

Technical Report 1041

An Exploration of the Construct Validity of a Leadership Behavior Rating System

Elisa H. Schwager and Kenneth L. Evans
U.S. Army Research Institute

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An Exploration of the Construct Validity of a Leadership Behavior Rating System

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FOREWORD

The Center for Leadership and Organizations Research (CLOR), jointly established by the U.S. Military Academy (USMA) and the U.S. Army Research Institute for the Behavioral and Social Sciences (ARI), conducts programmatic research on Army-wide priorities in the areas of organizational leadership and leader education, training, and development. One of the CLOR's major research efforts is its Leadership Development (LEAD 21) research program, initiated in 1994 to increase understanding of the leadership development process. This program involves the creation of a longitudinal data base, begun with USMA cadets in the class of 1998, which will be used for describing changes in the leadership behavior of individual leaders over time, as well as for identifying those experiences that contribute most to successful leader development.

A crucial component of any leadership development research program, particularly longitudinal programs, is an effective method of measuring leadership behavior. One measure that holds considerable promise in this regard is the Cadet Performance Report (CPR), a twelve-dimension leadership behavior rating system currently used by USMA personnel to evaluate and improve cadet leadership performance. Because they are completed by superior, peer, and subordinate raters, CPR ratings enable a 360° view of leadership performance to be obtained.

Evidence of the content validity of the CPR leadership dimensions has been provided by prior USMA research. This report provides evidence of their construct validity for measuring cadet leadership behavior. This evidence was obtained by examining the conceptual relationship of CPR dimensions to those found in other taxonomies of leadership behavior, including those used by the Center for Army Leadership and the Reserve Officers Training Corps. Evidence of their construct validity was also obtained by examining their internal statistical properties and their statistical relationships with more holistic leadership measures. Taken as a whole, the evidence suggests the CPR to be a valid instrument for measuring leadership behavior, with the potential to generalize to a broad range of leadership situations and environments.

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AN EXPLORATION OF THE CONSTRUCT VALIDITY OF A LEADERSHIP BEHAVIOR RATING SYSTEM

EXECUTIVE SUMMARY

Research Requirement:

An effective method of measuring leadership behavior was needed as an essential part of a longitudinal program of leadership development research recently initiated by the Center for Leadership and Organizations Research (CLOR) at the U.S. Military Academy (USMA). One measure being considered for its ability to fulfill this key research requirement is the Cadet Performance Report (CPR), a 12-dimension leadership behavior rating system currently used to develop and evaluate the leadership performance of USMA cadets. Although evidence for the content validity of the CPR dimensions has been provided by prior USMA research, no previous investigation has examined their construct validity for measuring cadet leadership behavior.

Procedure:

Records of CPR ratings, each consisting of 12 individual dimension scores and a global score of leadership performance, were received from an automated data base at USMA. Separate analyses of these records, reflecting the CPR ratings of over 2,000 different cadets, were conducted for three different types of CPR raters: superiors, peers, and subordinates. Our general approach in exploring the construct validity of the CPR dimensions was primarily inductive in nature and it involved three interrelated steps. First, we examined how the CPR dimensions related to more holistic measures of leadership performance, specifically the CPR global score and the leadership grade. The leadership grade is USMA's official evaluation of a cadet's overall performance in a leadership role. Second, we investigated the interrelationships existing among the 12 CPR dimensions themselves in an effort to better understand the underlying conceptual structure of the CPR instrument. Finally, we explored how the three types of CPR raters used the dimensions to differentially evaluate the leadership strengths and weaknesses of rated cadets.

Findings:

For each type of rater, significant relationships were found between most CPR dimensions and both the leadership grade and the

CPR global score. In particular, the dimensions of duty motivation and military bearing were most strongly related to these more holistic measures of leadership performance across rater types. Relative to the other 10 CPR dimensions, they also explained considerably more of the variation in the holistic measures, though there was some deviation from this general trend for subordinate raters.

A series of principal components factor analyses suggested the 12 CPR dimensions have an underlying structure consisting of four broader components of leadership behavior. Specifically, there appears to be a cognitive component related to three CPR dimensions (planning and organizing, decision making, and oral and written communication), a formal interpersonal component related to three dimensions (delegating, supervising, and developing subordinates), an informal interpersonal component related to four dimensions (teamwork, influencing others, consideration for others, and professional ethics), and a self-management component related to two dimensions (duty motivation and military bearing).

Both similarities and differences were found in the ways the three types of raters used the CPR dimensions to evaluate the leadership strengths and weaknesses of rated cadets. Duty motivation and military bearing were the most often used CPR dimensions among the three types of raters. However, differences were found along most of the other 10 dimensions. For example, superiors were more likely than either peers or subordinates to use the dimension of supervising. In addition, superiors were more likely than subordinates to use the dimension of planning and organizing, as well as the dimension of oral and written communication. In contrast, both peers and subordinates were more likely than superiors to use the dimension of consideration for others. Further, subordinates were more likely than either superiors or peers to use the dimensions of influencing others and developing subordinates.

Utilization of Findings:

Our exploratory findings have substantial consistency with related research in the literature and provide support for the construct validity of the CPR dimensions as measures of leadership behavior. Their usefulness in obtaining multiple views of leadership performance was demonstrated, particularly in those areas not typically stressed by superiors. Because they provide more detailed and comprehensive information about cadet leadership behavior than holistic measures alone, the CPR dimensions appear well suited to the task of evaluating cadet

leadership development over time. To the extent that these dimensions overlap with those in other leadership taxonomies, our findings should have some general applicability to a broader range of leadership situations and environments.

AN EXPLORATION OF THE CONSTRUCT VALIDITY OF A LEADERSHIP BEHAVIOR RATING SYSTEM

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AN EXPLORATION OF THE CONSTRUCT VALIDITY OF A LEADERSHIP BEHAVIOR RATING SYSTEM

Introduction

Identifying the behaviors that represent the leadership domain and determining their relevance to successful performance are essential for the advancement of leadership theory and the improvement of leader development programs. Leadership behavior rating systems provide a framework for defining and measuring various dimensions of leadership effectiveness, thereby facilitating these goals. In examining the construct validity of any leadership behavior rating system two primary concerns must be addressed. First, the respective meaning of the dimensions being measured must be considered, both as they relate to one another and as they relate to external criteria, often of a more holistic nature. Second, the effects on the evaluation process of the rater's organizational position, relative to the ratee, also must be taken into account.

Historically, leadership researchers have explored the meaning and interrelatedness of leadership dimensions through the creation of taxonomies that attempt to categorize behaviors for effective leadership across situations. Fleishman et al. (1991) reviewed 65 different classifications of leadership behavior found between 1940 and 1986. Taxonomies and classification systems such as these have provided both a means for organizing leadership terms and concepts, as well as a mechanism for communication (Clement & Ayres, 1976).

Although taxonomies differ in terms of the number and types of dimensions posited, some consistent trends are found across many of the classification systems. For example, two dimensions found in almost every taxonomy are facilitating group relations and accomplishing tasks (Fleishman et al., 1991). Showing concern for subordinates and maintaining standards of performance are exemplary of behaviors fitting into these classifications. Although the dimensions associated with such behaviors are probably best known as consideration and initiation of structure, from the Ohio State University leadership studies of the early 1950s (see Fleishman, 1973), they are listed in a variety of leadership taxonomies under different labels.

In addition, the managerial and administrative functions of leadership appear quite uniformly across taxonomies. As noted by Fleishman et al. (1991), these functions involve monitoring both personnel and physical resources. Kanungo and Misra (1992) have also noted that behaviors involved in resource planning and coordination are evident in many leadership frameworks. Yet, Kanungo and Misra (1992) distinctly emphasize the importance of managing oneself. In their conceptualization, self-management has a central role in regulating the effectiveness of a leader's performance in all other areas.

The increased acknowledgment that leaders are problem solvers who act upon organizational systems has become evident in many of the dimensions found in more recent leadership classification schemes (see Fleishman et al., 1991). For example, the existence of planning and decision making dimensions in a variety of leadership taxonomies attends to the cognitive requirements of leadership. Viewing the leader as a problem solver implies comparability of leadership requirements across settings and allows for greater understanding of effective organizational leadership behavior in a wide variety of contexts (Mumford, 1986). In fact, Fleishman et al. (1991) suggest that "leadership behavior represents a form of organizationally-based problem solving, implemented in a social context, where an attempt is made to bring about goal attainment by influencing the actions of other subsystems" (pp. 258-259).

Leadership Dimensions in the U.S. Army

The U.S. Army has conducted a considerable amount of research on defining and measuring leadership effectiveness. Three classification systems are particularly relevant for understanding leadership in the Army context. The Center for Army Leadership (CAL) has identified nine leadership competencies representing the performance requirements of leaders throughout the U.S. Army. Two other systems were developed to classify the leadership behaviors involved in precommissioning education and training. They are the Leadership Assessment Program (LAP), a sixteen-dimension taxonomy used in the Reserve Officers Training Corps (ROTC), and the Cadet Performance Report (CPR), a twelve-dimension leadership behavior rating system employed by the U.S. Military Academy (USMA) at West Point, NY.

The nine CAL leadership competencies are communications, supervision, teaching and counseling, soldier and team development, technical and tactical proficiency, decision making, planning, use of available systems, and professional ethics (Department of the Army, 1990). The CAL competencies were originally established to provide a broad framework for assessing Army leadership performance (Clement & Ayres, 1976). The identified leadership competencies were viewed as reflecting the requirements faced by leaders Army-wide.

Support has been found for the CAL competencies as representing a meaningful classification system of leadership behavior (Tremble, 1992; Twohig & Tremble, 1991). Specifically, these studies found relationships in tactical training environments between the identified competencies and leadership quality, leader effectiveness, and unit effectiveness. In relation to these competencies, some researchers also have argued for tailoring leader assessment programs to the requirements of leadership positions at different organizational levels (Clement & Ayers, 1976; Twohig & Tremble, 1991).

The sixteen dimensions of the LAP are oral communication, oral presentation, written communication, initiative, sensitivity, influence, planning and organizing, delegation, administrative control, problem analysis, judgment, decisiveness, followership, technical/tactical competence, physical stamina, and mission accomplishment (U.S. Army Cadet Command, 1993). The development of the initial LAP was based on a job analysis of ROTC precommissioning education and training requirements (Rogers, Lilley, Wellins, Fischl, & Burke, 1982). In their analysis, a tentative set of dimensions was derived from a review of the literature, interviews with job incumbents (i.e., Second Lieutenants), and critical incident interviews with individuals who had occupied or supervised individuals in the incumbent position (i.e., Captains). Following these steps, a questionnaire was administered to another sample of Captains to investigate the importance of each dimension for achieving success in the Second Lieutenant position. A content validity analysis was employed to determine the final set of dimensions used in the LAP.

The twelve dimensions of the CPR are duty motivation, military bearing, teamwork, influencing others, consideration for others, professional ethics, planning and organizing, delegating, supervising, developing subordinates, decision making, and oral and written communication (U.S. Corps of Cadets, 1995). They were developed from a job analysis conducted by USMA's Office of Institutional Research (Office of Institutional Research [OIR], 1989). Techniques they employed were similar to the ones used by the creators of the LAP (Rogers et al., 1982). The twelve dimensions resulting from the OIR analysis provide a common framework for observing and rating the performance of USMA cadets in a wide variety of leadership roles.

Table 1 shows a comparison of the three U.S. Army leadership classification systems (CAL, LAP, and CPR). It appears that a substantial amount of comparability exists among the dimensions, although they are referred to by slightly different terms. There are a few disparities across the leadership classifications that may relate to unique responsibilities required for successful performance in specific leadership situations. One difference is that the CPR has no dimension involving technical and tactical proficiency, unlike the CAL and LAP classification systems. This dimension may not have been included in the CPR because the technical and tactical competence of USMA cadets is evaluated separately within the overall USMA curriculum.

In addition, the LAP and CPR possess some common features not found in the CAL classification system. For example, the LAP's dimension of initiative and the CPR's dimension of duty motivation both connote an active performance orientation, generally thought to be important for successful task accomplishment and effective leadership. Similarly, the dimensions of physical stamina in the LAP and military bearing in the CPR are related to the extent they both involve maintaining

Table 1

A Comparison of Leadership Dimensions From Three
U.S. Army Classification Systems

CAL Department of the Army (1990)	LAP U.S. Army Cadet Command (1993)	CPR U.S. Corps of Cadets (1995)
Communications	Oral Communication Written Communication Oral Presentation	Oral and Written Communication
Supervision	Administrative Control Delegation	Supervising Delegating
Teaching & Counseling	see Influence	Developing Subordinates
Soldier & Team Development	Influence ^a Sensitivity Followership	Influencing Others Consideration for Others Teamwork
Technical & Tactical Proficiency	Technical/Tactical Competence	-----
Decision Making	Problem Analysis Judgment Decisiveness	Decision Making
Planning	Planning and Organizing	Planning & Organizing
Use of Available Systems ^b	-----	-----
Professional Ethics	see Influence	Professional Ethics
-----	Initiative Physical Stamina ^c Mission Accomplishment	Duty Motivation Military Bearing

^a Part of the LAP's influence dimension relates to teaching and coaching subordinates. Part of this dimension also relates to being honest and ethical.

^b Competency regarding information management technology is a primary feature of this CAL dimension.

^c This LAP dimension includes the ability to complete required tasks while under physical, mental, and emotional stress (i.e., maintaining composure). In addition, part of the influence dimension relates to displaying self-confidence in one's posture, appearance, and behavior.

personal composure under stressful conditions. These similarities between the LAP and CPR may be due to the fact that they were both created to assess performance in precommissioning education and training environments. Certainly, each system has evidenced a degree of content validity for that purpose (OIR, 1989; Rogers et al., 1982).

Interestingly, the use of available systems dimension in the CAL classification system is not present in either the LAP or CPR. Exclusion of this dimension may be attributed to the central role that computer and information management technology have in contemporary post-secondary education. Because most ROTC and USMA cadets already display considerable familiarity and facility with such technology, particularly as they approach graduation, it may be viewed as a less important dimension upon which to differentiate leadership performance in those populations.

Overall, the three Army taxonomies appear to incorporate both specific dimensions representing the military leader role, as well as other dimensions having greater generalizability across organizations. In fact, other researchers have incorporated many of these actual dimensions in their broader categorizations of leadership behavior, which are not limited solely to military organizations (Fleishman et al., 1991; Korotkin, Mumford, Yarkin-Levin, Wallis, & Fleishman, 1986). While the overlap among the dimensions shown in Table 1 lends some conceptual support to the belief that they are somewhat representative of the leadership domain, additional empirical evidence is needed before one can conclude that measures of these dimensions reflect actual leadership performance, either holistically or componentially. This is particularly true of the CPR dimensions, which were developed most recently.

Effects of Rater Position on the Evaluation Process

While the meaning and interrelatedness of leadership behavior dimensions must be considered when evaluating their construct validity, the importance of a particular dimension in evaluating overall leadership effectiveness is often dependent upon the perspective of the individual providing the rating. Superior, peer, and subordinate raters may place differential significance on the dimensions contributing to their overall leadership assessment. Thus, the effects of the positional relationship between rater and ratee on the evaluation process must also be considered when examining the construct validity of a leadership behavior rating system.

While superiors have been used to provide evaluations of leadership performance most often, other studies have indicated that peers or subordinates can also provide evaluations having sufficient levels of reliability and validity (Hollander, 1957, 1965; McEvoy & Beatty, 1989; Shipper & Wilson, 1991). In fact,

the simultaneous use of differing types of raters to evaluate the performance of leaders has gained considerable acceptance in recent years, at least in theory if not in practice. Hogan, Curphy, and Hogan (1994), for example, believe the most practical way to evaluate leaders is to ask their superiors, peers, and subordinates to rate their performance. The leadership behavior rating system at USMA, based on the twelve CPR dimensions, is an example of an evaluation program in which the same dimensional scheme is used by different types of raters (i.e., superiors, peers, and subordinates) to assess a cadet's leadership performance.

Evaluation programs having multiple types of raters can provide reliable, credible, comprehensive, and informative feedback to developing leaders that they can then use to organize self-perceptions about their own leadership performance over time (Morgan, 1989). In their meta-analytic review of multiple rater evaluation programs, Harris and Schaubroeck (1988) cite a variety of advantages that have been associated with such programs in the past. These advantages include an enhanced ability to observe and measure different aspects of performance, greater reliability of the ratings, heightened perceptions of fairness and acceptance by those rated, and a more defensible legal foundation for an organization's overall evaluation program.

A number of investigations have explored in some detail the differences in perspective between superior, peer, and subordinate raters (Cann & Siegfried, 1987, 1990; Halpin, 1953; Harris & Hogan, 1992; Moore & Smith, 1952; Mount, 1984). Moore and Smith (1952) interviewed U.S. Air Force personnel about the characteristics of the best and worst noncommissioned officers they had known. The percentage of individuals mentioning various characteristics differed among groups of commissioned officers (superiors), noncommissioned officers themselves (peers), and airmen (subordinates). For example, superiors frequently mentioned that a good noncommissioned officer does not require continuous supervision, is a disciplinarian, and is not arbitrary. In contrast, peers often mentioned that a good noncommissioned officer sets the example, commands respect, and provides leadership. Subordinates frequently said a good noncommissioned officer issues quiet and authoritative commands, looks out for the welfare of subordinates, and respects subordinates as people. Despite these differences, good noncommissioned officers were often viewed as knowing their job and having a neat appearance by those in every group. Moore and Smith (1952) concluded that one's views about leadership "depend upon one's position in a leadership hierarchy" (p. 5).

In a study of B-29 aircraft commanders flying combat missions over Korea, Halpin (1953) found that superiors tended to rate favorably those commanders who were described by their subordinates as being high on the initiating structure dimension of leader behavior. However, subordinates tended to rate favorably those commanders they found to be high on the

consideration dimension. Aircraft commanders rated highest in overall combat effectiveness by their superiors tended to score above the mean on the two leader behavior dimensions, while those rated lowest in overall combat effectiveness tended to score below the mean on both dimensions. Halpin (1953) suggested that superiors and subordinates selectively perceive "one dimension as more important than the other, yet in neither case is the second of the two dimensions viewed adversely" (p. 18). Thus, a moderately high level of initiating structure was acceptable to subordinates, as long as their commander was highly considerate. Conversely, a moderately high level of consideration by commanders was acceptable to superiors, if it was accompanied by a high level of initiating structure.

Mount (1984) examined how superior and subordinate ratings of middle managers on five leadership effectiveness factors related to the interpersonal satisfaction of subordinates with their managers. The factors of consideration and expertise were related to subordinate satisfaction for both superior and subordinate raters. Their developing employees factor was related to subordinate satisfaction for subordinates only. Two factors, administration and structuring work, were unrelated to subordinate satisfaction for either group. Unfortunately, the satisfaction of superiors with these managers was not examined.

Cann and Siegfried (1987) asked two groups of undergraduates to rate an ideal manager of a hypothetical company using a set of 36 traits. Those in one group rated their ideal managers from the perspective of a superior, while those in the other group provided ratings from a subordinate perspective. Superiors tended to rate their ideal managers as more dominant, forceful, aggressive, analytical, stern, competitive, solemn, and tactful than did subordinates. However, subordinates tended to rate their ideal managers as more compassionate, sentimental, excitable, sensitive, understanding, sincere, and gentle than did superiors. Both groups of raters described their ideal managers as being highly reliable, truthful, efficient, and confident. Later, Cann and Siegfried (1990) suggested superiors value leaders who are high on initiating structure, while subordinates value those high on consideration.

Harris and Hogan (1992) found some agreement between superior and subordinate ratings of managers in a trucking company using a 55-item questionnaire. In terms of the relationship of these items to ratings of overall effectiveness, however, subordinates viewed effective managers as "persons who can be trusted, who are loyal to the workers, and who work at building relations with the employees" (p. 17). In contrast, superiors viewed overall managerial effectiveness largely in terms of technical competence (cited in Hogan et al., 1994).

In general, these findings indicate the use of different types of raters in a leadership evaluation program may provide a more comprehensive view of leadership effectiveness than that

stemming from the perspective of superiors alone. Although some similarity is often found, different types of raters appear to value different aspects of leadership performance. Knowledge of the organizational position of the rater, relative to the ratee, may suggest those dimensions likely to be most salient for particular types of raters in a leadership evaluation program.

Objectives

The overriding goal of the present research was to determine if the twelve CPR dimensions of USMA's leadership development rating system have enough construct validity to be used in a recently initiated longitudinal program of leadership development research at the Center for Leadership and Organizations Research. Although their level of content validity has been established by previous USMA research (OIR, 1989), these dimensions have not been examined for their level of construct validity in evaluating leadership performance.

Campbell (1976) maintains that there are both deductive and inductive approaches for examining the construct validity of a measure and that the appropriateness of an approach depends upon the research objectives. Rather than positing formal hypotheses based on theory, an inductive approach is more appropriate when one is concerned with giving substantive meaning to a particular set of measures for which one is not yet ready to predict empirical relationships (Campbell, 1976). We selected an inductive approach to examine the construct validity of the CPR dimensions based upon these guidelines and the exploratory nature of our work.

Our objectives in exploring the construct validity of the CPR dimensions were threefold. First, we wanted to determine the relationships, if any, of these dimensions to more holistic measures of leadership performance. Second, we wanted to describe the nature of potential interrelationships existing among the twelve dimensions, in order to better understand the CPR's underlying conceptual structure. Finally, we wanted to determine if different types of raters diverge in how they use the dimensions to evaluate leadership strengths and weaknesses.

Method

Sample

All available CPR ratings of USMA cadets were obtained and analyzed for three consecutive academic terms during 1992 and 1993. Although sample sizes increased substantially over time, the research procedures followed and the results obtained were highly similar across terms. For this reason, our report addresses only research related to the Fall semester of 1993, for which ratings of over 2,000 different cadets were received. Because the exact nature of this sample is difficult to understand without information on the measurement procedures involved, additional information on the sample is provided in the Procedure section on pages 11 and 12.

Measures

The Leadership Evaluation and Developmental Ratings (LEADR) system at USMA incorporates both evaluative and developmental processes, as its name implies. The leadership grade is the main evaluative measure in the LEADR system, and represents the official evaluation of a cadets overall performance in a leadership role for a specified academic term or summer detail. The CPR is employed as the primary developmental instrument in LEADR. It supplies a common framework for observing and rating cadet performance at the Academy. Its primary function is to provide feedback and coaching to cadets on their leadership performance in accordance with duty position¹ and cadet class requirements (U.S. Corps of Cadets, 1995).

Leadership grade. A leadership grade is given to each cadet using a conventional 5-point letter to numeric conversion: A (4), B (3) C (2), D (1), and F (0). A forced distribution system is used to limit the number of cadets receiving grades of A, B, or C (U.S. Corps of Cadets, 1995). The result of this forced distribution system is that no more than 20% of the cadets within a grader's span of control can receive an A, no more than 40% can receive a B, and no more than 40% can receive a C. The awarding of marginal (D) and unsatisfactory (F) grades is not governed by this forced distribution system, as they are awarded on a relatively infrequent basis, usually only to those cadets that fail to meet USMA standards of performance in their assigned duty position. Although an unofficial grade is given to each cadet

¹ A duty position is a specific job assigned to a cadet each term, varying in terms of both its functional task requirements and its level of supervisory responsibility. Assignments to duty positions are based upon a cadet's graduation year (class) and their performance in prior positions.

for the purpose of developmental feedback at midterm, only the final leadership grade, awarded near the end of the term, was used in our analyses. The final grade represents the official record of each cadet's overall performance in a leadership role.

The procedure for awarding the leadership grade entails calculating a weighted average of the individual grades awarded by a number of raters, usually four. For cadets in most duty positions, 50% of the final grade is determined by one's Tactical Officer², 30% is determined by one's first-level (immediate) superior in the cadet chain of command, 10% is determined by one's second-level superior, and the remaining 10% is determined by one's third-level superior. An important exception to this general procedure is the fact that Tactical Officers can determine 100% of the final grade when they believe cadets have demonstrated marginal (D) or unsatisfactory (F) performance.

Cadet performance report (CPR). The CPR rating instrument consists of 12 leadership dimensions rated on a 5-point scale with the following anchor points: Excellent (5), Outstanding (4), Success (3), Needs Some Improvement (2), Needs Much Improvement (1). In addition to numerical ratings, at least two dimensions are selected as comparative strengths ("s") and at least two as relative weaknesses needing improvement ("n"). An "x" is awarded to those dimensions considered to be neither a strength nor a weakness. An overall measure of cadet leadership performance, referred to as the CPR global score in the remainder of this report, is also evaluated on a 5-point rating scale. On this global 5-point scale, cadets are rated as being either in the Upper 10% (5), Upper 25% (4), Middle 30% (3), Lower 25% (2), or Lower 10% (1). Raters provide CPR scores on cadet performance in comparison with all other cadets in a particular duty position.

The CPR rating procedure at the Academy is automated during the two academic terms occurring each year (i.e., the Fall and Spring semesters). Every rater enters their CPR ratings of others on their own personal computer, which is connected to a central host computer via a local area network. In this manner, academic term CPR ratings are centrally collected prior to subsequent collation and dissemination. In contrast, CPR ratings are completed manually with a paper-and-pencil instrument during the Summer term, which is devoted primarily to developing the military leadership skills of cadets in a field training environment. The manual version of the CPR rating form is shown in Appendix A, while an example of a report generated by the automated system is shown in Appendix B.

² A Tactical Officer is a military officer charged with monitoring and shaping individual development within a company of cadets.

Cadets are the major provider of CPR ratings at USMA. They evaluate other cadets from superior, peer, and subordinate rating positions. Superior ratings are provided by cadet leaders who are assigned to rate those in subordinate duty positions. These rating assignments are based upon the duty position and class of the cadet leader. Although a cadet may receive CPR ratings from superiors at several different organizational levels, our investigation focused on those ratings provided by first-level (immediate) superiors. Immediate superiors are expected to rate their assigned subordinates at least once during each half of the academic term, though our analyses considered only the last rating given to each cadet during the second half of the term. For most cadets, this rating occurred just prior to the award of the final leadership grade.

In contrast, peer and subordinate CPR ratings are based on a nomination process. Rather than having assigned cadets to rate, peer and subordinate raters must decide whom to rate themselves, within certain procedural requirements. In general, they are instructed to nominate and rate those having the highest and lowest relative levels of performance within a particular group of cadets. Yet, the actual numbers of cadets rated vary according to the type of rating and the class of the rater. Specifically, peers in the First Class (seniors) and the Second Class (juniors) are instructed to rate the highest performer and the two lowest performers within their company and respective class. Peers in the Third Class (sophomores) and Fourth Class (freshmen) rate the highest performer and the two lowest performers within their platoon and respective class. In comparison, subordinates in the Third Class rate the two highest and three lowest Second Class cadets in their company, while subordinates in the Fourth Class rate the highest and two lowest Third Class cadets in their platoon. Although not required, Second Class cadets have the option of giving subordinate CPR ratings to First Class cadets. Despite these procedural differences, all peer and subordinate ratings are made near the end of the academic term, following the award of final leadership grades. The identity of peer and subordinate raters is unknown to rated cadets, who later receive developmental counseling by their Tactical Officer on the contents of the peer and subordinate ratings.

Additional CPR ratings are given by non-cadet raters, including academic instructors, coaches, and club sponsors. Rating procedures for instructors are similar to those for peers and subordinates. Near the end of each academic term instructors are asked to nominate and rate the highest and lowest relative performers among the cadets enrolled in their academic courses. We examined instructor ratings for their utility in providing supplementary information about the construct validity of the CPR dimensions. However, CPR ratings provided by coaches and club sponsors were not examined because of the comparatively small number of ratings involved.

In summary, it should be noted that peer and subordinate CPR ratings are measures largely independent of the leadership grade, because these ratings are made after grades are finalized and because they involve a largely different set of raters from those involved in the assignment of leadership grades. However, leadership grades are somewhat dependent upon the CPR ratings of immediate superiors, to the extent that each cadet's immediate superior determines a weighted portion of their final leadership grade (30% for most duty positions). Further, superior CPR ratings can be used as one potential source of performance input by any of the graders (usually four) that determine a particular cadet's leadership grade. Other potential sources of input to the leadership grade are discussions about the rated cadet's performance that are held among these graders, as well as any personal observations they may have made. Finally, it again should be noted that the assignment of leadership grades is governed by a forced distribution system, which limits the number of high grades awarded. CPR ratings, including superior ratings, are not governed by a forced distribution system.

Procedure

Leadership grades and automated CPR records were provided to us for analysis from archival data bases at USMA. These CPR records were sorted by type of rating into separate files of superior, peer, subordinate, and instructor ratings. Duplicate ratings were culled. We then examined each rating to insure it had been properly classified by type of rating.

To obtain the most current representation of overall term performance, in relation to the leadership grade assigned near the end of the term, superior ratings made during the first half of the term were dropped. For each cadet, in fact, we retained only the most recent rating provided by their immediate superior during the second half of the term. Limiting superior ratings to the second half of the term also resulted in greater temporal consistency with peer, subordinate, and instructor ratings, which were all made near the end of the term.

Unlike superior ratings, in which each cadet had only one assigned rater, the other types of ratings could involve multiple raters, because each used a nomination process. Thus, one cadet might receive no peer, subordinate, or instructor ratings at all, if they were considered to be neither a high nor a low performer. Conversely, another cadet might receive multiple ratings from each of these types of raters. For cadets with multiple ratings, analyses were based on the average scores obtained across raters.

Collectively these procedures yielded the overall cadet sample shown in Table 2. One will note a relatively lower total number of cadets rated by subordinates, in comparison with other types of raters. There were two reasons for the smaller subordinate sample. First, cadets in the Class of 1997 had no

subordinates during their Fourth Class Year. Second, subordinate ratings of First Class cadets (Class of 1994) were not required.

In terms of the overlap of cadets rated by superiors with cadets rated by other types of raters, we found that 1267 of the 2375 cadets who had been rated by superiors were also rated by at least one peer (53%). Similarly, 994 of the cadets rated by superiors were also rated by one or more subordinates (59% of the upper three classes), whereas 1461 were rated by one or more instructors (62%).

To minimize potential confusion in understanding our analyses and results, readers should keep in mind that our research samples consisted of the numbers of different cadets rated by different types of raters. Our reported samples were not based on either numbers of raters or numbers of ratings. Thus, our unit of analysis was always an individual cadet ratee.

Table 2

Number of Cadets Rated by Class and Type of CPR Rater

Class	Type of CPR Rater			
	Superior	Peer	Subordinate	Instructor
1994	454 (19)	344 (15)	123 (10)	643 (25)
1995	569 (24)	530 (24)	532 (41)	597 (24)
1996	651 (27)	616 (28)	639 (49)	533 (21)
1997	701 (30)	748 (33)	not applicable	751 (30)
Total	2375 (100)	2238 (100)	1294 (100)	2524 (100)

Note. Approximate class percentages are shown in parentheses for each type of rater.

Results

Table 3 presents the means and standard deviations of CPR dimension scores and the CPR global score for superior, peer, and subordinate raters. Overall, the means and standard deviations were similar across the three types of raters. As expected, the mean scores of peers and subordinates were slightly lower than those of superiors due to CPR completion requirements for those raters (i.e., more nominations of cadets with relatively low levels of performance than cadets with relatively high levels of performance). Among the 12 CPR dimensions, duty motivation and military bearing received the highest mean scores and standard deviations for each type of rater. Most of the dimension means fell between Success (3) and Outstanding (4) on a 5-point scale. However, the global score mean for each type of rater tended to be closer to Upper 25% (4) on a 5-point scale. Similarly, the leadership grade was found to have a mean of 2.95 (almost a B) and a standard deviation of .62. Like the CPR global score, the leadership grade represents a holistic assessment of performance. Unlike the CPR global score, the leadership grade was assigned using a forced distribution system that limited the number of high grades given (as mentioned earlier).

Relationships Between CPR Dimension Scores and Holistic Measures of Leadership Performance

Leadership grade. Table 4 summarizes the relationships found between the leadership grade and CPR dimension scores for superior, peer, and subordinate raters. It is apparent when comparing across types of raters that many of these relationships were slightly stronger for superiors and peers than for subordinates. In particular, the dimensions of teamwork, consideration for others, delegating, supervising, decision making, and oral and written communication were significantly related to the leadership grade only for superior and peer raters ($p < .01$). The lack of significant relationships for subordinates on these dimensions suggests their conception of leadership behavior was somewhat different from that of superiors and peers.

In addition, the relationship found between the leadership grade and the CPR global score, across types of raters, also suggested somewhat distinct rater perspectives. These variables correlated more strongly for superiors ($r = .57$) than for peers ($r = .41$) and subordinates ($r = .35$). The presence of a stronger relationship for superior raters was anticipated because of the senior position held both by cadets providing the CPR rating and those raters supplying the leadership grade (cadets and Tactical Officers). Despite differences in magnitude for each type of rater, all correlations were statistically significant ($p < .001$), indicating some similarity between these two holistic measures of leadership performance.

Table 3

Means and Standard Deviations of CPR Dimension Scores and the CPR Global Score for Superior, Peer, and Subordinate Raters

<u>Dimension</u>	<u>Superior</u>		<u>Peer</u>		<u>Subordinate</u>	
	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>
Duty Motivation	4.18	.80	3.85	.90	3.77	.78
Military Bearing	3.79	.84	3.59	.81	3.53	.76
Teamwork	3.57	.75	3.44	.80	3.33	.63
Influencing Others	3.25	.56	3.19	.60	3.25	.67
Consideration for Others	3.32	.65	3.37	.76	3.36	.70
Professional Ethics	3.28	.62	3.32	.62	3.28	.59
Planning and Organizing	3.40	.74	3.29	.65	3.22	.55
Delegating	3.14	.43	3.11	.41	3.12	.41
Supervising	3.21	.55	3.12	.43	3.15	.50
Developing Subordinates	3.31	.64	3.19	.53	3.33	.72
Decision Making	3.13	.49	3.13	.47	3.09	.37
Oral and Written Communication	3.39	.69	3.24	.60	3.21	.52
Global Score	4.25	.74	3.97	.91	3.94	.86

Note. Depending on the dimension, there were between 2013 and 2375 cadets rated by superiors, between 2042 and 2238 rated by peers, and between 1221 and 1294 rated by subordinates.

Table 4

Correlations of the Leadership Grade With CPR Dimension Scores
for Superior, Peer, and Subordinate Raters

Dimension	<u>Type of Rater</u>		
	Superior	Peer	Subordinate
Duty Motivation	.37	.31	.35
Military Bearing	.28	.30	.30
Teamwork	.13	.10	.03
Influencing Others	.15	.12	.11
Consideration for Others	.06	.07	.01
Professional Ethics	.11	.13	.11
Planning and Organizing	.17	.20	.08
Delegating	.14	.08	.05
Supervising	.13	.11	.03
Developing Subordinates	.10	.07	.11
Decision Making	.13	.12	.05
Oral and Written Communication	.12	.08	.03

Note. Depending on the dimension, correlations were based on between 2005 and 2375 cadets for superior raters, between 1981 and 2233 for peer raters, and between 1208 and 1275 for subordinate raters. Correlations of .06 or greater were statistically significant, $p < .01$.

In order to investigate the role of CPR dimensions in explaining leadership grade variation, a stepwise multiple regression analysis was conducted for each type of rater. The resulting multidimensional models were statistically significant for superiors [$F(6,1913)=60.69$, $p < .0001$], peers [$F(5,1923)=70.92$, $p < .0001$], and subordinates [$F(4,1145)=53.38$, $p < .0001$]. Each of these models explained between 15% and 16% of the variation in leadership grades. As shown in Table 5, most of this variation was explained by the dimensions of duty motivation and military bearing for each type of rater. The planning and organizing dimension contributed to the models for superiors and peers, as did the consideration for others dimension for subordinates. Other dimensions comprising the models explained a relatively small amount of additional variation (a total of less than 1% in each model).

CPR global score. Table 6 shows the relationships found between the CPR global score and the CPR dimension scores for superior, peer, and subordinate raters. For each type of rater, the CPR global score was most strongly related to the duty motivation and military bearing dimensions. However, the strength of the relationship between the global score and many of the other dimensions varied across the three types of raters. For example, teamwork, influencing others, consideration for others, professional ethics, and developing subordinates were all more strongly related to the global score for peers and subordinates than for superiors. These findings suggest peers and subordinates attributed greater relative importance to such behaviors in their evaluations of overall leadership performance. They may also have had more opportunities than superiors to observe such behaviors.

A comparison with Table 4 reveals that CPR dimension scores were more strongly related to the CPR global score than to the leadership grade. One reason for this finding is that for every cadet rated, dimension scores and the global score are given by the same rater at the same point in time. Conversely, the leadership grade is based upon judgments from several raters, each having partial input to the assigned grade. In addition, the individual contribution to the leadership grade made by a CPR superior rater (usually about 30%) is not necessarily reflected in the final grade after averaging across all graders (peers and subordinates have no direct input to the leadership grade). As noted earlier, the leadership grade is assigned according to a forced distribution system that restricts the amount of A's, B's, and C's awarded to cadets. Consequently, the strength of the relationships found between the dimension scores and the leadership grade may also be restricted.

In order to investigate the role of CPR dimensions in explaining CPR global score variation, a stepwise multiple regression analysis was conducted for each type of rater. The resulting multidimensional models were highly significant

Table 5

Summary of Stepwise Multiple Regression Analyses Predicting the Leadership Grade From CPR Dimension Scores for Superior, Peer, and Subordinate Raters

Dimension	ΔR^2	R^2
<u>Superior</u>		
Duty Motivation	.13	.13
Military Bearing	.02	.15
Planning and Organizing	.01	.16
<u>Peer</u>		
Duty Motivation	.11	.11
Military Bearing	.03	.14
Planning and Organizing	.01	.15
<u>Subordinate</u>		
Duty Motivation	.13	.13
Military Bearing	.02	.15
Consideration for Others	.01	.16

Note. Regression analyses were based on 1920 cadets for superior raters, 1929 for peer raters, and 1150 for subordinate raters. The incremental variance explained by each of the above dimensions was statistically significant, $p < .01$.

Table 6

Correlations of the CPR Global Score With CPR Dimension Scores
for Superior, Peer, and Subordinate Raters

Dimension	<u>Type of Rater</u>		
	Superior	Peer	Subordinate
Duty Motivation	.53	.65	.56
Military Bearing	.43	.51	.49
Teamwork	.25	.46	.35
Influencing Others	.23	.37	.46
Consideration for Others	.15	.37	.34
Professional Ethics	.16	.31	.30
Planning and Organizing	.25	.30	.23
Delegating	.16	.18	.21
Supervising	.19	.22	.23
Developing Subordinates	.21	.30	.46
Decision Making	.21	.24	.19
Oral and Written Communication	.22	.23	.22

Note. Depending on the dimension, correlations were based on between 2004 and 2375 cadets for superior raters, between 1978 and 2238 for peer raters, and between 1219 and 1285 for subordinate raters. All correlations were statistically significant, $p < .001$.

statistically for superiors [$F(6,1916)=168.74$, $p < .0001$], peers [$F(9,1917)=269.87$, $p < .0001$], and subordinates [$F(8,1146)=157.82$, $p < .0001$]. Each of these models explained between 34% and 56% of the variation in CPR global scores. As shown in Table 7, scores on the duty motivation dimension explained most of this variation for each type of rater.³

Nevertheless, differences among the types of raters were found in the relative contributions of other CPR dimensions to CPR global score variation. Except for duty motivation, military bearing explained more additional global score variation for both superior and peer raters. For subordinate raters, however, influencing others and developing subordinates explained more additional variation than did military bearing. Teamwork contributed to the model for each type of rater, especially peers. The planning and organizing dimension also contributed to the models for superiors and peers, as did the consideration for others dimension for peers and subordinates. In addition, the influencing others dimension contributed to the model for peers, though to a lesser extent than it did for subordinates. Other dimensions comprising the models explained a relatively small amount of additional variation (a total of less than 1% in each model). As a whole, the dimensional differences among types of raters were more pronounced for CPR global score prediction than they were for leadership grade prediction (see Table 5).

Interrelationships Among the CPR Dimensions

A series of 19 principal components analyses with promax rotation was employed to determine if the 12 CPR dimensions could be characterized as having broader underlying factors. For each of four types of raters (superiors, peers, subordinates, and instructors), separate analyses were conducted by cadet class, with the exception that there were no subordinate ratings of the Fourth Class to analyze. In addition, an overall analysis across classes was conducted for each type of rater. These 19 analyses produced a variety of component structures: 9 two-factor structures ($\bar{M}\%$ variance explained=42%,12%), 8 three-factor structures ($\bar{M}\%$ variance explained=30%,11%,9%), and 2 four-factor structures ($\bar{M}\%$ variance explained=34%,12%,10%,9%). However, a synthesis of the results from the separate analyses led us to

³ Analyses conducted within cadet class for each type of rater also demonstrated the greater relative importance of duty motivation in explaining CPR global score variation. One exception to this general trend was found. In Fourth Class subordinate ratings of Third Class cadets, developing subordinates explained more global score variation (31%) than any other dimension. As the primary leadership task of Third Class cadets is to develop a subordinate cadet in the Fourth Class, the extent to which CPR ratings reflect this leadership emphasis is a positive indication of their construct validity.

Table 7

Summary of Stepwise Multiple Regression Analyses Predicting the CPR Global Score From CPR Dimension Scores for Superior, Peer, and Subordinate Raters

Dimension	ΔR^2	R^2
<u>Superior</u>		
Duty Motivation	.26	.26
Military Bearing	.05	.31
Planning and Organizing	.02	.33
Teamwork	.01	.34
<u>Peer</u>		
Duty Motivation	.42	.42
Military Bearing	.06	.48
Teamwork	.05	.53
Consideration for Others	.01	.54
Influencing Others	.01	.55
Planning and Organizing	.01	.56
<u>Subordinate</u>		
Duty Motivation	.31	.31
Influencing Others	.10	.41
Developing Subordinates	.05	.46
Military Bearing	.03	.49
Teamwork	.02	.51
Consideration for Others	.01	.52

Note. Regression analyses were based on 1923 cadets for superior raters, 1927 for peer raters, and 1155 for subordinate raters. The incremental variance explained by each of the above dimensions was statistically significant, $p < .0001$.

hypothesize the presence of four major components underlying the dimensions. We considered a dimension to be part of a particular component if it had a higher relative loading on that component than on any of the other components (.20 or greater difference).

The first component appeared related to cognition, because it contained the dimensions of planning and organizing, decision making, and oral and written communication. Interpersonal in nature, the second component seemed to be characterized by those role-related activities that formal or designated leaders of a group are usually expected to perform. This formal interpersonal component consisted of the dimensions of delegating, supervising, and developing subordinates. Also interpersonal in nature, the third component appeared related to leadership activities of a more informal nature, in the sense that they could be performed by any group member, not just by formal leaders. This informal interpersonal component consisted of the dimensions of teamwork, influencing others, consideration for others, and professional ethics. Finally, the fourth component appeared related to the concept of self-management. Least interpersonal in its orientation, this self-management component contained the dimensions of duty motivation and military bearing. Although not evident solely from the empirical results of the principal components analyses, our subjective appraisal of numerous rater comments suggests these latter two dimensions are related to the notions of task accomplishment, effort (toward both individual and organizational goals), perseverance, and the maintenance of a professionally appropriate demeanor.

The entire set of dimensions associated with an underlying component did not surface in every analysis. Therefore, in some analyses a component may not have been as completely represented as in other analyses. For example, only two of the three dimensions comprising the formal interpersonal component (e.g., delegating and supervising) may have loaded together on the same component in a particular analysis. In cases such as these, we considered a component to be present if at least two of its hypothesized dimensions loaded on the same component together.

To investigate whether these four components adequately describe the underlying conceptual structure of CPR ratings, median component loadings across the 19 analyses were calculated for each of the 12 CPR dimensions. To better illustrate the procedures used in our calculation of median component loadings, consider as an example the overall analysis of instructor ratings across classes, in which a two-component structure emerged. Three dimensions in this analysis (delegating, supervising, and developing subordinates) had relatively higher loadings on the first component than on the second component (.20 or greater difference). Therefore, the loadings of the 12 dimensions on the first component were used as one set of loadings in calculating the median loadings for the formal interpersonal component. Conversely, five dimensions (duty motivation, military bearing, planning and organizing, decision making, and oral and written

communication) had relatively higher loadings on the second component than on the first. Here, the loadings of the 12 dimensions on the second component were used in calculating median loadings for both the self-management component and the cognitive component. Finally, no loadings from the analysis were used in calculating median loadings for the informal interpersonal component, because there was no clear difference in the loadings of the remaining dimensions across the first and second components. We anticipated that a given dimension's highest median loading would be on the one component hypothesized to underlie that dimension. Yet, because some sets of loadings were used in calculating the median loadings of more than one component (as in the example just outlined), we realized these procedures would produce rather conservative estimates of the actual conceptual differences existing among the components.

Table 8 shows the median loadings of each CPR dimension on the four components. Six dimensions had a median loading on the hypothesized component that was substantially greater than on any of the other three components. Differences between the two components having the highest median loadings ranged from .21 to .47 on these six dimensions. Further, such differences ranged from .07 to .13 on four other dimensions. However, the median loadings for the dimensions of influencing others and professional ethics varied little across three of the four components. Because of the unanticipated results encountered on these two dimensions, we individually examined the 19 principal components analyses for an explanation. In doing so we discovered that the influencing others and professional ethics dimensions emerged less often than the teamwork and consideration for others dimensions as part of the informal interpersonal component.

An alternative way of examining Table 8 is to focus on the components separately. Looking down each of the four columns it becomes evident that the dimensions we hypothesized to underlie a particular component did in fact receive median loadings that were higher than those dimensions not hypothesized to underlie the component. The only exception was that the decision making dimension had a higher median loading on the informal interpersonal component than was expected.

Overall, the results of the principal components analyses suggested the CPR dimensions to be interrelated, as reflected in the emergence of four broader factors of leadership behavior. Because dimension scores within a component tend to be more alike than dimension scores across components, one can develop many expectations about the nature of future CPR ratings (e.g., that military bearing scores will be more like duty motivation scores than delegating scores). Although simpler factor structures could have been advanced for rather limited purposes (e.g., understanding the nature of First Class peer ratings), the four-component structure we hypothesized seems appropriate for more general use in understanding how the CPR dimensions relate to one

Table 8

Median Component Loadings of CPR Dimensions Across
19 Principal Components Analyses

Dimension	Component			
	Cognitive (12)	Formal Interpersonal (15)	Informal Interpersonal (16)	Self- Management (15)
Duty Motivation	.34	.26	.32	<u>.81</u>
Military Bearing	.34	.25	.28	<u>.80</u>
Teamwork	.46	.38	<u>.56</u>	.29
Influencing Others	.56	.56	<u>.54</u>	.36
Consideration for Others	.44	.47	<u>.71</u>	.17
Professional Ethics	.52	.54	<u>.53</u>	.37
Planning and Organizing	<u>.75</u>	.39	.20	.46
Delegating	.66	<u>.73</u>	.46	.21
Supervising	.60	<u>.73</u>	.38	.25
Developing Subordinates	.43	<u>.64</u>	.39	.31
Decision Making	<u>.73</u>	.62	.60	.25
Oral and Written Communication	<u>.69</u>	.43	.34	.33

Note. Principal components analyses conducted across classes were based on 1929 cadets for superior raters, 1927 for peers, 1163 for subordinates, and 1317 for instructors. The number of analyses in which each component emerged is shown in parentheses and it is, for 9 of the 12 dimensions, identical to the number of loadings used in calculating each median loading. Because Fourth Class cadets are not generally rated on three dimensions (delegating, supervising, and developing subordinates), median component loadings were based on three fewer loadings for these dimensions. The median loading of each dimension on its hypothesized component is underlined.

another across all cadet classes and types of raters. Although our examination of median component loadings tended to minimize class and rater differences, we now consider how various types of raters used the dimensions to differentiate cadet performance.

Use of CPR Dimensions by Different Types of Ratets

Although no formal hypotheses were tested, we further investigated the construct validity of the CPR dimensions by calculating the frequency with which different types of raters used individual dimensions to describe the relative leadership strengths and weaknesses of rated cadets. As noted earlier, raters select at least two dimensions they perceive to be relative strengths of each ratee and at least two different ones they perceive to be relative weaknesses. For this analysis, dimension usage was defined as the percentage of cadets having a particular dimension rated as a relative strength plus the percentage having that same dimension rated as a relative weakness. Table 9 displays the CPR dimensions rank ordered by dimension usage for different types of CPR raters.

Although dimension percentages can be compared within each type of rater, they should not be compared across types of raters due to the inherent procedural differences involved. Specifically, each cadet received no more than one superior rating in our investigation. However, each cadet could have received ratings from many peer, subordinate, and instructor raters because of the nomination process employed with these types of ratings. When a cadet received ratings from more than one rater of a particular type, the dimension scores themselves were averaged and then rounded to the nearest whole number. However, the selection of dimensions as relative strengths and weaknesses was more difficult to classify across multiple raters. In such cases we chose to classify a dimension as a strength or weakness only if there was clear agreement among most of the raters.⁴ Relative to superior raters, these procedures artificially lowered levels of dimension usage for peer, subordinate, and instructor raters. Therefore, when comparing the dimension usage of different types of raters in Table 9, it is more appropriate to compare dimension ranks than percentages.

As shown in Table 9, both similarities and differences were found in the ways the different types of raters used the CPR dimensions to evaluate the leadership strengths and weaknesses of

⁴ When a cadet was rated by two or more raters, a dimension was assigned a value of +1 when it was rated a strength, a value of -1 when it was rated a weakness, and a value of 0 when it was rated to be neither a strength nor weakness. Values within each dimension were then summed across raters. Dimensions were classified as strengths when this sum was +2 or more and they were classified as weaknesses when this sum was -2 or less.

Table 9

Rank Order of CPR Dimension Use by Superior, Peer, Subordinate,
and Instructor Raters

Dimension	Type of Rater			
	Superior	Peer	Subordinate	Instructor
Duty Motivation	1 (90)	1 (71)	1 (61)	1 (50)
Military Bearing	2 (81)	2 (55)	2 (50)	4 (31)
Teamwork	5 (56)	3 (45)	6 (28)	5 (23)
Influencing Others	6 (38)	7 (30)	3 (41)	8 (14)
Consideration for Others	9 (27)	5 (36)	5 (34)	7 (18)
Professional Ethics	11 (20)	8 (18)	10 (18)	9 (14)
Planning and Organizing	3 (68)	4 (39)	8 (26)	3 (37)
Delegating	12 (19)	10 (15)	9 (19)	11 (5)
Supervising	8 (28)	12 (11)	11 (18)	12 (5)
Developing Subordinates	7 (34)	9 (18)	4 (35)	10 (5)
Decision Making	10 (24)	11 (15)	12 (10)	6 (21)
Oral and Written Communication	4 (57)	6 (33)	7 (26)	2 (42)

Note. Depending on the dimension, there were between 2013 and 2375 cadets rated by superiors, between 2042 and 2238 rated by peers, between 1221 and 1294 rated by subordinates, and between 1367 and 2524 rated by instructors. Approximate dimension use percentages are shown in parentheses. Dimension usage was defined as the percentage of cadets having a particular dimension rated as a relative strength plus the percentage having that same dimension rated as a relative weakness.

rated cadets. It is apparent that duty motivation was the most frequently used dimension by each type of CPR rater. Military bearing was another often used dimension, especially among the three different types of cadet raters. However, differences in usage were found along most of the other ten dimensions.

With respect to cadet raters, superiors were more likely than either peers or subordinates to use the dimension of supervising. In addition, superiors were more likely than subordinates to use the dimension of planning and organizing, as well as the dimension of oral and written communication. In contrast, both peers and subordinates were more likely than superiors to use the dimension of consideration for others. Further, subordinates were more likely than either superiors or peers to use the dimensions of influencing others and developing subordinates. Of the three types of cadet raters it appeared that superiors and subordinates had the most distinctly different patterns of dimension usage, with peers being similar to superiors on some dimensions and similar to subordinates on others. Although peers may have had a perspective about cadet leadership performance that was less distinctive, a comparison of dimension ranks in Table 9 suggests peers placed a relatively greater emphasis on teamwork and professional ethics than either superiors or subordinates.

Compared with cadet raters, instructors were more likely to use the dimensions of decision making and oral and written communication, although they were somewhat less likely to use the military bearing dimension. Additionally, it was found that many instructors did not rate cadets at all on the dimensions of delegating, supervising, and developing subordinates. This resulted in lower rates of usage for these dimensions, relative to the other nine. In all probability the classroom environment affords less opportunity to observe leadership behavior in these latter three dimensions, even when cadets in the upper classes are being observed. As many courses are composed of cadets within the same class year, opportunities to lead cadets in the lower classes take place largely outside of the classroom.

Discussion

Each of the 12 CPR dimensions was positively related to the holistic measures of leadership performance in our investigation, though some dimensions were more strongly related than others. Specifically, the dimensions of duty motivation and military bearing had a central role in explaining most of the variation found in both the leadership grade and the CPR global score. This is consistent with Kanungo and Misra's (1992) view that effective self-management is critical to leadership performance in all other areas. Morgan (1989) also found that motivation ratings explained most of the variation in a holistic measure of leadership performance.

It is possible that cadet raters viewed duty motivation and military bearing as more important contributors to effective cadet leadership performance or that they were just more easily observed than many of the other 10 dimensions. These inferences are partially supported by the findings of a content validity study in which subject matter experts (cadets, tactical officers, faculty, and staff) rated how essential and observable the 12 CPR dimensions were in evaluating cadet performance in a variety of leadership roles (OIR, 1989). Averaging across all duty positions, they found duty motivation to be the dimension rated most essential to successful cadet performance. They also found military bearing to be the most observable dimension, followed by the oral and written communication dimension and the duty motivation dimension.

It appears the duty motivation and military bearing dimensions are highly applicable to evaluations of almost any cadet leadership task. Conversely, the other 10 dimensions seem more specific in their orientation, with less general applicability across situations. Some obvious examples of the latter dimensions are supervising, delegating, and developing subordinates. As mentioned earlier, these three dimensions were rarely used by any type of rater to evaluate cadets in the Fourth Class. Further, they were not used very often by instructors to evaluate cadets in any class. Relative to other CPR dimensions, duty motivation and military bearing are probably more analogous to the holistic measures of leadership performance because of their greater level of general applicability across situations.

Even though duty motivation and military bearing have a clear role to play in cadet leadership evaluation, their importance was not universally apparent. In the principal components analyses, for example, the self-management component tended to account for a generally smaller percentage of the dimensional variance than the other three components. Consisting of duty motivation and military bearing, the self-management component was the first component to emerge in only 3 of the 15 analyses in which it appeared. In addition, the dimensions of influencing others and developing subordinates were more important than military bearing in explaining CPR global score

variation among subordinate raters. Among Fourth Class subordinate raters of Third Class cadets, developing subordinates explained more global score variation than either duty motivation or military bearing.

The finding that CPR dimensions were all positively related to more holistic leadership measures suggests the dimensions did, in fact, measure some aspect of leadership performance. Yet consistently, the dimensions were more strongly related to the CPR global score than to the leadership grade. There are several reasons why the dimensions were more closely related to the global score. First, a cadet's CPR global score was provided by the same person providing that cadet's CPR dimension scores. In contrast, a cadet's leadership grade was based on the weighted judgments of a group of superiors, only one of which (i.e., the immediate superior) also provided CPR dimension scores of that cadet's performance. Second, a cadet's global score was provided at the same point in time as the accompanying dimension scores, whereas that cadet's leadership grade was provided at a slightly different point in time. Finally, a cadet's leadership grade could have been affected by the forced distribution system of grading, unlike either the CPR global score or the dimension scores.

Despite the inherent procedural differences between these two holistic measures, we found them to be significantly related to each other, particularly for superior raters. It is even possible to consider the global score from a superior CPR rating to be conceptually equivalent to a leadership grade that might be assigned by an immediate superior without a forced distribution system. In this hypothetical example, both holistic measures would be provided by the same person using similar five-point rating scales. There are few reasons to expect these two measures might yield widely differing results.

The CPR dimensions themselves were interrelated to some degree, as reflected by the emergence of a four-component factor structure. We conducted the series of 19 principal components analyses, not for the purpose of data reduction, but to better understand how the dimensions relate to one another conceptually. Though our calculation of median component loadings tended to minimize the effects of class and rater differences, the four-component structure appears to provide some insight into how raters view the cadet performance domain and it appears to fit within broader conceptual frameworks of leadership advanced in the literature (Fleishman, 1973; Fleishman et al., 1991; Korotkin et al., 1986).

In particular, the view of cadet performance obtained from the regression analyses was entirely different from that obtained from the principal components analyses. Focusing on the relationships of CPR dimensions to other measures, the regression analyses seemed to initially suggest that many raters saw cadet leadership performance as little more than duty motivation and

military bearing. Focusing on the interrelationships existing among the CPR dimensions, however, the principal components analyses implied that raters kept up to four different concepts in mind as they rated cadets on the dimensions. Of these four concepts, only one was related to duty motivation and military bearing, and it tended to be least important in explaining the variation among dimension scores.

It is unclear exactly why the two types of analyses yielded such different results. One explanation is that raters tend to base their holistic judgments about leadership performance on those things that they see most often or most easily. Because self-management concepts like duty motivation and military bearing are observable in a variety of situations (OIR, 1989), holistic judgments can be formed by the sheer volume of behavioral incidents occurring in those dimensions. It is also possible that those same dimensions are used most often by raters who had the least opportunity to observe cadets during the rating period. For instance, one could easily rate cadets on duty motivation and military bearing, without having observed them interacting with subordinates. Secondly, raters can also base their judgments on those things they value or find most important in a particular situation. Regarding CPR global scores provided by subordinate raters, for example, this secondary consideration may help to explain why the developing subordinates and influencing others dimensions each accounted for more variance than the military bearing dimension, which is probably more observable.

Even if most raters base their holistic judgments on the above considerations, they still appear quite capable of differentiating cadet performance using most CPR dimensions. Instances where they cannot tend to have reasonable explanations (e.g., cadets in the Fourth Class are rarely rated on the delegating, supervising, and developing subordinates dimensions because they have no subordinates). One indicator of the construct validity of a leadership behavior rating system is the extent to which raters assign similar scores to those dimensions that are the most similar conceptually. Although our proposed four-component structure appears to have a plausible conceptual foundation in this regard, it only becomes useful when it helps to formulate accurate predictions about CPR ratings that are then confirmed through future research. Though not reported here, we should note that the same four-component structure emerged in two earlier investigations involving smaller cadet samples.

The analysis of CPR dimension use by different types of raters provided additional information about the importance of the duty motivation and military bearing dimensions. Generally, these dimensions were the ones most often used by raters to describe a cadet's relative strengths and weaknesses. However, there were some consistent differences found in the ways the various types of raters used the remaining dimensions. Superiors and subordinates appeared to have the most distinctly different

views of cadet performance. Superiors were more likely to focus on those dimensions related to the CPR's cognitive component (i.e., planning and organizing, decision making, and oral and written communication). Subordinates were more likely to focus on two dimensions related to the informal interpersonal component (i.e., influencing others and consideration for others). On the formal interpersonal component superiors focused on supervising, while subordinates focused on developing subordinates. Similar to superiors on some dimensions and similar to subordinates on others, peers were most distinctive in their relatively greater emphasis on two other dimensions related to the informal interpersonal component (i.e., teamwork and professional ethics). Lastly, instructors tended to have a particularly strong focus on dimensions related to the cognitive component, even more so than cadet superiors. Yet, instructors had a relatively weak emphasis on all dimensions related to the formal interpersonal component.

The results of the analysis of CPR dimension use, coupled with the regression analyses pertaining to the CPR global score, are highly consistent with earlier findings in the literature about the effects of rater position on the leadership evaluation process (Cann & Siegfried, 1987, 1990; Halpin, 1953; Harris & Hogan, 1992; Moore & Smith, 1952; Mount, 1984). As they relate to broader classifications of leadership behavior found in the literature (Fleishman, 1973; Fleishman et al., 1991; Korotkin et al., 1986), our findings generally suggest superiors to be more task-oriented and subordinates to be more person-oriented in their evaluations of others. Peers seem oriented to both people and tasks. Though both peers and subordinates had an orientation toward people, we found peers tended to focus on group relations (e.g., teamwork) and subordinates tended to focus on individual relations (e.g., developing subordinates).

While our report has highlighted the distinct perspectives of different types of raters, our findings also imply most raters held superior, peer, and subordinate perspectives of leadership performance at the same time. Due to the design of USMA's leadership evaluation system, a cadet can rate one group of other cadets from a superior perspective, a second group from a peer perspective, and a third group from a subordinate perspective. Conversely, a cadet can be judged by others from these three perspectives as well. Because our investigation focused on ratees rather than raters, we cannot state with certainty that a particular rater or group of raters held all three perspectives simultaneously. Yet, our overall results could not have been obtained if most cadets held a single perspective. It seems unlikely that a cadet maintained one exclusive orientation in all of their superior, peer, and subordinate ratings of others. Rather, our findings suggest most cadet raters maintained a task orientation in their superior ratings, both a group relations and a task orientation in their peer ratings, and an individual relations orientation in their subordinate ratings.

Although the nature of our data precluded the calculation of meaningful reliability coefficients (i.e., cadets had only one superior rater and cadets with presumably moderate performance had no peer, subordinate, or instructor raters), we observed several trends concerning CPR reliability in the process of averaging across raters for cadets with multiple peer, subordinate, and instructor ratings. For every type of rater, the most reliable part of the CPR appeared to be the global score of performance. Raters generally agreed about whether a particular cadet was a high or low performer. However, a consensus was reached less often in describing the nature of a cadet's high or low performance. Thus, CPR dimension scores tended to vary more across raters than the global score, though duty motivation and military bearing scores seemed less variable than scores on the other dimensions. The least reliable part of the CPR appeared to be the selection of dimensional strengths and weaknesses. Compared to the dimension use percentages of superiors, the degree to which raters disagreed about a cadet's relative strengths and weaknesses was reflected in lower reported dimension use percentages for peer, subordinate, and instructor raters (as was shown in Table 9).

Even though describing large groups of cadets in terms of their strengths and weakness can be informative (such as to explore differences among classes or differences among types of raters), caution should be used in making judgments about the strengths and weaknesses of an individual cadet. Because it is not unusual for raters to disagree about an individual cadet's strengths and weaknesses, one should be especially careful in cases where strength and weakness judgments come from one rater. Only when there is clear agreement among raters can one have confidence in the accuracy of this type of information. Because they represent the combined judgments of multiple raters, averaged CPR ratings are apt to be more reliable and valid than those based on a single rater.

In exploring the construct validity of the CPR dimensions we also learned more about the nature of the leadership grade as a holistic performance measure. In terms of the CPR dimensions, the leadership grade appears to measure cadet performance primarily in the areas of duty motivation and military bearing. Yet, these dimensions accounted for only about 15% of the variance in cadet leadership grades across classes. Because most of the leadership grade variance is unexplained in terms of CPR dimension scores, there is much about the leadership grade that we do not understand at present. However, we are aware from some of our other research that duty position is an important factor to consider in predicting the leadership grades of First and Second Class cadets, though duty position appears to be much less important in predicting the CPR global scores of these same cadets. It is not yet clear why the leadership grade and the CPR global score differ in this way. In order to resolve issues like this one, one goal of our future research will be to determine

those factors that most influence the process by which cadets are selected for duty positions in the last two years before their graduation.

In summary, our exploratory findings suggest the CPR dimensions have a sufficient level of construct validity for the purpose of measuring cadet leadership behavior over time. The support for this view comes from three areas of investigation. First, the dimensions are related to, though they are not the same as, more holistic measures of leadership performance. Second, the dimensions interrelate among themselves in ways that are explainable, meaningful as they relate to other classifications of leadership behavior, and generally consistent across a broad array of separate analyses. Third, the divergent ways that various types of raters use the dimensions to evaluate leadership performance are much like those that have been documented in the literature.

We believe these results are encouraging. Therefore, we plan to use the CPR as a central measure of leadership behavior in a recently initiated longitudinal program of leadership development research at USMA. CPR ratings appear to be a complementary adjunct to the leadership grade because they provide additional information about the nature of leadership performance, particularly in those areas not typically stressed by superiors. As they provide more detailed and comprehensive information than holistic measures alone, CPR ratings appear well-suited to the task of evaluating cadet leadership development over time. To the extent the 12 CPR dimensions overlap with those found in other leadership taxonomies, our findings should have some general applicability to a broader range of leadership situations and environments.

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Appendix A
Cadet Performance Report (CPR) Rating Form

CADET PERFORMANCE REPORT

For Use of this Form See USCC Regulation 623-1; Proponent Agency is LDB, USCC

PART I - ADMINISTRATIVE DATA

a. NAME (Last, First, Middle Initial)		b. SSAN	c. GRAD YR	d. AY COMPANY
e. RANK	f. DUTY ASSIGNMENT		g. ORGANIZATION	
h. TYPE REPORT: ☐ student ☐ peer ☐ subordinate ☐ chain of command ☐ other _____				

PART II - AUTHENTICATION

a. NAME OF RATER (Last, First, Middle Initial)		b. SIGNATURE	c. DATE
d. RANK	e. DUTY ASSIGNMENT	f. ORGANIZATION	
g. NAME OF OFFICER REVIEWER (Last, First, Middle Initial)		h. SIGNATURE	i. DATE
j. RANK	k. DUTY ASSIGNMENT	l. ORGANIZATION	
m. RATED CADET: I have seen this report completed through Part IV. I verify entries in Part I. I understand my signature does not constitute agreement with the evaluation of the rater. I do ☐ do not ☐ wish to make a statement in my own behalf concerning the rater's evaluation (attach statements).		n. SIGNATURE	o. DATE

PART III - PERFORMANCE OF DUTIES (Rater)

Rate each of the following dimensions using the following scale: 5 - Excellent; 4 - Outstanding; 3 - Successful; 2 - Needs Some Improvement; 1 - Needs Much Improvement. Specific Bullet examples are required for ratings other than "Success." Comments on Success ratings are optional. Indicate the dimensions (at least two) which are comparatively strongest by checking the "S" block and those (at least two) requiring relatively more attention by checking the "N" block. Comments are required for those dimensions marked "S" or "N."

a. DUTY MOTIVATION: Actions that indicate persistence in the attempt to achieve high standards of performance for self, subordinates, and others.	S	5	☐
	☐	4	☐
		3	☐
	N	2	☐
	☐	1	☐
b. MILITARY BEARING: Maintaining Army standards of appearance, physical fitness, manner, composure, and courtesy.	S	5	☐
	☐	4	☐
		3	☐
	N	2	☐
	☐	1	☐
c. TEAMWORK: Actions that indicate commitment to the achievement of organizational goals while working effectively with others; support of organizational rules and regulations.	S	5	☐
	☐	4	☐
		3	☐
	N	2	☐
	☐	1	☐
d. INFLUENCING OTHERS: The act of using appropriate interpersonal styles and methods in guiding individuals or groups towards task accomplishment or resolution of conflicts and disagreements.	S	5	☐
	☐	4	☐
		3	☐
	N	2	☐
	☐	1	☐
e. CONSIDERATION FOR OTHERS: Actions which indicate a sensitivity to and regard for the feelings and needs of others and an awareness of the effect on one's own behavior on them; being supportive of and fair with others.	S	5	☐
	☐	4	☐
		3	☐
	N	2	☐
	☐	1	☐
f. PROFESSIONAL ETHICS: Maintaining ethical, moral, and Army professional standards and values; accepting and acknowledging full responsibility for one's actions and their consequences.	S	5	☐
	☐	4	☐
		3	☐
	N	2	☐
	☐	1	☐

g. PLANNING AND ORGANIZING: The ability to establish a course of action for oneself and others to accomplish goals; establishing priorities and planning appropriate allocation of time and resources and proper assignment of people.	S 5 ☐ 4 ☐ 3 ☐ N 2 ☐ 1 ☐
h. DELEGATING: The ability and inclination to use the talents of subordinates effectively; the allocation of decision-making and other authority to the appropriate subordinates.	S 5 ☐ 4 ☐ 3 ☐ N 2 ☐ 1 ☐
i. SUPERVISING: The ability to establish procedures for monitoring and regulating processes, tasks, or activities of subordinates and one's own job; taking actions to monitor the results of delegated tasks or projects.	S 5 ☐ 4 ☐ 3 ☐ N 2 ☐ 1 ☐
j. DEVELOPING SUBORDINATES: The art of developing the competence and self-confidence of subordinates through role modeling and training and developmental activities related to their current or future duties.	S 5 ☐ 4 ☐ 3 ☐ N 2 ☐ 1 ☐
k. DECISION-MAKING: The ability to reach sound, logical conclusions based on analysis of factual information and the readiness to take appropriate actions based on the conclusions.	S 5 ☐ 4 ☐ 3 ☐ N 2 ☐ 1 ☐
l. ORAL AND WRITTEN COMMUNICATION: The ability to express oneself effectively in individual and group situations, either orally or in writing; includes utilizing proper grammar, gestures, and non-verbal communication.	S 5 ☐ 4 ☐ 3 ☐ N 2 ☐ 1 ☐

PART IV - OVERALL PERFORMANCE AND POTENTIAL (Rater)

a. Compared to all others I have seen in this duty position, this cadet ranks in the RANKING (check one) <table border="1" style="margin: auto; text-align: center;"> <tr> <td style="padding: 5px;">UPPER 10%</td> <td style="padding: 5px;">1</td> </tr> <tr> <td style="padding: 5px;">UPPER 25%</td> <td style="padding: 5px;">3</td> </tr> <tr> <td style="padding: 5px;">MIDDLE 30%</td> <td style="padding: 5px;">5</td> </tr> <tr> <td style="padding: 5px;">LOWER 25%</td> <td style="padding: 5px;">3</td> </tr> <tr> <td style="padding: 5px;">LOWER 10%</td> <td style="padding: 5px;">1</td> </tr> </table>	UPPER 10%	1	UPPER 25%	3	MIDDLE 30%	5	LOWER 25%	3	LOWER 10%	1	b. General comments on performance and overall potential. c. Recommendations for improvement.
UPPER 10%	1										
UPPER 25%	3										
MIDDLE 30%	5										
LOWER 25%	3										
LOWER 10%	1										

PART V - OFFICER REVIEWER

a. I do ☐ do not ☐ concur with the rater's evaluation.	b. General comments on performance, potential, and recommendations for improvement.
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Return original to: Commandant of Cadets, USCC, ATTN: MACC-O-SP-LD, West Point, New York 10996

Appendix B

An Example (Fictional) of a Completed CPR
from the Automated System

C A D E T P E R F O R M A N C E R E P O R T

PART I: ADMINISTRATIVE DATA

a. Name: DOE, JOHN b. Grad Yr: 94 c. AY Company: I4 d. Rank: SGT
e. Duty Assignment: SQD LDR f. Organization: 1ST SQD, 3D PLT, CO K, CBT
g. Report Type: Chain of Command

PART II: AUTHENTICATION

a. Name: Smith, Daniel b. 07/31/93 c. Phone 938-2494
b. Duty Position: PLT SGT e. Organization, LDB

PART III: PERFORMANCE OF DUTIES

a. DUTY MOTIVATION:	RATING: 4	FOCUS: s
Always enthusiastic. Very detailed in planning and preparing training. Excellent use of hip pocket training to reinforce marksmanship principles at BRM training.		
b. MILITARY BEARING:	RATING: 4	FOCUS: x
Always completed PT runs and road marches; satisfactory room and personal appearance. Sometimes gave the impression through facial expressions that he found it difficult to accept constructive criticism.		
c. TEAMWORK:	RATING: 2	FOCUS: n
Returned one hour late from leave and was, as a result one hour late for a squad meeting he scheduled.		
d. INFLUENCING OTHERS:	RATING: 3	FOCUS: x
e. CONSIDERATION OF OTHERS:	RATING: 2	FOCUS: n
Needs to be less critical of peers. Shows low tolerance of those who don't seem to measure up to his standards. Sometimes demonstrates this in chain of command meetings.		
f. PROFESSIONAL ETHICS:	RATING: 3	FOCUS: x
g. PLANNING AND ORGANIZING:	RATING: 4	FOCUS: x
Best of 4 sqd ldrs in making good use of time and resources. Showed flexibility in reacting to last minute changes.		
h. DELEGATING:	RATING: 4	FOCUS: s
Made excellent use of a prior service New Cadet to assist other New Cadets in areas such as assembling LBE and disassembly/assembly of M16 rifle.		
i. SUPERVISING:	RATING: 4	FOCUS: x
Above average in training his squad in general military training and providing them with feedback on their mastery of the skills.		
j. DEVELOPING SUBORDINATES:	RATING: 4	FOCUS: s
A detailed, thorough trainer. Cdt Doe trained and led by personal example in training that included: CS Gas Chamber, mountaineering, BRM, and IMT.		
k. DECISION MAKING:	RATING: 3	FOCUS: x
l. ORAL AND WRITTEN COMMUNICATIONS:	RATING: 3	FOCUS: x

PART IV: OVERALL PERFORMANCE AND POTENTIAL (RATER)

a. Overall Ranking: UPPER 25 PERCENT

b. General comments on performance and overall potential.
Above average squad leader. Thrives on developing subordinates. Above avg potential.

c. Recommendations for improvement.
Work on interpersonal skills and relationships with peers. Be more understanding and tolerant of others' shortcomings.