76

Note: A 5-point scale ranging from “1-significantly less effective than most leaders” to “5-significantly more effective than most leaders” was used for overall performance. A 3-point scale ranging from “1-Not at all” to “3-To a great extent” was used for leader influence. Numbering of leader influence items corresponds with their respective overall performance item. Recall that not all performance items have a corresponding influence item. Item-total correlations are based on N= 102 for the overall performance scale and N= 120 for the influence scale due to missing data on any item in the scale.

In some cases, target leader subordinates completed the criterion measures and the mean ratings for the overall performance items were slightly lower than supervisors’ ratings, on average. The item mean ratings ranged from 3.47 to 4.05, with a mean rating overall of 3.84. The mean ratings from subordinates on the leader influence items were very similar to the item means from supervisors. The item means on leader influence ranged from 2.18 to 2.61, with an overall mean of 2.44. Appendix E presents the means, standard deviations and item-total correlations for each item on the criterion measures for the subordinates.

Scale (Competency) Statistics

Table 9 presents the mean ratings, standard deviations and reliabilities for the eight Army competencies and the two proposed competencies from the subordinate ratings and for the overall performance and leader influence from the supervisor ratings. Internal consistency reliabilities for the eight competencies ranged from .94 to .97. Cronbach’s alpha for overall performance and leader influence was .97 and .91, respectively. Table 9 also presents the correlations between the competencies, overall performance (averaged across the 17 individual items) and leader influence (averaged across the 12 individual items). The eight competencies were found to be highly correlated with each other. The correlations ranged from .91 to .97 among the eight Army core competencies. Therefore, regression analyses including the competencies may be weakened due to inflated error terms from the multicollinearity among the competencies (Tabachnick & Fidell, 1996).

In terms of the relationship between the competencies and overall performance, each competency had a moderately high positive correlation with overall performance. The correlations ranged from .49 to .53. The competency correlating the highest with overall performance was *Extend Influence Beyond Chain of Command*. The correlations between the competencies and leader influence were considerably lower, ranging from .26 to .33; however, they were still statistically significant. To take into account the fact that other factors may influence outcomes more strongly than leaders’ behaviors, the mean leader influence ratings was used as a weight on the overall performance ratings. Correlating the competencies with this weighted overall performance resulted in slightly lower correlations compared to the non-weighted overall performance. Note that results for the two proposed competencies, *Planning and Organizing* and *Decision-making and Problem-solving* are also included in this table in italics but the implications of these results will be discussed in a subsequent section.

Table 9. *Descriptive statistics, Reliabilities and Intercorrelations of Leadership Competencies*

Competency or Scale	N	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Lead Others	138	5.21	1.33	0.94												
2. Lead by Example	138	5.42	1.31	0.94	0.96											
3. Create a Positive Environment	138	5.26	1.26	0.95	0.95	0.96										
4. Communicate	138	5.13	1.36	0.94	0.93	0.95	0.96									
5. Develop Leaders	138	5.09	1.39	0.94	0.91	0.95	0.93	0.96								
6. Prepare Self to Lead	138	5.20	1.28	0.95	0.94	0.94	0.96	0.93	0.95							
7. Get Results	138	5.23	1.27	0.96	0.93	0.96	0.95	0.94	0.95	0.97						
8. Extend Influence Beyond Chain of Command	138	5.17	1.33	0.91	0.91	0.93	0.93	0.92	0.91	0.91	0.94					
9. <i>Planning and Organizing</i>	138	5.22	1.31	0.92	0.91	0.90	0.90	0.89	0.91	0.93	0.89	0.88				
10. <i>Decision-making/problem-solving</i>	138	5.31	1.25	0.93	0.93	0.94	0.93	0.90	0.93	0.93	0.91	0.91	0.96			
11. Overall performance	138	4.11	0.81	0.49	0.51	0.52	0.50	0.50	0.50	0.52	0.53	0.45	0.52	0.97		
12. Leader Influence	138	2.59	0.31	0.33	0.33	0.28	0.32	0.27	0.33	0.31	0.26	0.33	0.60	0.31	.91	
13. Weighted overall performance	138	11.22	2.86	0.47	0.50	0.51	0.47	0.49	0.47	0.50	0.52	0.44	0.50	0.96	0.78	.97

Note: A 7-point scale ranging from "1-performing well below expectations" to "7-performing well above expectations" was used for the eight competencies, while a 5-point scale ranging from "1-significantly less effective than most leaders" to "5-significantly more effective than most leaders" was used for overall performance. A 3-point scale ranging from "1-Not at all" to "3-To a great extent" was used for leader influence. Reliabilities are on the diagonal. ** $p < .01$. *** $p < .001$.

Model Validation

To meet the objective of this effort, which was to provide evidence of the criterion-related validity of the Army competency-based leadership model, a multiple regression analysis was conducted using the scale score on overall performance as the criterion. Prior to analysis, examination of the z scores for the individual variables and the standardized residuals from the regression analysis identified two outliers. One of the outliers had the lowest or second lowest z score on all of the predictor variables. The other outlier was identified by the standardized residual as a multivariable outlier with $p < .001$. Both outliers were deleted, leaving 138 cases for analysis.

A hierarchical multiple regression was performed to first determine the ability of the eight Army competencies to predict overall performance and the eight proposed competencies were entered in step 1. The unstandardized regression coefficients, the standardized regression coefficients, the semi partial correlations, R , and R^2 for this step are presented in Table 10. R was significantly different from zero in step 1 ($R = .56$, $F(8, 129) = 7.24$, $p < .001$); therefore the model has evidence of criterion-related validity. *Extend Influence Beyond Chain of Command* was the only predictor to have a regression coefficient significantly different from zero. *Extend Influence Beyond Chain of Command* contributed .02 in unique variability to the prediction of overall performance. The proposed eight competencies combined contributed another .29 in shared variability. Altogether, 31% (27% adjusted) of the variability in overall performance was accounted for by the core leadership competencies. Even though the correlations between overall performance and each of the eight Army competencies were significant, the relationships are redundant due to the high correlations among the competencies and therefore, each competency alone, with the exception of *Extend Influence Beyond Chain of Command*, did not contribute significantly to the regression. *Extend Influence Beyond Chain of Command*, although still highly correlated with the other competencies, had the lowest correlations with the other competencies.

Table 10. *Hierarchical Multiple Regression Analysis*

	B	Std. Error	Beta	t	Sig.	sr _i ²	R	R ²
STEP 1							.56	.31**
Lead Others	-0.23	0.19	-0.38	-1.21	0.23	0.01		
Lead by Example	0.11	0.17	0.18	0.66	0.51	0.00		
Create a Positive Environment	0.16	0.23	0.25	0.69	0.49	0.00		
Communicate	-0.19	0.19	-0.32	-1.01	0.31	0.01		
Develop Leaders	-0.06	0.16	-0.10	-0.35	0.72	0.00		
Prepare Self to Lead	0.05	0.20	0.08	0.27	0.79	0.00		
Get Results	0.24	0.21	0.37	1.12	0.26	0.01		
Extend Influence Beyond Chain of Command	0.28	0.14	0.45	2.02	0.05	0.02		

Instrument Development

In addition to evaluating the criterion-related validity of the model, analyses were also conducted to refine the predictor measure for assessing the leader competencies. To determine the most predictive items in the measure for each competency, separate multiple regression analyses were performed regressing the items comprising each competency onto overall performance. The items were entered into the regression analysis using the forward selection procedure, in which the items for a competency were entered sequentially into the equation based on their partial correlation with overall performance. The unstandardized regression coefficients, the standardized regression coefficients, R , and R^2 for the final model produced in each of these analyses are presented in Table 11.

Table 11. *Final Models for Each Competency from Forward Multiple Regression Analyses*

	B	Std. Error	Beta	t	Sig.	R	R ²
Lead Others						.47	.22***
(Constant)	2.91	0.21		13.64	0.00		
25. Establishing and communicating clear intent and purpose	0.24	0.04	0.46	5.96	0.00		
Lead by Example						.54	.29***
(Constant)	2.56	0.23		11.00	0.00		
64. Reinforcing verbal guidance through demonstration of own actions	0.29	0.04	0.54	7.03	0.00		
Create a Positive Environment						.56	.32***
(Constant)	2.47	0.23		10.76	0.00		
52. Encouraging open and candid communications	0.17	0.06	0.33	2.78	0.01		
13. Fostering team work, cohesion, cooperation, and loyalty	0.13	0.06	0.27	2.32	0.02		
Ensuring a Shared Understanding						.49	.24***
(Constant)	2.92	0.21		13.82	0.00		
65. Employing engaging communication techniques	0.24	0.04	0.49	6.20	0.00		
Develop Leaders						.51	.26***
(Constant)	2.57	0.25		10.37	0.00		
61. Building team skills and processes	0.16	0.06	0.29	2.48	0.01		
12. Facilitating ongoing development	0.14	0.07	0.25	2.15	0.03		
Prepare Self to Lead						.54	.29***
(Constant)	2.59	0.25		10.57	0.00		
27. Analyzing and organizing information to create knowledge	0.30	0.05	0.54	6.61	0.00		
Get Results						.51	.26***
(Constant)	2.63	0.24		10.87	0.00		
19. Identifying and accounting for individual and group capabilities and their commitment to task	0.15	0.06	0.29	2.44	0.02		
1. Seeking, recognizing, and taking advantage of opportunities to improve performance	0.14	0.06	0.26	2.18	0.03		
Extend Influence Beyond Chain of Command						.54	.30***

	B	Std. Error	Beta	t	Sig.	R	R ²
(Constant)	2.66	0.23		11.76	0.00		
62. Building trust with those outside lines of authority	0.28	0.04	0.54	6.90	0.00		

Note: N sizes ranged from 109 to 131.

Of the six items under the competency *Lead Others*, only item 25 met the criterion for being entered into the equation. This item alone explained 22% of the variance in overall performance. Similarly, of the nine items under *Lead by Example*, only item 64 entered the equation and explained 29% of the variance in overall performance. Items 13 and 52 under the competency *Create a Positive Environment*, were the only items that were entered for the competency, and they accounted for 32% of the variance in overall performance. The only item to be entered out of the seven items under *Communicate* was item 65. It accounted for 24% of the variance in overall performance. Items 12 and 61 under *Develop Leaders* were entered into the equation and accounted for 26% of the variance in overall performance. Item 27 under *Prepare Self to Lead* was the only item entered for the competency and it accounted for 29% of the variance in overall performance. Two items, 19 and 1, were entered in the equation for the competency, *Get Results*, and explained 26% of the variance in overall performance. Lastly, of the five items under *Extend Influence Beyond Chain of Command*, only item 62 was included in the equation, accounting for 30% of the variance in overall performance. Thus, for each competency, only one to two items were able to account for roughly 20 to 30% of the variance in overall performance. These results are likely due to the high correlations among all of the predictor items.

A multiple regression analysis was also performed, regressing all of the predictor items on overall performance. Using the backward elimination procedure, in which all items are entered and then sequentially removed based on their partial correlations, a final set of 10 items was produced. Table 12 presents the unstandardized regression coefficients, the standardized regression coefficients, *R*, and *R*² for final model produced from this regression analysis. Together, these items accounted for 48% of the variance in overall performance.

Table 12. *Final Model of 10 Predictor Items from Backward Multiple Regression Analysis*

	Competency	B	Std. Error	Beta	t	Sig.	R	R ²
(Constant)		3.22	0.25		12.71	0.00	.70	.48***
13. Fostering team work, cohesion, cooperation, and loyalty	Create a Positive Environment	0.17	0.07	0.38	2.41	0.02		
22. Fostering growth in others	Develop Leaders	-0.20	0.08	-0.39	-2.40	0.02		
24. Guiding successful operations	Get Results	0.30	0.10	0.62	3.03	0.00		
26. Setting and maintaining high expectations for individuals and teams	Create a Positive Environment	0.18	0.08	0.38	2.13	0.04		
30. Maintaining relevant cultural awareness	Prepare Self to Lead	-0.11	0.06	-0.25	-1.96	0.05		

	Competency	B	Std. Error	Beta	t	Sig.	R	R ²
35. Exemplifying warrior ethos	Lead by Example	0.16	0.07	0.37	2.30	0.02		
46. Evaluating and incorporating personal feedback from others	Prepare Self to Lead	-0.38	0.09	-0.76	-4.26	0.00		
52. Encouraging open and candid communications	Create a Positive Environment	0.25	0.08	0.52	3.04	0.00		
54. Ensuring shared understanding	Communicate	0.21	0.08	0.44	2.49	0.02		
63. Executing plans to accomplish the mission	Get Results	-0.40	0.13	-0.79	-3.19	0.00		

Note: Adjusted R² = .42. p < .001. N=89.

Analysis of Additional Competencies and Leadership Items

The two newly proposed competencies, *Planning & Organizing* and *Decision-making & Problem-solving*, were evaluated to determine if adding the competencies of *Planning & Organizing* and *Decision-making & Problem-solving* improved the prediction over the proposed eight core competency set (see Table 13). These competencies were highly correlated with each other and with the eight core competencies, although *Planning & Organizing* had slightly lower correlations with the other competencies. *Planning & Organizing* and *Decision-making & Problem-solving* were entered in step two to determine if they would account for variance in overall performance above and beyond the variance accounted for by the eight Army competencies. *Planning & Organizing* had the lowest correlation of all competencies with overall performance. The addition of *Planning & Organizing* and *Decision-making & Problem-solving* in step two was not significant (R^2 change=.02, ns).

Table 13. Hierarchical Multiple Regression Analysis including *Planning & Organizing* and *Decision-making/Problem solving* competencies

	B	Std. Error	Beta	t	Sig.	sri2	R	R ²
STEP 2							.57	.33**
Lead Others	-0.17	0.19	-0.29	-0.90	0.37	0.00		
Lead by Example	0.15	0.17	0.24	0.84	0.40	0.00		
Create a Positive Environment	0.04	0.24	0.07	0.17	0.86	0.00		
Communicate	-0.19	0.19	-0.32	-1.04	0.30	0.01		
Develop Leaders	-0.02	0.17	-0.04	-0.14	0.89	0.00		
Prepare Self to Lead	0.03	0.20	0.04	0.14	0.89	0.00		
Get Results	0.32	0.22	0.51	1.44	0.15	0.01		
Extend Influence Beyond Chain of Command	0.28	0.14	0.46	1.99	0.05	0.02		
<i>Planning & Organizing</i>	-0.22	0.14	-0.35	-1.57	0.12	0.01		
<i>Decision-making/Problem-solving</i>	0.14	0.17	0.22	0.86	0.39	0.00		

Note: Adjusted R² = .27 in step 1. p < .001. Adjusted R² = .27 in step 2. R² change = .02 (ns). N=138.

A standard multiple regression analysis was performed between the 12 items from Ulmer, et al.'s (2004) scale as the independent variables and overall performance as the

dependent variable. Table 14 presents the unstandardized regression coefficients, the standardized regression coefficients, R , and R^2 for the 12 items. The R was significantly different from zero, $F(12, 110) = 5.15, p < .001$, and predicted 36% of the variance in overall performance.

Table 14. *Standard Multiple Regression Analysis with 12 Items from Ulmer et al.'s (2004) Scale*

	B	Std. Error	Beta	t	Sig.	R	R ²
						.60	.36***
(Constant)	2.64	0.27		9.80	0.00		
76. Keeping cool under pressure	0.09	0.08	0.17	1.14	0.26		
77. Clearly explaining missions, standards, and priorities	-0.06	0.10	-0.11	-0.60	0.55		
78. Seeing the big picture; providing context and perspective	0.05	0.10	0.10	0.54	0.59		
79. Making tough, sound decisions on time	0.10	0.11	0.18	0.92	0.36		
80. Adapting quickly to new situations and requirements	0.17	0.10	0.30	1.67	0.10		
81. Setting high standards without a “zero defects” mentality	0.15	0.08	0.29	1.90	0.06		
82. Handling “bad news”	-0.15	0.09	-0.28	-1.65	0.10		
83. Coaching and giving useful feedback to subordinates	0.06	0.10	0.12	0.62	0.53		
84. Setting a high ethical tone; demanding honest reporting	-0.08	0.08	-0.16	-1.12	0.26		
85. Knowing how to delegate without “micromanaging”	-0.18	0.08	-0.33	-2.35	0.02		
86. Building and supporting teamwork within staff and among units	0.14	0.10	0.27	1.40	0.16		
87. Being positive, encouraging, and realistically optimistic	0.00	0.10	0.01	0.05	0.96		

Note: Adjusted R2 = .29. $p < .001$. $N=123$.

DISCUSSION AND RECOMMENDATIONS

This effort sought to provide support for an empirical relationship between a proposed set of Army leader competencies and performance outcomes associated with leadership. Conducting field research in large and complex organizations such as the U.S. military services is challenging, particularly during heightened operational periods brought on by the Global War on Terrorism, and this limited the opportunities for collecting data as well as the participating sample needed for conducting more rigorous model testing (i.e., factor analyses of competency and performance measures). Nonetheless, this research represents a unique and relatively scientifically rigorous effort to link a competency model to leader effectiveness. The results will be discussed in terms of the validation of the core leader competency model, the addition of additional competencies and predictor items to this model, the development of a leader assessment

instrument, the implications for applying the leadership model, and aspects for further research.

Validation of the Leader Competency Model

Overall, the results of this research provide evidence of the validity of the leadership model competencies and components. One issue of obvious concern is the high inter-correlations between the core competencies. These can be interpreted in several ways. First, the competency model was developed to measure the construct of leadership and it is important that the competencies representing this construct do, in fact, correlate significantly with one another. Second, it is well documented that performance ratings are affected by various types of error including halo (Bass, 1990) and the perception of a single performance factor (Viswesvaran, Schmidt, & Ones, 2005) and this is a likely influence on the present results. Finally, the leaders included in this research were all second term and beyond-level leaders that have experienced various amounts of institutional training and feedback on their performance. It is possible that these experiences have helped to round them into more consistent performers across various leadership dimensions than would be found in the general population. Naturally, when sub-dimensions (competencies) are so highly inter-correlated there is a limitation on their subsequent independent prediction of a criterion. Using a purely statistical determination of the contribution of the various leadership competencies and components toward predicting outcomes of leadership would greatly limit the competencies and components recommended in a 'predictive' final model. However, the fact that all of the core competencies demonstrated a significant relationship to the overall performance composite supports their inclusion as part of the leader model.

The eight proposed competencies were all found to be significantly correlated with the overall performance composite. Using select items from six of the eight competencies predicted nearly 50% of the criterion variance and this is considerable when compared with other leadership assessment instrument criterion-related validation studies within Army contexts (Bass, Avolio, Jung, Berson, 2003). Additional information on these comparisons is presented in a section to follow.

Efforts to control for possible situational constraints on leader effectiveness ratings by weighting those effectiveness items which may not be completely under the leader's influence using influence weights did not prove fruitful. The positive correlation with both leader behavior ratings and effectiveness ratings indicates that influence judgments are likely already being estimated (to some extent) in the overall performance ratings. Ideally, one would expect ratings of the extent to which any leader has influence over outcomes to be independent of the performance of a given leader. One likely reason for the positive correlation is the phrasing of the performance criteria items in terms of the target leader's effect on outcomes rather than just the outcomes themselves. That is, the stem for these items read *'The following items ask for your assessment of the person's overall performance as a leader, as compared to most leaders in the Army. Please mark the answer that best reflects his or her level of effectiveness for each of the items below.'* The items included such things as *'Training Soldiers, unit, or organization'*, *'Developing Soldiers into leaders'*, and *'Developing a*

unit or organization that has high cohesion. In essence then, ratings on these items might necessarily already include consideration of whether or not the leader has influence over these outcomes. Perhaps a better strategy would be to have supervisors make ratings of leadership outcomes independent of considering the 'relative effectiveness' of the leader. Referring back to the previous items as examples, if the supervisors simply rated 'training level of soldiers, unit or organization', 'leadership ability of soldiers', and 'unit cohesion' then the ratings of the extent to which the leader influences these aspects would have more meaning. There were indications during the data collection that some participants were confused about the Leader Influence scale in relation to the Overall Performance scale. To be consistent with this approach, rephrasing the leader influence item stem from '*extent to which the target leader influences these outcomes*' to '*extent to which any leader influences these outcomes*' is recommended. This may be a valuable area for future research, particularly in military contexts where leadership is a 24-hour-a-day concern and the outcomes associated with it often have life and death implications. It could prove detrimental to leader development to hold leaders accountable for unit and organization outcomes which are considered by others to be beyond their control. At the very least, it is important to further understand potential situational constraints on ratings of leader effectiveness.

Contribution of Additional Competencies and Items

The comparison of the eight proposed competencies with the two additional competencies of *Planning & Organizing* and *Problem-solving & Decision-making* indicates that neither of these competencies adds significantly to the predictability of the model. The original rationale for not including these competencies in the model was that these aspects of leadership were already embedded at the component level within several of the existing competencies. For example, one cannot *Get Results*, *Lead Others*, or *Create a Positive Environment* without also planning and making decisions. To the degree the results of this effort are reliable and can be generalized across leadership situations, this rationale was supported.

Comparing the results of Ulmer et al.'s (2004) leadership items with the competency model indicates that these items similarly predict leader effectiveness. While these items do explain a significant amount of the overall performance criterion, they do not outperform the model items. The fact that these items are correlated with the overall performance items serves to support the criterion used in this study. If parsimony alone were the goal, then a subset of leadership items from the proposed model would also out predict the Ulmer et al. items.

Development of a Leader Assessment Instrument

One question which should be raised given the results presented here is how well do the model items perform as a potential leader assessment instrument? When developing a predictive instrument, reliability and validity, as well as other practical considerations such as length, and development and application costs are relevant. The criterion-related validity issue has already been addressed. Face validity is likely to be

high, given the content approach to competency development and subsequent content validity results (Fallesen & Reichard, 2005). Another important aspect of creating a predictor instrument is to cross-validate results on a hold out sample. The demographic characteristics of the cross-validation sample, particularly related to leader types (e.g., officer vs. enlisted, rank) must also be considered.

With respect to the reliability of the items comprising an assessment instrument based upon the model, only internal consistency (content sampling) was addressed. Further tests of the instrument using multiple raters (inter-rater reliability) and multiple administrations (time sampling) are recommended. These estimates notwithstanding, the scale and total instrument reliabilities appear adequate to support continued use of the items as leader assessment instrument.

Instrument length is particularly pertinent given current Army operational pace and the preponderance of surveys in the military. It can be argued that the regression results support using a much shorter instrument. While the exact length of such an instrument cannot be determined from these results, additional data collection under the conditions previously suggested is recommended to better establish the ideal length of a measurement instrument.

This study also demonstrates the feasibility of using the instrument in an online environment which greatly reduces the administration and analysis costs and the timeframe associated with data collection. Additional research is recommended to determine the practical value of using the survey results as developmental feedback for target leaders. Also, additional research on improving the instructions for both subordinates and supervisors to improve rating accuracy and reduce potential rating bias is recommended.

Comparison with Other Leadership Instruments

A number of leadership assessment instruments have been proposed as valuable for Army leader development (Zaccaro, Klimoski, Boyce, Chandler, Banks, & Gade, 1999). Table 15 provides an overview of those instruments that have been applied in U.S. Army settings with corresponding validity with supervisory (or trained rater) ratings for comparison with this study's results. The current model compares favorably with these other instruments. The potential to greatly reduce the length of the assessment instrument and actually improve validity with the leader effectiveness criterion warrants additional research using the current model.

Table 15. *Leadership Assessment Instruments Proposed for Army Leader Development*

Instrument	Items	# of Dimensions	Reliability	Validity	References
Competency Based Leadership Model	63	8 competencies	.85-.96	.40 - .45 with supervisory ratings	This report

Instrument	Items	# of Dimensions	Reliability	Validity	References
Multifactor Leadership Question (Form 5X)	36	6 Factors (2 Transactional; 4 Transformational)	.84-.96	.04 - .55 with potency, cohesion, performance ratings	Bass, Avolio, Jung, & Berson, 2003
Multifactor Leadership Questionnaire	80 (depends on version)	8 Leadership; 3 Organizational outcome	.60-.92	.04-.35 mean corrected with supervisory ratings.	Lowe, Kroeck & Sivasubramaniam, 1996
Leader Azimuth Check II	72 (version 2)	14 Aspects	.66 - .87	None available.	Zaccaro, et al., 1999

Implications for Applying the Leadership Model

The construct of leadership in the Army has been under examination for many decades and considerable research contributed to the development of the model validated in this report. The reliability and criterion-related validity results presented here indicate that the model serves as a good predictor of leadership outcomes. As stressed in Horey, et al. (2004), the value of a competency model is in its application to assessment, development and feedback, and managerial processes. Beyond just predicting effectiveness then, the model should serve as a template for providing developmental and performance feedback to target leaders. While the model provides such a template, it should not be perceived as exact, static, or exhaustive. Certainly what has been included in leadership depictions and information related to how leaders effectively influence others has changed over the years. The model should be open to additional revisions as more is learned about leadership and leader effectiveness.

Army leaders participate in institutional, on-the-job and self development at various intervals and to varying degrees throughout their service career. The institutional portion of this development is derived from needs analyses with professional educators delivering this content. It is a given that this is the most systematic of the three aspects of development. There is little doubt, based on the overwhelming success of Army operations and the relative lack of widespread behavioral problems, that this development is highly effective. What isn't known is how much more effective this development might be if it were aligned to a common theoretical model. That is one of the purposes for producing a leader competency model and based upon the empirical results presented here, there is reason to believe that the proposed model may help guide and align all aspects of development to a common metric.

Beyond the question of what model should be used to align Army leader developmental experiences is that of how such an alignment would take place. It is unlikely that all competencies and components would be addressed by any one specific leadership course or during individual on-the-job or self-development exercises. However, linking course and exercise objectives to the competencies and components would assist target leaders, course administrators, and other stakeholders in recognizing

how those courses and exercises fit into the ‘big picture’ of leadership. Another validation of sorts of the model would be to examine existing leader development courses to see how their objectives align with the competencies and components and to determine if there are aspects of leader development that are not represented in the model.

The use of a common model (and instrument) to measure leadership also serves the purpose of providing comparisons of leadership aspects over time and situations. The assumption is that leadership develops with experience, maturity, and exposure to systematic development. Yet this presents challenges for individuals to track their own development as Army leaders without the use of some kind of standardized measurement instrument. Obviously, it would be of value to the individual and the organization to see how leadership competency improves over time and how various educational and assignment experiences affect leadership behaviors.

Quantifying leadership effectiveness for performance feedback and managing leaders has been particularly challenging for most organizations. Edward Deming, the noted quality improvement innovator, went so far as to recommend that performance appraisals are not valuable for organizations because they imply that performance deficiency is a reflection of the individual rather than the system that supports the individual (Deming, 1986). Certainly performance ratings can suffer from a variety of rater errors and some subordinates or supervisors may think unfavorably about the use of their feedback for promotions, rewards, and disciplinary actions. However, feedback is a necessary component of performance improvement (indeed, the basis of total quality improvement is grounded on process measurement and feedback) and to the extent this feedback can be given in a structured, constructive, and actionable way, it provides great value to the individual. The model provides the structure for this feedback.

An often overlooked aspect of developing a leadership competency model is to provide meaningful job aids to leaders in the form of something other than a multi-rater or self assessment instrument. Leaders in the Army at various times are asked to be visionaries, team members, sounding boards, family counselors, sergeants at arms, and even babysitters. Remembering the responsibilities that go along with these roles is demanding. While there have been advances in terms of technology-based applications to assist with ‘planning and organizing’ in the form of personal digital assistants, the leadership model provides additional content and structure for helping to organize one’s daily leadership activities in a manner that reduces the likelihood important activities will be forgotten.

Aspects for Further Investigation

One area of potential improvement in the measurement of model leadership behaviors has already been mentioned, that of using multiple subordinate raters to assess leader behaviors. This approach would allow for separating halo error from the general performance factor which may underlie the competencies represented. Another means to improve measurement of leader behaviors would be to pursue alternative rating formats. Several methods, including forced choice ratings (Bass & Avolio, 1989) and adaptive scales that reduce the amount of data necessary for making reliable ratings (Borman, Buck, Hanson, Motowidlo, Stark, & Drasgow, 2001) may prove useful in improving the

accuracy of leadership competency ratings. Uleman (1991) provides additional suggestions specifically for improving the accuracy of rating leadership behaviors.

Additional validation of the leader behaviors in the model is also recommended using more objective criteria and more comprehensive subjective criteria of leadership outcomes. Improvements in supervisory ratings which may result in more objective assessment of leader effects on individual, unit, and organizational outcomes have already been mentioned. Research to investigate potential other objective criteria is also recommended. Measures of unit performance in combat, cohesion, potency, readiness, and morale, while confounded with other influences may still prove valuable as effectiveness criteria. Moreover, considering additional dimensions of leader effectiveness beyond those included in the criterion measure in this study may also prove valuable.

Finally, another important and perhaps overlooked aspect of leadership research is to further isolate what isn't leadership. Competency and other construct modeling techniques run the risk of including performance aspects within a construct that may be best categorized elsewhere. This is perhaps the main criticism of military leadership models and relates directly to the definition of leadership from which models are evolved. Leadership, as indicated in the prevailing performance models covered in the introduction to this report, does not equate to individual performance in an organization and therefore should not necessarily include all aspects of technical, managerial, and interpersonal competency. It is interesting to note that the single core competency which best predicted the performance criterion was *Extend Influence Beyond Chain of Command*. This competency was the only one of the eight core competencies that contained the verb 'influence' which is most closely aligned with the Army definition of leadership.

CONCLUSIONS

Fallesen and Reichard (2005) provided support for the content validity of the leader competency model proposed by Horey et al. (2004). The findings of this study support the value of the designated competencies and components in predicting leadership performance outcomes in the form of supervisor ratings. The subordinate ratings of leader behaviors resulted in highly reliable competency scales. While the multiple regression results do not allow comparison of the relative contributions of the competencies due to the high correlations between competencies, one would be hard pressed to argue that those competencies or components not found to be significantly related to the criterion should be dropped from a model of military leadership effectiveness.

Competency-based models of leadership are prevalent in organizations and no doubt have been credited with aspects of performance that are likely beyond ascribed leadership definitional boundaries. It is important to keep more global performance models in mind, such as those proposed by Campbell et al. (1993), Borman et al. (1987), and Hedge et al. (2004), when considering how leadership is related to overall performance within an organization. Further distinguishing how leadership constructs are related to other individual performance dimensions will assist in understanding how these constructs can be better described, measured and developed.

In closing, we must stress that competency models are not developed to represent wholly comprehensive or absolute depictions of leader effectiveness. Rather, they provide key areas of leader functioning that should lead to effective organization outcomes. With this guidance in place, the Army leader competencies and components should be promulgated through doctrine and reflected in developmental and assessment processes to encourage dissemination, understanding, and application toward improving leader behaviors.

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APPENDIX A

Leader Behavior Scale

	Performing well below expectations			Performing appropriately			Performing well above expectations	Not observed
1. Seeking, recognizing, and taking advantage of opportunities to improve performance	1	2	3	4	5	6	7	Not Obs.
2. Creating a learning environment	1	2	3	4	5	6	7	Not Obs.
3. Maintaining and enforcing high professional standards	1	2	3	4	5	6	7	Not Obs.
4. Making feedback part of work processes	1	2	3	4	5	6	7	Not Obs.
5. Considering long-term consequences of actions not just immediate consequences	1	2	3	4	5	6	7	Not Obs.
6. Creating and sharing a vision of the future	1	2	3	4	5	6	7	Not Obs.
7. Identifying and adjusting to external influences on the mission and organization	1	2	3	4	5	6	7	Not Obs.
8. Demonstrating technical, technological, and tactical knowledge and skills	1	2	3	4	5	6	7	Not Obs.
9. Making a “good enough” decision now instead of a “best” decision too late	1	2	3	4	5	6	7	Not Obs.
10. Encouraging subordinates to accept responsibility	1	2	3	4	5	6	7	Not Obs.
11. Expanding own conceptual and interpersonal capabilities	1	2	3	4	5	6	7	Not Obs.
12. Facilitating ongoing development	1	2	3	4	5	6	7	Not Obs.
13. Fostering team work, cohesion, cooperation, and loyalty	1	2	3	4	5	6	7	Not Obs.
14. Developing effective plans to achieve unit missions	1	2	3	4	5	6	7	Not Obs.
15. Modeling Army values consistently through actions, attitudes, and communications	1	2	3	4	5	6	7	Not Obs.
16. Considering the big picture and impact on others when making decisions	1	2	3	4	5	6	7	Not Obs.
17. Building and maintaining alliances	1	2	3	4	5	6	7	Not Obs.
18. Supporting institutional-based development of subordinates	1	2	3	4	5	6	7	Not Obs.
19. Identifying and accounting for individual and group capabilities and their commitment to task	1	2	3	4	5	6	7	Not Obs.
20. Identifying, contending for, allocating, and managing resources	1	2	3	4	5	6	7	Not Obs.

	Performing well below expectations			Performing appropriately			Performing well above expectations	Not observed
21. Conveying thoughts and ideas to ensure understanding	1	2	3	4	5	6	7	Not Obs.
22. Fostering growth in others	1	2	3	4	5	6	7	Not Obs.
23. Encouraging fairness and inclusiveness	1	2	3	4	5	6	7	Not Obs.
24. Guiding successful operations	1	2	3	4	5	6	7	Not Obs.
25. Establishing and communicating clear intent and purpose	1	2	3	4	5	6	7	Not Obs.
26. Setting and maintaining high expectations for individuals and teams	1	2	3	4	5	6	7	Not Obs.
27. Analyzing and organizing information to create knowledge	1	2	3	4	5	6	7	Not Obs.
28. Prioritizing, organizing, and coordinating tasks for teams or groups	1	2	3	4	5	6	7	Not Obs.
29. Anticipating people's on-the-job needs	1	2	3	4	5	6	7	Not Obs.
30. Maintaining relevant cultural awareness	1	2	3	4	5	6	7	Not Obs.
31. Leading others to success	1	2	3	4	5	6	7	Not Obs.
32. Visualizing second and third order effects of decisions before they are made	1	2	3	4	5	6	7	Not Obs.
33. Negotiating to reach mutual understanding and to resolve conflict	1	2	3	4	5	6	7	Not Obs.
34. Fostering job development, job challenge, and job enrichment of others	1	2	3	4	5	6	7	Not Obs.
35. Exemplifying warrior ethos	1	2	3	4	5	6	7	Not Obs.
36. Balancing requirements of the mission with welfare of followers	1	2	3	4	5	6	7	Not Obs.
37. Focusing on the most important aspects of a problem	1	2	3	4	5	6	7	Not Obs.
38. Maintaining mental and physical health and well-being	1	2	3	4	5	6	7	Not Obs.
39. Recognizing and rewarding good performance	1	2	3	4	5	6	7	Not Obs.
40. Creating alternate or contingency plans	1	2	3	4	5	6	7	Not Obs.
41. Displaying confidence, self-control, composure, and positive attitude	1	2	3	4	5	6	7	Not Obs.
42. Shaping climate	1	2	3	4	5	6	7	Not Obs.

	Performing well below expectations			Performing appropriately			Performing well above expectations	Not observed
43. Making sound decisions without all of the facts	1	2	3	4	5	6	7	Not Obs.
44. Maintaining relevant geo-political awareness	1	2	3	4	5	6	7	Not Obs.
45. Seeking and is open to diverse ideas and points of view	1	2	3	4	5	6	7	Not Obs.
46. Evaluating and incorporating personal feedback from others	1	2	3	4	5	6	7	Not Obs.
47. Presenting recommendations so others understand advantages	1	2	3	4	5	6	7	Not Obs.
48. Expressing and demonstrating care for people and their well-being	1	2	3	4	5	6	7	Not Obs.
49. Anticipating how different plans will look when executed	1	2	3	4	5	6	7	Not Obs.
50. Assessing developmental needs of subordinates	1	2	3	4	5	6	7	Not Obs.
51. Expanding own knowledge of technical, technological, and tactical areas	1	2	3	4	5	6	7	Not Obs.
52. Encouraging open and candid communications	1	2	3	4	5	6	7	Not Obs.
53. Conveying the significance of the work	1	2	3	4	5	6	7	Not Obs.
54. Ensuring shared understanding	1	2	3	4	5	6	7	Not Obs.
55. Designating, clarifying, and de-conflicting roles	1	2	3	4	5	6	7	Not Obs.
56. Understanding sphere of influence, means of influence, and limits of influence	1	2	3	4	5	6	7	Not Obs.
57. Accepting reasonable setbacks and failures	1	2	3	4	5	6	7	Not Obs.
58. Working effectively in situations with less-than-perfect information	1	2	3	4	5	6	7	Not Obs.
59. Understanding the importance of conceptual thinking skills and modeling them to others	1	2	3	4	5	6	7	Not Obs.
60. Modeling sound values and behaviors	1	2	3	4	5	6	7	Not Obs.
61. Building team skills and processes	1	2	3	4	5	6	7	Not Obs.
62. Building trust with those outside lines of authority	1	2	3	4	5	6	7	Not Obs.
63. Executing plans to accomplish the mission	1	2	3	4	5	6	7	Not Obs.
64. Reinforcing verbal guidance through demonstration of own actions	1	2	3	4	5	6	7	Not Obs.

	Performing well below expectations			Performing appropriately			Performing well above expectations	Not observed
65. Employing engaging communication techniques	1	2	3	4	5	6	7	Not Obs.
66. Extending influence beyond chain of command	1	2	3	4	5	6	7	Not Obs.
67. Maintaining self awareness and recognizing impact of self on others	1	2	3	4	5	6	7	Not Obs.
68. Demonstrating good judgment when the situation is unclear	1	2	3	4	5	6	7	Not Obs.
69. Being sensitive to cultural factors in communication	1	2	3	4	5	6	7	Not Obs.
70. Demonstrating commitment to the Nation, U.S. Army, one's unit, and Soldiers	1	2	3	4	5	6	7	Not Obs.
71. Removing work barriers	1	2	3	4	5	6	7	Not Obs.
72. Listening actively	1	2	3	4	5	6	7	Not Obs.
73. Coaching, counseling, and mentoring	1	2	3	4	5	6	7	Not Obs.
74. Determining information sharing strategies	1	2	3	4	5	6	7	Not Obs.
75. Preparing self to lead	1	2	3	4	5	6	7	Not Obs.
76. Keeping cool under pressure	1	2	3	4	5	6	7	Not Obs.
77. Clearly explaining missions, standards, and priorities	1	2	3	4	5	6	7	Not Obs.
78. Seeing the big picture; providing context and perspective	1	2	3	4	5	6	7	Not Obs.
79. Making tough, sound decisions on time	1	2	3	4	5	6	7	Not Obs.
80. Adapting quickly to new situations and requirements	1	2	3	4	5	6	7	Not Obs.
81. Setting high standards without a "zero defects" mentality	1	2	3	4	5	6	7	Not Obs.
82. Handling "bad news"	1	2	3	4	5	6	7	Not Obs.
83. Coaching and giving useful feedback to subordinates	1	2	3	4	5	6	7	Not Obs.
84. Setting a high ethical tone; demanding honest reporting	1	2	3	4	5	6	7	Not Obs.
85. Knowing how to delegate without "micromanaging"	1	2	3	4	5	6	7	Not Obs.
86. Building and supporting teamwork within staff and among units	1	2	3	4	5	6	7	Not Obs.

	Performing well below expectations			Performing appropriately			Performing well above expectations	Not observed
87. Being positive, encouraging, and realistically optimistic	1	2	3	4	5	6	7	Not Obs.

APPENDIX B

Overall Performance Scale

	Significantly less effective than most leaders	Slightly less effective than most leaders	As effective as most leaders	Slightly more effective than most leaders	Significantly more effective than most leaders	Not applicable
1. Earning Soldiers' trust in his/her combat judgment.	1	2	3	4	5	N/A
2. Training Soldiers, unit, or organization	1	2	3	4	5	N/A
3. Ensuring Soldiers, unit, or organization accomplish their missions.	1	2	3	4	5	N/A
4. Making recommendations that improve unit or organization effectiveness.	1	2	3	4	5	N/A
5. Ensuring that his or her team's equipment is operationally ready	1	2	3	4	5	N/A
6. Developing a unit or organization that has high cohesion.	1	2	3	4	5	N/A
7. Developing Soldiers into leaders.	1	2	3	4	5	N/A
8. Earning Soldiers' trust	1	2	3	4	5	N/A
9. Improving the morale of Soldiers in his or her unit.	1	2	3	4	5	N/A
10. Improving Soldiers' task accomplishment.	1	2	3	4	5	N/A
11. Increasing the likelihood that Soldiers in his or her unit will remain in the Army.	1	2	3	4	5	N/A
12. Helping Soldiers in his or her unit grow as leaders.	1	2	3	4	5	N/A
13. Earning the trust of his or her superior officers/supervisors.	1	2	3	4	5	N/A
14. Contributing to Army readiness.	1	2	3	4	5	N/A
15. Showing concern for Soldier's families.	1	2	3	4	5	N/A
16. Succeeding in all of his or her assignments.	1	2	3	4	5	N/A
17. Making team members better Soldiers.	1	2	3	4	5	N/A

APPENDIX C

Leader Influence Scale

	Not at all	To Some Extent	To a Great Extent	Not applicable
1. Earning my Soldiers' trust in my combat judgment.	1	2	3	N/A
2. Training my Soldiers, unit, or organization	1	2	3	N/A
3. Ensuring my Soldiers, unit, or organization accomplish their missions.	1	2	3	N/A
4. Making recommendations that improve unit or organization effectiveness.	1	2	3	N/A
5. Ensuring that my team's equipment is operationally ready	1	2	3	N/A
6. Developing a unit or organization that has high cohesion.	1	2	3	N/A
7. Developing Soldiers into leaders.	1	2	3	N/A
8. Earning my Soldiers' trust	1	2	3	N/A
9. Improving the morale of Soldiers in my unit.	1	2	3	N/A
10. Improving my Soldiers' task accomplishment.	1	2	3	N/A
11. Increasing the likelihood that Soldiers in my unit will remain in the Army.	1	2	3	N/A
12. Helping Soldiers in my unit grow as leaders.	1	2	3	N/A
13. Earning the trust of my superior officers/supervisors.	1	2	3	N/A
14. Contributing to Army readiness.	1	2	3	N/A
15. Showing concern for Soldier's families.	1	2	3	N/A
16. Succeeding in all of my assignments.	1	2	3	N/A
17. Making my team members better Soldiers.	1	2	3	N/A

APPENDIX D

Supervisor Predictor Ratings

Item Text	N	Item Mean	Item SD	Item-total correlation
Lead Others				
31. Leading others to success	57	4.84	1.72	0.94
25. Establishing and communicating clear intent and purpose	58	4.93	1.66	0.90
53. Conveying the significance of the work	57	4.72	1.53	0.82
3. Maintaining and enforcing high professional standards	59	4.92	1.76	0.84
36. Balancing requirements of the mission with welfare of followers	59	4.85	1.51	0.83
6. Creating and sharing a vision of the future	56	4.39	1.40	0.83
Lead by Examples				
60. Modeling sound values and behaviors	57	5.02	1.52	0.86
15. Modeling Army values consistently through actions, attitudes, and communications	59	5.05	1.69	0.75
35. Exemplifying warrior ethos	59	5.08	1.61	0.82
70. Demonstrating commitment to the Nation, U.S. Army, one's unit, and Soldiers	58	5.28	1.65	0.74
41. Displaying confidence, self-control, composure, and positive attitude	58	5.22	1.61	0.71
8. Demonstrating technical, technological, and tactical knowledge and skills	59	5.22	1.55	0.66
59. Understanding the importance of conceptual thinking skills and modeling them to others	48	4.71	1.43	0.72
45. Seeking and is open to diverse ideas and points of view	59	4.76	1.37	0.72
64. Reinforcing verbal guidance through demonstration of own actions	57	5.04	1.57	0.84
Create a Positive Environment				
42. Shaping climate	55	4.65	1.55	0.79
13. Fostering team work, cohesion, cooperation, and loyalty	59	5.14	1.68	0.75
10. Encouraging subordinates to accept responsibility	56	5.29	1.38	0.77
2. Creating a learning environment	57	4.53	1.62	0.86
52. Encouraging open and candid communications	56	5.00	1.36	0.67
23. Encouraging fairness and inclusiveness	58	4.79	1.31	0.86
48. Expressing and demonstrating care for people and their well-being	57	5.02	1.33	0.80
29. Anticipating people's on-the-job needs	58	4.57	1.53	0.83
26. Setting and maintaining high expectations for individuals and teams	56	5.02	1.57	0.78
57. Accepting reasonable setbacks and failures	53	4.57	1.58	0.63
Communicate				
54. Ensuring shared understanding	57	4.65	1.51	0.89
72. Listening actively	58	4.69	1.57	0.86
65. Employing engaging communication techniques	55	4.64	1.61	0.87
74. Determining information sharing strategies	49	4.84	1.50	0.79
21. Conveying thoughts and ideas to ensure understanding	58	5.07	1.30	0.83

Item Text	N	Item Mean	Item SD	Item-total correlation
47. Presenting recommendations so others understand advantages	58	4.83	1.40	0.81
69. Being sensitive to cultural factors in communication	54	4.70	1.50	0.84
Develop Leaders				
22. Fostering growth in others	58	4.83	1.48	0.87
50. Assessing developmental needs of subordinates	55	4.78	1.50	0.86
73. Coaching, counseling, and mentoring	54	4.93	1.44	0.82
34. Fostering job development, job challenge, and job enrichment of others	55	4.55	1.27	0.80
12. Facilitating ongoing development	58	4.84	1.44	0.75
18. Supporting institutional-based development of subordinates	55	4.78	1.47	0.70
61. Building team skills and processes	58	4.95	1.39	0.87
Prepare Self to Lead				
75. Preparing self to lead	57	5.11	1.76	0.80
38. Maintaining mental and physical health and well-being	59	5.22	1.63	0.57
67. Maintaining self awareness and recognizing impact of self on others	56	4.80	1.52	0.71
46. Evaluating and incorporating personal feedback from others	58	4.74	1.40	0.73
51. Expanding own knowledge of technical, technological, and tactical areas	55	4.80	1.64	0.60
11. Expanding own conceptual and interpersonal capabilities	56	4.96	1.55	0.69
27. Analyzing and organizing information to create knowledge	57	4.67	1.57	0.71
30. Maintaining relevant cultural awareness	53	4.64	1.53	0.68
44. Maintaining relevant geo-political awareness	40	4.35	1.55	0.68
Get Results				
24. Guiding successful operations	59	5.12	1.57	0.84
28. Prioritizing, organizing, and coordinating tasks for teams or groups	59	4.78	1.58	0.79
19. Identifying and accounting for individual and group capabilities and their commitment to task	56	4.91	1.50	0.91
55. Designating, clarifying, and de-conflicting roles	53	4.64	1.39	0.85
20. Identifying, contending for, allocating, and managing resources	58	4.91	1.47	0.84
71. Removing work barriers	53	4.72	1.52	0.81
39. Recognizing and rewarding good performance	57	4.93	1.53	0.82
1. Seeking, recognizing, and taking advantage of opportunities to improve performance	59	4.81	1.47	0.73
4. Making feedback part of work processes	57	4.65	1.51	0.81
63. Executing plans to accomplish the mission	57	5.18	1.47	0.85
7. Identifying and adjusting to external influences on the mission and organization	59	4.92	1.59	0.84
Extend Influence Beyond Chain of Command				
66. Extending influence beyond chain of command	53	4.89	1.56	0.80
56. Understanding sphere of influence, means of influence, and limits of influence	52	4.63	1.48	0.83
62. Building trust with those outside lines of authority	55	5.00	1.41	0.80
33. Negotiating to reach mutual understanding and to resolve conflict	55	4.44	1.57	0.82
17. Building and maintaining alliances	56	4.79	1.40	0.83

APPENDIX E

Subordinate Criterion Ratings

Item Text	N	Item Mean	Item SD	Item-total correlation
Overall Performance				
1. Earning Soldiers' trust in his/her combat judgment.	188	3.93	0.98	0.80
2. Training Soldiers, unit, or organization	205	3.77	0.94	0.81
3. Ensuring Soldiers, unit, or organization accomplish their missions.	212	3.97	0.89	0.81
4. Making recommendations that improve unit or organization effectiveness.	217	3.90	0.89	0.76
5. Ensuring that his or her team's equipment is operationally ready	196	3.72	1.06	0.71
6. Developing a unit or organization that has high cohesion.	210	3.76	0.99	0.80
7. Developing Soldiers into leaders.	199	3.71	0.98	0.85
8. Earning Soldiers' trust	212	3.98	1.01	0.79
9. Improving the morale of Soldiers in his or her unit.	208	3.82	1.06	0.76
10. Improving Soldiers' task accomplishment.	205	3.71	0.87	0.86
11. Increasing the likelihood that Soldiers in his or her unit will remain in the Army.	201	3.47	1.05	0.78
12. Helping Soldiers in his or her unit grow as leaders.	205	3.75	0.97	0.86
13. Earning the trust of his or her superior officers/supervisors.	215	4.05	0.95	0.74
14. Contributing to Army readiness.	215	3.92	0.89	0.80
15. Showing concern for Soldier's families.	209	4.00	0.99	0.59
16. Succeeding in all of his or her assignments.	215	3.95	0.91	0.76
17. Making team members better Soldiers.	205	3.81	0.93	0.91
Leader Influence				
2. Training my Soldiers, unit, or organization	201	2.48	0.54	0.59
3. Ensuring my Soldiers, unit, or organization accomplish their missions.	215	2.61	0.51	0.63
5. Ensuring that my team's equipment is operationally ready	191	2.46	0.59	0.65
6. Developing a unit or organization that has high cohesion.	207	2.46	0.56	0.66
7. Developing Soldiers into leaders.	207	2.37	0.62	0.74
9. Improving the morale of Soldiers in my unit.	207	2.44	0.56	0.58
10. Improving my Soldiers' task accomplishment.	212	2.39	0.57	0.69
11. Increasing the likelihood that Soldiers in my unit will remain in the Army.	202	2.18	0.65	0.65
12. Helping Soldiers in my unit grow as leaders.	210	2.39	0.58	0.76
14. Contributing to Army readiness.	213	2.49	0.55	0.64
16. Succeeding in all of my assignments.	216	2.61	0.53	0.58
17. Making my team members better Soldiers.	211	2.44	0.58	0.75

