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Long Term Forecasting of Transformational Leadership and Its Effects Among Naval Officers: Some Preliminary Findings

Francis J. Yammarino and Bernard M. Bass

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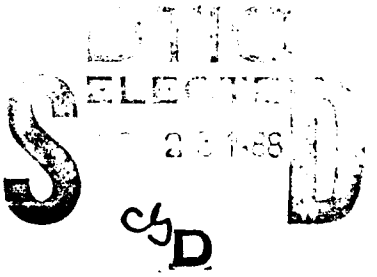

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The purpose of this study was to propose, provide measures of, and test a general model of transformational leadership and its relationship to various precursors and consequences in a sample of United States Navy (USN) Officers. The 186 officers were on active duty assigned to the surface warfare fleet and graduates of the United States Naval Academy (USNA). Data about the officers were collected from USNA records (pre- and post-admissions assessments), 793 senior subordinates of the officers, and USN records that contained superiors' performance evaluations of the officers. The preliminary results of this study indicate that (1) high school rank and verbal and math aptitude were predictors of academic and military success at the USNA; (2) military performance at the USNA was a predictor of charismatic/inspirational leadership as rated by subordinates as well as superiors' performance evaluations; and (3) transformational as compared to

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transactional leadership as rated by subordinates was more strongly related to subordinates' evaluations of effectiveness and satisfaction with the focal officers and superiors' ratings of the focal officers' performance. Given these preliminary findings, several directions for future research are discussed.

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Abstract

The purpose of this study was to propose, provide measures of, and test a general model of transformational leadership and its relationship to various precursors and consequences in a sample of United States Navy (USN) Officers. The 186 officers were on active duty assigned to the surface warfare fleet and graduates of the United States Naval Academy (USNA). Data about the officers were collected from USNA records (pre- and post-admissions assessments), 793 senior subordinates of the officers, and USN records that contained superiors' performance evaluations of the officers. The preliminary results of this study indicate that (1) high school rank and verbal and math aptitude were predictors of academic and military success at the USNA; (2) military performance at the USNA was a predictor of charismatic and inspirational leadership and effectiveness as rated by subordinates as well as superiors' performance evaluations; and (3) transformational as compared to transactional leadership as rated by subordinates was more strongly related to subordinates' evaluations of effectiveness and satisfaction with the focal officers and superiors' ratings of the focal officers' performance. Given these preliminary findings, several directions for future research are discussed.

LONG TERM FORECASTING OF TRANSFORMATIONAL LEADERSHIP AND ITS EFFECTS AMONG NAVAL OFFICERS: SOME PRELIMINARY FINDINGS

The model of leadership that is limited to a transactional exchange of rewards with subordinates for the services they render also limits how much effort will be forthcoming from the subordinates, how satisfied the subordinates will be with the arrangements, and how effectively they will contribute to reaching the organization's goals. To proceed beyond such limits in subordinates' effort, satisfaction, and effectiveness calls for a new model of leadership--transformational leadership (Bass, 1985). The transformational leader articulates a realistic vision of the future that can be shared, stimulates subordinates intellectually, and pays attention to the differences among the subordinates (Bass, 1985, Chapter 2).

Such transformational leadership does not need to be left to the accidents of the right personality happening to show up at the right time. Transformational leadership can be increased through training and the design of role relationships. It can be fostered by the appropriate recruitment, selection, and promotion of those with potential to be transformational.

The purpose of this study was to measure and assess transformational leadership and its association with several precursors and consequences in a sample of United States Navy (USN) Officers. The 186 officers were graduates of the United States Naval Academy (USNA) and currently on active duty in the fleet. The study involved collecting and analyzing data from the officers themselves, 793 immediate subordinates of the officers, and records from the Naval Academy and the Navy.

BACKGROUND AND CONCEPTUALIZATION

Transactional Leadership

Current measurement of leader behavior and leadership potential is dominated by behavioral theory that suggests leaders must engage in a transaction with their subordinates--an exchange based on initiating and clarifying what is required of their subordinates and the consideration the subordinates will receive if they fulfill the requirements (e.g., Deets & Morano, 1986). These behaviors deal primarily with the two factors of initiating structure and consideration generally emphasized nowadays to be of consequence to leadership (Bass, 1981, Chapter 21). This leadership concentrates on both accomplishing the tasks at hand and satisfying the self-interests of those working with the leader who handle the tasks well. The leader sees that promises of reward are fulfilled for those followers who successfully carry out what is required of them.

By clarifying what is required of the subordinate, transactional leaders are able to build confidence in subordinates to exert the necessary effort to achieve expected levels of performance. Complimenting this approach, transactional leaders also recognize what subordinates need and want, and clarify for them how those needs will be satisfied when subordinates expend the necessary effort to accomplish the objective. Such effort to perform or motivation to work provides a sense of direction and to a degree energizes subordinates to reach agreed-upon objectives.

In its active form, transactional leadership can be characterized as contingent reinforcement--rewards (or avoidance of penalties) contingent upon effort expended and performance level achieved. The less active form of transactional leadership is management-by-exception or contingent negative reinforcement; and the extreme end of inactivity is well known as laissez-faire leadership. In studies of 198 senior Army officers and over

800 industrial leaders who were described by their subordinates and colleagues, such contingent rewarding by superiors is seen as effective and satisfying (r=.4 to .5); but not as effective or satisfying as transformational leadership (r=.6 to .7) by the superiors (Bass, 1985; Waldman & Bass, 1986; Waldman, Bass & Einstein, 1987).

In many instances, such transactional leadership is a prescription for mediocrity--or worse--the leader relies heavily on management-by-exception, intervening with his or her group only when procedures and standards for task accomplishment are not being met. Such a manager espouses the popular adage, "If it ain't broken, don't fix it." Correlations of management-by-exception with effectiveness and satisfaction according to subordinates are about .2 for military leaders and -.1 to -.2 for industrial leaders (Bass, 1985). Using disciplinary threats to bring a group up to standards is even less efficacious and is likely to be counterproductive in the long run (Yukl, 1981).

Moreover, whether promise of rewards or avoidance of penalties is effective depends on whether the leader has control of the rewards or penalties, and whether the rewards are valued or the penalties not disdained by the subordinates. Pay increases and promotions often depend on qualifications and policies about which the leader has little to say. Regulations may be the main source of penalties.

Thus, transactional leadership is good as far as it goes. However, it may fail for a variety of reasons. The transactional leader may be unable to provide rewards commensurate with what subordinates expect due to limitations of organizational resources, ineffective appraisal systems, time pressures, and a lack of skill on the leader's part to effectively utilize positive reinforcement. Something beyond transactional leadership is therefore needed--transformational leadership.

Transformational Leadership

Superior leadership performance--transformational leadership--is seen when leaders broaden and elevate the interests of their subordinates, when they generate awareness and acceptance among the subordinates of the purposes and mission of the group, and when they move their subordinates to go beyond their own self-interests for the good of the group (Burns, 1978). Transformational leaders motivate subordinates to do more than originally expected. They raise the consciousness of subordinates about the importance and value of designated outcomes and ways of reaching them and, in turn, get subordinates to transcend their own immediate self-interests for the sake of the mission and vision of the organization. Subordinates' confidence levels are raised and their needs are expanded. The heightened level of motivation is linked to three empirically derived factors of transformational leadership (Bass, 1985; Avolio & Bass, 1988; Bass & Avolio, in press).

First, transformational leaders are more charismatic and inspiring in the eyes of their subordinates. Charismatic leaders have great referent power and influence. Charismatic leaders inspire loyalty to the organization, command respect, have an ability to see what is important (vision) which typically translates into a mission and energized response by subordinates. Subordinates want to identify with these leaders and develop intense feelings about them (Zaleznick, 1983). Subordinates have a high degree of trust and confidence in them. Charismatic leaders excite, arouse, and inspire their subordinates (House, 1977). Charismatic qualities have been observed at all levels of organizations (Bass, 1985).

A second necessary component for transformational leadership is individualized consideration. Although a leader's charisma may attract subordinates to the mission or vision, the leader's use of individualized consideration also significantly contributes to a subordinate achieving

his/her fullest potential. The leader pays attention to individual differences in subordinates' needs for growth and development. The leader sets examples and assigns tasks on an individual basis not only to satisfy the immediate needs of subordinates, but also to elevate a subordinate's needs and abilities to higher levels. Individualized consideration is, in part, coaching and mentoring. It is a method of communicating timely information to subordinates. It provides for continuous follow-up and feedback, and, perhaps more importantly, links an individual's current needs to the organization's mission, and elevates those needs when it is appropriate to do so (Bass, 1985, Chapter 5).

The third component of transformational leadership is intellectual stimulation. An intellectually stimulating leader arouses in subordinates an awareness of problems, an awareness of their own thoughts and imagination, and a recognition of their beliefs and values. Intellectual stimulation is seen in subordinates' conceptualization, comprehension, and analysis of problems they face and solutions they generate.

Leaders fulfill the role of a transforming/intellectual leader to the extent they can discern, comprehend, conceptualize, and articulate to their subordinates opportunities and threats facing their organization, as well as the organization's strengths, weaknesses, and comparative advantages. It is through intellectual stimulation of subordinates that new methods of accomplishing the organization's mission are explored. The leaders are willing and able to show subordinates new ways of looking at old methods (Bass, 1985, Chapter 6).

Overall, transformational leaders are more likely to be proactive than reactive in their thinking, to be more creative and innovative in ideas, and to be less inhibited in their ideational search for solutions. Rather than being inhibited by organizational constraints, transformational leaders see

how those constraints can be turned into opportunities. In sum, transformational leaders may attain charisma in the eyes of their subordinates; transformational leaders may deal individually to meet the needs of each of their subordinates; and transformational leaders may intellectually stimulate their subordinates.

The Greater Payoff from Transformational Leadership

Extensive survey studies of managers and technical team leaders have been completed in firms such as General Electric, IBM, Digital Equipment, Minneapolis Honeywell, Federal Express, Agway, Exxon, and Larsen & Toubro, as well as in various governmental and military organizations. Subordinates and colleagues of leaders have rated them on the extent to which they are transformational (charismatic/inspirational, individually considerate, and intellectually stimulating), transactional (contingent rewarding, managing-by-exception) and avoiding leadership (being laissez-faire). Transformational leaders contribute to their organization's effectiveness. Subordinates say they exert extra effort for such transformational leaders (see Avolio & Bass, 1988; Bass, 1985). U.S. Army combat officers were seen to be more charismatic than combat support officers (Waldman & Bass, 1986).

In contrast, if leaders are only transactional, the organizations are seen as less effective; particularly if much of the leadership practiced is management-by-exception (intervening only when standards are not being met). Subordinates say they exert much less effort for such leaders. To be effective, contingent reward by leaders requires that leaders control the rewards for compliance and the rewards have to be valued by the subordinates (Bass, 1985).

These findings, however, are based mainly on subordinates' judgments. In a recent study (Hater & Bass, 1988), leaders were evaluated by their subordinates and their superiors. Those managers described as

transformational rather than transactional by their subordinates were judged much more highly in leadership potential by the managers' superiors. The transformational leaders also received higher performance ratings from their superiors (Hater & Bass, 1988).

There clearly is a greater payoff for the organization from transformational leaders who can articulate a realistic, shared vision of the future, to arouse confidence, commitment, and the desire of employees to self-actualize in alignment with organizational opportunities, as well as to counter threats of mutual concern. Burns (1978) conceived transactional and transformational leadership to be bi-polarities at two ends of the same continuum. However, Bass (1985) argued and demonstrated (Waldman & Bass, 1986) that transformational leadership builds on transactional, but not vice versa. Thus, in an overall way and in an additive sense, transformational leadership has a greater impact on outcomes that count.

Perspectives on Leadership

Most previous leadership research, including that on transformational leadership, has assumed that the appropriate dynamic of consequence lies between the leader and his or her group as revealed by the average member of the group. A powerful explanatory alternative has been offered which suggests that leader-subordinate dynamics are much more complex and "individualistic" often differing in the "quality of the relationship" from one leader-subordinate dyad to another. Thus, each subordinate may view a leader differently, or a leader may interact differently with each subordinate rather than uniformly toward a group of subordinates (Graen, 1976).

The approach developed by Dansereau, Alutto, and Yammarino (1984) provides a conceptual and statistical way of looking at leadership behavior from a leader-subordinate dyadic (one-to-one) perspective, as well as in

terms of a group level of analysis. It is possible then to examine those leadership behaviors that have individual and differential impact on subordinates and those which have a group-wide impact, thus refining our understanding of the transformational leadership process. To accomplish this (in addition to employing a variety of traditional statistical techniques), Within and Between Analysis (Dansereau, Alutto, & Yammarino, 1984) was used to compare dyadic (one-to-one) and group based transformational leadership behaviors.

General Model

The general model which formed the basis for this research is summarized in Figure 1. Essentially, USNA selection devices (pre-Academy information) and success measures (information obtained while at the Academy) were hypothesized to better predict transformational leadership (charisma, individualized consideration, intellectual stimulation, inspirational leadership) than contingent promises and rewards (transactional leadership). More specifically, based on the work of Bass (1985), it was hypothesized that verbal aptitude, high school class rank, recommendations, extracurricular activities, and humanities and social science majors rather than engineering and science majors would predict more transformational than transactional leadership. The precursors (USNA selection devices and success measures) were not expected to be related to active or passive management-by-exception (transactional leadership) and to be negatively associated with laissez-faire leadership. In turn, the leadership variables were hypothesized to differentially predict the consequences; i.e., USN performance as rated by supervisors of the focal leader and outcomes as rated by subordinates of the focal leaders. In particular, transformational leadership was posited to better predict the consequences than transactional leadership, and laissez-faire leadership

was hypothesized to be negatively related to the consequences. Moreover, various individual (age, rank, assignment) and ship (size, combat type) characteristics were expected to moderate these associations.

Insert Figure 1 about here

METHOD

Sample

The focal leaders for this study were all USN officers who were USNA graduates on active duty assigned to the surface warfare fleet. Originally, 330 officers were randomly selected by members of the USNA and Naval Personnel Research and Development Center (NPRDC) staffs to participate in the study. Of these, 54 officers were not reachable due to transferred assignments. From the effective sample of 276 officers, 186 participated, yielding a response rate of about 67%. In addition to gathering information from these officers and from the USNA and NPRDC records about these officers, six senior subordinates of each officer were randomly selected and asked to provide information anonymously about the officers. For officers who had less than six subordinates, all their senior subordinates were asked to provide information. In all, 793 subordinates of the focal officers participated, yielding an average of 4.26 subordinates per officer. Returns were as follows: 98 officers (53%) were described by five or six subordinates, 58 officers (31%), by three or four subordinates, and 30 officers (16%), by one or two subordinates.

The focal officers were commissioned in 1978 (n = 36), 1979 (n = 31), 1983 (n = 51), and 1984 (n = 68), and held the ranks of O-2 or Lieutenants Junior Grade (n = 71) and O-3 or Lieutenants (n = 114). There

was one Lieutenant Commander (rank 0-4) in the sample. Nearly all the officers were males (n = 185) and were primarily 25-30 years (n = 120) and 31-35 years (n = 45) in age. They were assigned to a variety of types and sizes of ships.

All subordinate survey materials were sent to the commanding officer of the ship on which the focal officers were serving. The CO was asked to relay the materials to the appropriate senior subordinates of the focal officers. All returns were collected in sealed envelopes. The subordinates who provided information about the officers were approximately 93% males. Most were 21-25 years (n = 213), 26-30 years (n = 220), or 31-39 years (n = 275) in age. Most of the subordinates held the ranks of E-4 to E-6 (n = 171), E-7 to E-9 (n = 191), or 0-1 to 0-2 (n = 362), and generally had worked with the focal officers for three to six months (n = 184), seven months to one year (n = 243), or one to two years (n = 255). Although details about the superiors who evaluated the performance of the focal officers were not available, it is known that 5.84 reports on average about the officers were provided which constituted information from a number of superiors over several years in a variety of assignments.

Measures

Information was obtained from multiple sources. First, precursor information was acquired from files about the officers' pre-Academy and Academy success scores. Second, performance information about the officers while on active duty as rated by superiors was obtained from their files. Third, from the senior subordinates, leadership and outcome measures were secured from mail surveys. Fourth, self-descriptions about leadership and outcomes were collected by mail surveys from the focal officers themselves. Although this self-report information was not used in the

present analysis, it provided the focal officers with knowledge about what was being asked of their subordinates.

Precursors: Selection Devices. In terms of precursors (see Figure 1), data for the selection devices (e.g., aptitude, personality, interest, and biodata measures) were collected prior to admission to the USNA in 1973-1974 and 1978-1979. Verbal and math aptitude were measured using the Scholastic Aptitude Test (SAT). In general, a minimum score of 520 and 600 for verbal and math, respectively, are required for USNA qualification. High school class rank is a standardized score (M = 500, SD = 100) ranging from 200 to 800 that is based on an individual's high school rank. Recommendations is a score based on school officials' estimates of the individual's potential for success as a Naval Officer. It is an objective score ranging from 0 to 1000 derived from evaluations of the candidate on physical abilities, academic potential, interpersonal relations, personal conduct, and participation in extracurricular activities. Extracurricular activities is based on an objective scoring system that ranges from 300 to 800 about a candidate's participation in both athletic and non-athletic high school activities as reported by the individual. Career retention (also called career interest) and engineering-science scales are two measures derived from the Strong-Campbell Interest Inventory (SCII). Career retention is comprised of SCII items keyed to differentiate between high and low tenure midshipmen and officers based on motivational and academic components. Engineering-science is comprised of SCII items keyed to identify candidates with engineering and science as compared to humanities and social science interests who would be more likely to choose these majors at the USNA.

Precursors: Success Measures. The success measures data were collected while candidates were attending the USNA in 1974-1979 and 1979-1984. Academic performance is analogous to a cumulative quality or grade point

average based on grades obtained and quality points for those grades. It includes all courses completed during four years at the Academy. Military performance is analogous to a cumulative quality point score based on performance in professional, military, and physical education courses completed during four years at the USNA as well as the Second Class Summer evaluation, annual Professional Competency Review, and the semester-by-semester conduct scores. The exact formulation of these scores is a weighted combination of grades, quality points, and coefficients (values) of the components. Military performance grades are the most heavily weighted in this index. The candidates' choice of major is viewed at the USNA as more in line with the requirements of the Navy if it is engineering or science rather than humanities or social science. In addition, within engineering and science, the majors of "general engineering" and "physical science," respectively, are viewed as less valuable. In this study, there were 40 (22%) engineering, 67 (36%) science, 41 (22%) humanities and social science, 38 (20%) general engineering and physical science majors.

Leadership Measures. The leadership data (see Figure 1) were collected in 1987-1988 from the officers (not reported here) and their senior subordinates using the Multifactor Officer Questionnaire (MLQ-Forms 11R and 11S) (Bass & Yammarino, 1987). This survey is a modified version of the Multifactor Leadership Questionnaire that has been described in detail elsewhere (Avolio & Bass, 1988; Bass, 1985; Bass & Avolio, in press). In Form 11, the number of scales were increased with a consequent reduction in number of items per scale. Secondly, the content was changed wherever necessary to better suit the military setting. Respondents completing the surveys indicated how frequently they observed behaviors of the focal officers and also reactions to the focal officers on a five-point format ranging from "not at all" (0) to "frequently, if not always" (4).

These anchors have a magnitude estimation-based ratio to each other of 4:3:2:1:0 (Bass, Cascio, & O'Connor, 1974). For each scale, items were summed and divided by the appropriate number of items forming a scale score that ranged from zero to four.

Nine leadership scales were created for use in the current study. The four transformational leadership scales, the number of items in each, and examples of the items were:

1. Charisma (6 items) - "I am ready to trust him/her to overcome any obstacle."
2. Individualized Consideration (6 items) - "Gives personal attention to me when necessary."
3. Intellectual Stimulation (6 items) - "Shows me how to think about problems in new ways."
4. Inspirational Leadership (6 items) - "Provides vision of what lies ahead."

The four transactional leadership scales, the number of items in each, and examples of the items were:

5. Contingent Promises (3 items) - "Talks about special commendations and promotions for good work."
6. Contingent Rewards (3 items) - "Personally pays me a compliment when I do good work."
7. Active Management-by-Exception (4 items) - "Would reprimand me if my work was below standard."
8. Passive Management-by-Exception (4 items) - "Shows he/she is a firm believer in 'if it ain't broken, don't fix it'."

The non-leadership scale was:

9. Laissez-Faire (6 items) - "However I do my job is OK with him/her."

Consequences: Outcomes. In terms of consequences (see Figure 1), the outcome data, a part of the MLQ, were collected in 1987-1988. Several items were used to measure three outcome variables. Items were summed and divided by the appropriate number of items to form scale scores that ranged from zero to four. These included:

1. Extra Effort -- Four items were used to measure how much extra effort subordinates were willing to put forth in their jobs. For example, "I do more than I expected to do in my work." Items from this scale used the same response format as the leadership items.
2. Satisfaction -- Two items were used to measure subordinates' satisfaction with their leader. For example, "In all, how satisfied were you that the methods of leadership used by this officer were the right ones for getting your unit's job done?" Response alternatives were on a five-point format ranging from "very dissatisfied" (0) to "very satisfied" (4).
3. Effectiveness -- Four items were used to measure the effectiveness of the focal officer. For example, "How effective is this officer in meeting the job-related needs of his/her subordinates?" Response alternatives were on a five-point format ranging from "not effective" (0) to "extremely effective" (4).

Consequences: Performance. The job performance data were collected from the year of commission (1978, 1979, 1983, or 1984) to 1987 by the USN while the officers were on active duty with the fleet. This information was provided by the superiors of the focal officers over a number of years in a variety of job assignments working under several different supervisors. As shown in Figure 1, one of the measures, performance summary, was simply the number of performance or "fitness" reports available about a focal officer. This number was used in the calculation of two key performance measures.

First, the recommendation for early promotion (CEP) was the number of times an officer was recommended for early promotion divided by the number of times rated (fitness reports). Each recommendation is on a three-point format (early, regular, or no promotion) that is "a consequence of the officer's exhibited performance and potential during the evaluation period." Second, performance evaluation (CPE) was the number of times an officer was rated in the top performance category divided by the number of times rated (fitness reports). Each evaluation is on a nine-point format (00 = high to 09 = low) that assesses "the officer's performance with regard to contributions to the unit's mission, including effective integration of personnel and the mission and completion of assigned tasks." This scale was reverse-scored to reflect alignment with the other measures. A third performance measure, promotion recommendation (CPR), indicated whether an officer's most recent recommendation was for early, regular, or no promotion. This measure also was reverse-scored to reflect alignment with the other measures.

Scale Development and Evaluation

To evaluate the modifications and new scales, internal consistency analyses of the MLQ Form 11 were conducted on a separate sample of Naval Officers who were attending the Naval War College in 1987-1988. The data were gathered from 318 senior officers describing their most recent immediate superiors. As shown in Table 1, the proposed scales, in general, displayed adequate reliabilities. Furthermore, the means, standard deviations, and intercorrelations among the scales follow the same pattern as in a variety of other industrial and military studies (e.g., Bass 1985; Avolio & Bass, 1988; Bass & Avolio, in press). As such, this version of the scales was used in the present study to assess connections with precursors and consequences of leadership via correlational analyses. Traditional

analysis of variance procedures were also used to gain further understanding about the variables.

Insert Table 1 about here

RESULTS

The findings for this study are summarized in Tables 2 to 4. Descriptive statistics and correlations among the MLQ leadership and outcome measures based on subordinates' ratings are presented in Table 2. Descriptive statistics and correlations among the USNA selection and success measures and the USN performance measures based on superiors' ratings are presented in Table 3. The interrelationships among the precursors (USNA selection and success), leadership, and consequences (USN performance and MLQ outcomes) are presented in Table 4.

MLQ Leadership and Outcomes

Initially, the relationships among the MLQ Form 11 leadership and outcome measures were investigated based on 793 subordinates' reports about the 186 focal officers. These results displayed the same pattern as those in Table 1 and in a variety of other studies. They are not presented here because of space considerations and for the following reason: Because the relationships among these measures and the precursors and consequences also were of interest, it was necessary to aggregate the subordinates' reports about each focal leader. In this way, averaged subordinate responses for each focal officer about leadership and outcomes could be aligned with the other information about the focal officers. As a test of whether this aggregation of scores was appropriate, a traditional multivariate and univariate analysis of variance was performed in which the dependent variables were the leadership and outcome measures and the independent

variable was the focal leader. That is, each focal officer was a "cell" for the analysis to determine whether subordinates' ratings varied more between than within leaders. Despite numerous limitations with this traditional approach (see Dansereau, Alutto, & Yammarino, 1984), results of the MANOVA (leadership: Mult F = 1.56, $p<.001$, Mult $\eta^2 = .97$; outcomes: Mult F = 1.85, $p < .001$, Mult $\eta^2 = .73$) and all univariate ANOVA's indicated that aggregation was permissible.

As such, the intercorrelation among the MLQ leadership and outcomes measures based on 793 subordinates' averaged responses about the 186 focal officers are shown in Table 2. Compatible with prior research, the transformational leadership measures were highly correlated and had the highest associations of the leadership measures with perceived subordinate effectiveness and satisfaction. Again, consistent with previous research, charisma displayed the strongest relationships with the outcome variables, followed in magnitude by inspirational leadership, individualized consideration, and intellectual stimulation. Contingent rewards and promises and active management-by-exception (transactional leadership) were significantly related to effectiveness and satisfaction, but the magnitudes of these associations were less than those involving transformational leadership. Passive management-by-exception was not significantly related to the outcomes, and laissez-faire (non-leadership) was significantly, negatively associated with effectiveness and satisfaction. The relationship between perceived subordinate extra effort and the leadership measures followed the same pattern, but the magnitudes of the associations were much less.

Insert Table 2 about here

USNA and USN Measures

The intercorrelations among the USNA selection and success measures (precursors) and USN performance (consequences) as reported by the focal leaders' superiors are shown in Table 3. Consistent with forecasting success in college from pre-admissions assessments, and then forecasting subsequent on-the-job performance, high school class rank and tested verbal and math aptitudes predicted academic and military success at the USNA, but did not correlate with USN performance following graduation. Pre-admissions recommendations displayed a modest association with military success at the USNA, but not with academic success nor subsequent performance in the fleet.

In addition, based on ANOVA results (3 and 173 degrees of freedom), verbal aptitude ($F = 4.62$, $p<.01$, $\eta^2 = .07$), math aptitude ($F = 6.44$, $p<.001$, $\eta^2 = .10$), engineering-science scores ($F = 8.83$, $p<.001$, $\eta^2 = .13$), academic success ($F = 6.24$, $p<.001$, $\eta^2 = .10$), and military success ($F = 8.20$, $p<.001$, $\eta^2 = .13$), differed by the officers' choice of major. As might be expected, humanities and social science majors had the highest verbal scores, the lowest math scores, and the lowest engineering-science scores. Engineering majors had the highest math scores and the greatest academic and military success scores. General engineering and physical science majors, despite the highest engineering-science scores, had the lowest verbal scores and the least academic and military success. Choice of major, however, was not a significant predictor of subsequent on-the-job performance.

None of the other precursors displayed significant relationships with the USNA success measures nor subsequent USN performance. However, assessed military performance at the USNA correlated .23 with superiors' performance appraisals (CPE) and .25 with early promotion evaluations (CEP) many years later, but not with recommendations for promotion (CPR). Evidently a single,

three-point item (CPR) obtained just once lacks much reliability and remains unpredictable. However, when it is accumulated over a number of time periods (CEP), it becomes more predictable as shown in the next section.

Insert Table 3 about here

Precursors, Leadership, and Consequences

The *intercorrelations among* the precursors (USNA selection and success), leadership (MLQ), and consequences (USN performance and MLQ outcomes) measures are shown in Table 4. First, none of the USNA selection devices (pre-admissions assessments) correlated significantly with the MLQ leadership or outcome measures. Second, with one exception, the USNA success measures, including choice of major (as based on ANOVA results), were not associated with the MLQ *leadership or outcome measures*. The exception was that the military performance grade at the USNA correlated with being seen as a charismatic (.18), and inspirational (.14), and effective (.17) officer in the fleet. The military performance score did not correlate with being viewed as a transactional leader. In addition, although the results lacked statistical significance, humanities and social science majors were rated as being the most transformational (charismatic, individually considerate, intellectually stimulating, inspirational), most transactional (contingent rewards and promises, active management-by-exception), and least laissez-faire as compared to officers who had chosen other majors.

Third, as in industrial studies (e.g., Hater & Bass, 1988), a similar pattern of correlations emerged for the Naval fleet officers between subordinates' descriptions of their leaders' transformational and transactional behavior and outcomes (MLQ) and the performance appraisals

(USN) of those leaders by their superiors. As shown in Table 4, significant correlations ranged from .21 to .38 for the performance appraisals (CPE) with the officers' transformational scores, -.05 to .22 for the performance appraisals with their transactional scores, and -.31 for the performance appraisals with laissez-faire leadership. As in industry, early promotability correlated in a similar fashion with subordinates' descriptions. Transformational leadership of the officers correlated significantly .24 to .37 with an average of recommendations by the superiors for early promotion (CEP). Transactional leadership correlated -.04 to .28, and laissez-faire leadership correlated -.31, with early promotability. Promotion recommendation (CPR) yielded the same pattern of results with somewhat less magnitude for the correlations.

Note that these findings parallel those for the relationship between the MLQ leadership and outcome measures as described above (Table 2) and reproduced in the lower portion of Table 4. This is not surprising given that subordinates' ratings of the focal officers' effectiveness (MLQ) significantly correlated .38, .37, and .25 with superiors' ratings (USN) of early promotion, performance evaluation, and promotion recommendations respectively. Moreover, subordinates' perceived satisfaction (MLQ) with the focal officers significantly correlated .25 and .29 with superiors' assessments (USN) of early promotion and performance evaluation, respectively.

Insert Table 4 about here

DISCUSSION

The purpose of this study was to propose and assess the association

between transformational leadership and various precursors and consequences in a sample of Naval fleet officers. Data were gathered from a variety of sources (USNA records, officers' senior subordinates via the MLQ, officers' superiors via USN records) to empirically assess a general model summarized in Figure 1. Although preliminary, the findings of this study lead to several conclusions and suggest directions for future research.

Key Findings

First, in terms of precursors, it appears that the USNA selection paradigm works reasonable well. High school class rank and verbal and math aptitude test scores from pre-admissions assessments predict academic and military performance at the USNA as well as the identification of choice of majors. None of the precursors, however, with the exception of military performance at the USNA, was a significant predictor of leadership or consequences as rated by subordinates or superiors of the focal officers.

Second, the relationships among the leadership measures, and between the leadership and outcome measures (consequences rated by subordinates), were consistent with prior research (Avolio & Bass, 1988; Bass, 1985; Bass & Avolio, in press). Transformational leadership and the outcomes were highly, positively related, transactional leadership and the outcomes less so, and laissez-faire and the outcomes were negatively associated.

Third, the relationships between the leadership measures (as rated by subordinates) and performance measures (consequences rated by superiors) also were consistent with previous research (Hater & Bass, 1988). Transformational leadership had the highest positive associations with the performance appraisals, followed by transactional leadership, and laissez-faire was negatively related to these evaluations.

Fourth, the different types of consequences were generally related to one other. That is, using different rating forms (MLQ versus USN),

different types of raters (subordinates versus superiors of focal officers) agreed in their evaluations of focal officers and those evaluations were more highly related to transformational than transactional leadership.

Fifth, military performance at the USNA was a predictor of charismatic and inspirational leadership and effectiveness of the focal officers rated by their subordinates as well as early promotion and performance evaluation rated by their superiors. As such, this USNA success measure seems to be a key for understanding the long-term forecasting of transformational leadership and its consequences. However, subordinate and peer ratings of leadership performance at the Academy might be likely to better predict the future MLQ measures and superiors' fitness reports for the focal officers.

Future Research

Clearly, the importance of military performance in the network of variables assessed in this study should be the subject for additional future research. Given the results of this study, several other directions for future work also are warranted.

First, potential moderators of the relationships proposed in Figure 1 can be investigated. The lack of some relationships and the nature of other associations can be clarified by examining the role of individual moderators such as the age, rank, and assignment of the officers, and of ship moderators such as size and combat type. Second, the relationship between subordinates' ratings of the officers and the officers' self-ratings can also be investigated. This work can provide some insight to the issue of congruence between self- and other ratings of leadership and outcomes. Third, an evaluation of non-response bias can be made. Of the 330 officers who were originally selected, 144 did not participate in the study because of either transferred assignments (n = 54) or non-response (n = 90). Precursors (USNA selection and success measures) and consequences (USN

performance) data are available, however, for these 144 officers. As such, a comparison on these measures can be made between the 186 participating and 144 non-participating officers to assess potential differences.

Fourth, because a new version of the MLQ was used in this study, additional scale refinement seems necessary in future work. Using the Naval War College sample (Table 1), a new sample of midshipmen at the USNA, and the present sample of officers (Table 2), factor analyses, creation of new scales, and cross-validation of these can be conducted to enhance the measurement of transformational leadership. Fifth, Within and Between Analysis (Dansereau, Alutto, & Yammarino, 1984) can be employed in future research to address levels of analysis issues in this study. These procedures permit a more rigorous test of whether aggregation of the subordinates' reports is appropriate. Moreover, they provide an assessment of variation and covariation in the leadership and outcome measures within and between the focal officers and the groups of subordinates that they lead. In addition, the use of within and between analysis provides tests of the magnitudes of the obtained effects independent of, yet compatible with, tests of statistical significance.

In conclusion, this study has obtained new, valid, and reliable measures of transformational leadership and has shown the forecasting potential of the USNA military grade for predicting subsequent transformational leadership and appraised performance. However, early forecasting of prospective leaders suggests that more attention needs to be paid to various biodata in addition to differential aptitudes of this highly preselected group admitted to the Academy, and rated military in addition to academic performance at the USNA. These preliminary findings are likely to have further implications for identifying, selecting, training, and developing transformational leaders in a variety of settings.

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FIGURE CAPTION

Figure 1. Long-Term Forecasting of Transformational Leadership.

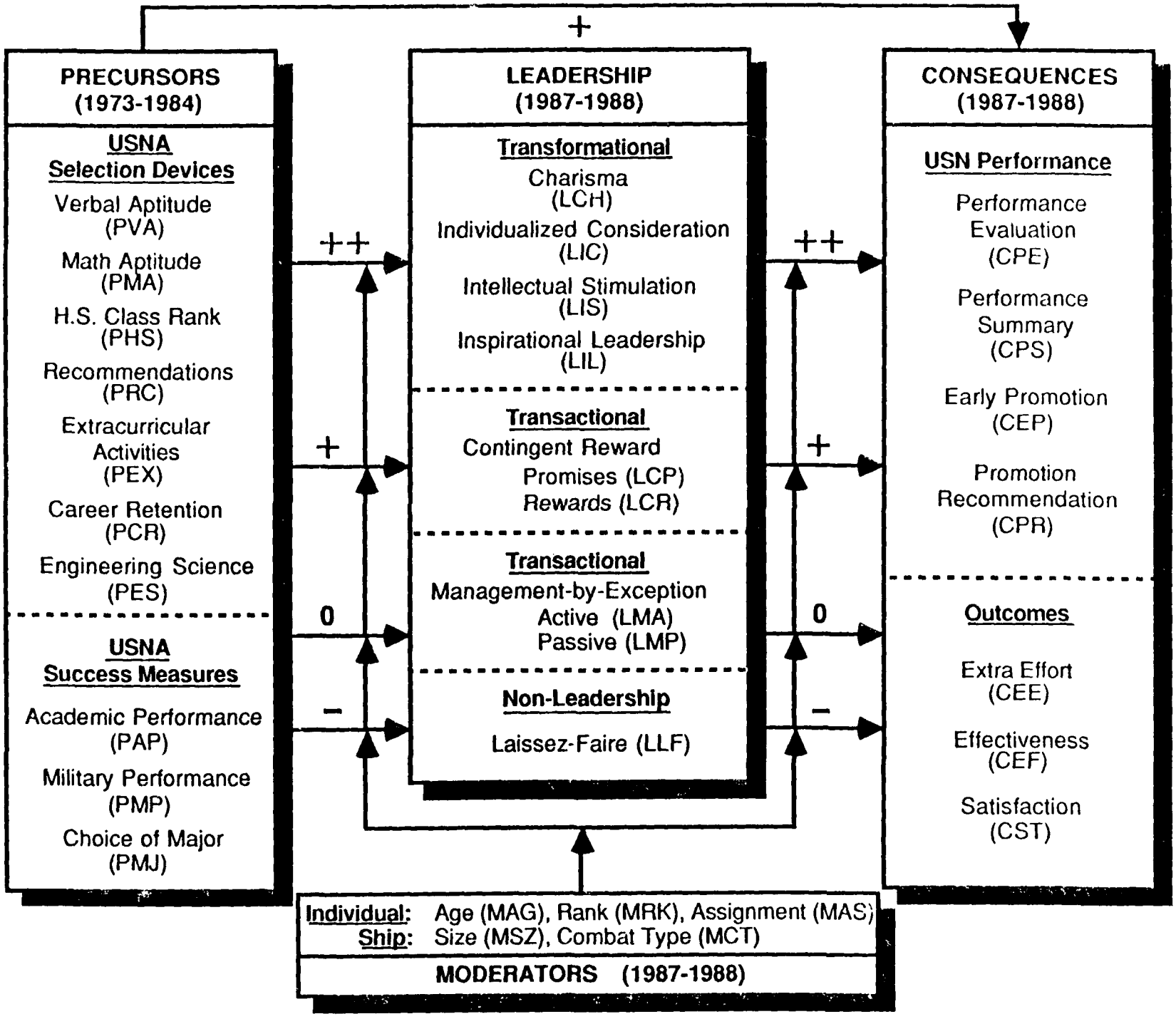
+
PRECURSORS
(1973-1984)
USNA
Selection Devices
Verbal Aptitude
(PVA)
Math Aptitude
(PMA)
H.S. Class Rank
(PHS)
Recommendations
(PRC)
Extracurricular
Activities
(PEX)
Career Retention
(PCR)
Engineering Science
(PES)
USNA
Success Measures
Academic Performance
(PAP)
Military Performance
(PMP)
Choice of Major
(PMJ)
++
+
0
−
LEADERSHIP
(1987-1988)
Transformational
Charisma
(LCH)
Individualized Consideration
(LIC)
Intellectual Stimulation
(LIS)
Inspirational Leadership
(LIL)
Transactional
Contingent Reward
Promises (LCP)
Rewards (LCR)
Transactional
Management-by-Exception
Active (LMA)
Passive (LMP)
Non-Leadership
Laissez-Faire (LLF)
++
+
0
−
CONSEQUENCES
(1987-1988)
USN Performance
Performance
Evaluation
(CPE)
Performance
Summary
(CPS)
Early Promotion
(CEP)
Promotion
Recommendation
(CPR)
Outcomes
Extra Effort
(CEE)
Effectiveness
(CEF)
Satisfaction
(CST)
Individual: Age (MAG), Rank (MRK), Assignment (MAS)
Ship: Size (MSZ), Combat Type (MCT)
MODERATORS (1987-1988)

TABLE 1

Descriptive Statistics and Intercorrelations Among MLQ Leadership and Outcome Measures: Navy War College

Measure	α	M	SD	(LCH)	(LIC)	(LIS)	(LIL)	(LCP)	(LCR)	(LMA)	(LMP)	(LLF)	(CEE)	(CEF)
Transformational														
Charisma (LCH)	.96	2.09	1.26	X										
Individualized Consideration (LIC)	.86	2.27	.90	.81	X									
Intellectual Stimulation (LIS)	.88	2.33	.88	.80	.74	X								
Inspirational Leadership (LIL)	.85	2.09	.84	.83	.82	.81	X							
Transactional														
Contingent Rewards (Promises) (LCP)	.67	1.38	.89	.52	.57	.52	.59	X						
Contingent Rewards (Rewards) (LCR)	.92	2.13	1.14	.68	.80	.64	.73	.68	X					
Mgt.-by-Exception (Active) (LMA)	.72	2.48	.86	.19	.11	.33	.23	.17	.15	X				
Mgt.-by-Exception (Passive) (LMP)	.61	2.41	.80	.16	.22	.07	.16	.17	.15	-.10	X			
Non-Leadership														
Laissez-Faire (LLF)	.61	1.39	.67	-.55	-.48	-.59	-.51	-.21	-.39	-.41	.23	X		
Outcomes														
Extra Effort (CEE)	.73	3.36	.57	.12	.11	.11	.10	.02	.03	.15	.08	-.09	X	
Effectiveness (CEF)	.89	2.68	.95	.83	.73	.73	.73	.48	.62	.20	.10	-.56	.13	X
Satisfaction (CST)	.93	2.39	1.36	.90	.80	.74	.77	.51	.67	.12	.18	-.51	.04	.83

Note: N = 318; $r \geq .11$, $p \leq .05$; $r \geq .15$, $p \leq .01$.

TABLE 2
Intercorrelations Among MLQ Leadership and Outcome Measures
Based on 793 Subordinates' Averaged Responses: Navy Fleet

Measure	α	M	SD	(LCH)	(LIC)	(LIS)	(LIL)	(LCP)	(LCR)	(LMA)	(LMP)	(LLF)	(CEE)	(CEF)
Transformational														
Charisma (LCH)	.94	2.40	1.16	X										
Individualized Consideration (LIC)	.86	2.50	.91	.80	X									
Intellectual Stimulation (LIS)	.88	2.47	.88	.78	.71	X								
Inspirational Leadership (LIL)	.82	2.26	.83	.84	.83	.83	X							
Transactional														
Contingent Rewards (Promises) (LCP)	.67	1.61	.92	.61	.62	.60	.67	X						
Contingent Rewards (Rewards) (LCR)	.91	2.38	1.10	.72	.80	.65	.78	.61	X					
Mgt.-by-Exception (Active) (LMA)	.71	2.65	.85	.46	.41	.62	.52	.39	.42	X				
Mgt.-by-Exception (Passive) (LMP)	.59	2.26	.82	.14	.18	.10	.17	.16	.16	-.04	X			
Non-Leadership														
Laissez-Faire (LLF)	.63	1.31	.67	-.57	-.54	-.67	-.56	-.33	-.45	-.57	.15	X		
Outcomes														
Extra Effort (CEE)	.81	3.24	.69	.17	.27	.24	.22	.04	.22	.25	.03	-.35	X	
Effectiveness (CEF)	.89	2.75	.94	.87	.73	.74	.79	.48	.66	.50	.11	-.60	.27	X
Satisfaction (CST)	.92	2.82	1.22	.89	.81	.73	.82	.53	.72	.44	.19	-.55	.22	.86

Note: N = 186; $r \geq .14$, $p \leq .05$; $r \geq .19$, $p \leq .01$.

TABLE 3

Descriptive Statistics and Intercorrelations Among Precursors and Consequences: Navy Fleet

Measure	M	SD	Pre-Academy (Selection) (PVA)	(PMA)	(PHS)	(PRC)	(PEX)	(PCR)	(PES)	Success at the Academy (PAP)	(PMP)	USN Performance in the Fleet (CEP)	(CPE)
USNA Selection													
Verbal Aptitude (PVA)	578.15	80.49	X										
Math Aptitude (PMA)	650.16	68.32	.45	X									
H.S. Class Rank (PHS)	570.46	111.31	.07	.19	X								
Recommendations (PRC)	851.60	108.54	-.16	-.19	.06	X							
Extracurricular Activities (PEX)	519.21	68.20	-.29	-.19	-.07	.21	X						
Career Retention (PCR)	517.17	89.68	-.09	.08	.09	-.08	-.06	X					
Engineering Science (PES)	493.20	90.24	-.11	.17	.11	.04	-.19	.22	X				
USNA Success													
Academic Performance (PAP)	261.57	40.82	.33	.31	.42	.10	-.12	.01	-.02	X			
Military Performance (PMP)	292.39	35.96	.18	.24	.35	.17	.00	-.04	.05	.70	X		
USN Performance													
Early Promotion (CEP)	.46	.35	-.01	.04	-.02	-.02	.12	-.02	-.04	.12	.25	X	
Performance Evaluation (CPE)	.32	.34	-.08	.02	.02	.07	.04	.00	.07	.08	.23	.65	X
Promotion Recommendation (CPR)	1.39	.49	-.13	.00	-.05	-.12	.07	.03	-.02	-.02	.06	.71	.44

Note: N = 186; $r \geq .14$, $p \leq .05$; $r \geq .19$, $p \leq .01$.

TABLE 4

Intercorrelations Among Leadership, Precursors, and Consequences: Navy Fleet

Measure	Transformational				Transactional				Non-Leader
	LCH	LIC	LIS	LIL	LCP	LCR	LMA	LMP	LLF
USNA Selection									
Verbal Aptitude (PVA)	-.08	-.07	-.13	-.10	-.06	-.04	-.05	-.02	.01
Math Aptitude (PMA)	-.08	-.04	-.09	-.08	-.12	.01	-.10	.03	.07
H.S. Class Rank (PHS)	.10	.06	.03	.08	.06	.09	.05	-.03	.01
Recommentdations (PRC)	.12	.06	.04	.11	.07	.06	.11	-.02	-.06
Extracurricular Activities (PEX)	.06	.10	.07	.06	.07	.11	.15	.09	-.05
Career Retention (PCR)	-.02	-.01	.00	-.03	-.06	-.07	-.04	-.10	-.13
Engineering Science (PES)	.00	-.06	-.06	-.11	-.12	-.06	-.08	-.03	.08
USNA Success									
Academic Performance (PAP)	.07	.02	.05	.09	.05	.11	.14	-.11	-.06
Military Performance (PMP)	.18	.06	.10	.14	.03	.12	.13	-.10	-.06
USN Performance									
Early Promotion (CEP)	.37	.24	.34	.28	.17	.24	.28	-.04	-.31
Performance Evaluation (CPE)	.38	.21	.31	.25	.17	.20	.22	-.05	-.31
Promotion Recommendation (CPR)	.26	.16	.27	.22	.16	.18	.24	-.01	-.25
Outcomes									
Extra Effort (CEE)	.17	.27	.24	.22	.04	.22	.25	.03	-.35
Effectiveness (CEF)	.87	.73	.74	.79	.48	.66	.50	.11	-.60
Satisfaction (CST)	.89	.81	.73	.82	.53	.72	.44	.19	-.55

Note: N = 186; $r \geq .14$, $p \leq .05$; $r \geq .19$, $p \leq .01$.

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(Code 71)
1235 Research Parkway
Orlando, FL 32826

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Learning Research & Develoment Center
University of Pittsburgh
Pittsburgh, PA 15620

Prof. George A. Miller
Dept.of Psychology
Princeton University
Princeton, NJ 08544

Dr. Jeffrey L. Kennington
School of Engineering & Applied Science
Southern Methodist University
Dallas, TX 75275-0335

Prof. Clark Glymour
Dept. of Philosophy
Carnegie-Mellon University
Pittsburgh, PA 15213

Prof. Kent E. Williams
Inst.for Simulation & Training
University of Central Florida
PO. Box 25000
Orlando, FL 32816-0544

Dr. Paul Feltovich
So. Illinois University
School of Medicine
PO Box 3926
Springfield, IL 62708

Prof. Thomas G. Bever
Dept.of Psychology
The University of Rochester
River Station
Rochester, NY 14627

Dr. Lawrence J. Stricker
Educational Testing Service
Princeton, NJ 08541

Prof. Michael Levine
Dept.of Educational Psychology
University of Illinois
506 South Wright St.
Urbana, IL 61801

Prof. Patricia A. Carpenter
Psychology Department
Carniegie-Mellon University
Pittsburgh, PA 15213

Dr. William B. Johnson
Search Technology, Inc.
4725 Peachtree Corners Circle
Norcross, GA 30092