Technical Report 1063

Estimating Personality Constructs from Archival Data

Kenneth L. Evans
U.S. Army Research Institute

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14. ABSTRACT *(Maximum 200 words)*:

As part of a leadership research program at the U.S. Military Academy involving cadets in the Class of 1998, this report examined the viability of using archival data on prior cadets to estimate a variety of personality constructs among current cadets. Two sets of archival personality data on prior cadet classes were obtained. The first involved a short form administration of the ABLE inventory to cadets in the Class of 1994. The second involved the administration of the NEO Personality Inventory to the Class of 1996. Scores on the 12 scales contained in these inventories were used as archival criteria. Archival predictors were then sought from other survey and questionnaire items administered to cadets at the same point in time as the original inventories. For each scale, a different 20-item pool of predictors was developed from the archival items having the strongest zero-order correlations with that scale. A series of multiple regression analyses was then used to predict scores on each scale. An average R^2 of .39 per scale was obtained after cross-validation. Both the original scales and their analogs tended to manifest similar relationships with two external criteria examined, leadership performance and attrition.

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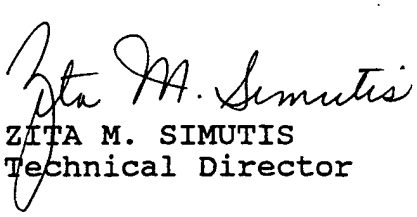
FOREWORD

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 database, begun with cadets in the USMA 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.

Prompted by the need to obtain personality measures of cadets in a research situation where resource constraints prevented their routine administration, this technical report examines the viability of using archival data on prior cadets to estimate a variety of personality constructs in current cadets. Results were highly encouraging. Because the preponderance of archival predictors related to various personality constructs were drawn from a widely used national survey of entering freshmen, this methodology can be easily adapted for use at all colleges and universities administering that survey on an annual basis.



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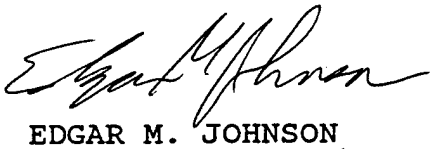

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ESTIMATING PERSONALITY CONSTRUCTS FROM ARCHIVAL DATA

EXECUTIVE SUMMARY

Research Requirement:

As part of a longitudinal program of leadership research focusing on the U.S. Military Academy (USMA) Class of 1998, personality measures consistently related to leadership performance in previous research were proposed for administration to new cadets during their first week at West Point. As is often the case in applied research, the personality measures initially proposed could not be administered due to the limited amount of cadet time available. Thus, a measurement alternative to the actual administration of personality instruments to these cadets was needed. This report examines whether archival data on prior cadets can be used to estimate a variety of personality constructs among current cadets.

Procedure:

Although originally developed for other research purposes, two sets of archival personality data on prior cadet classes were obtained. The first involved the administration of a short form of a personality inventory, the Assessment of Background and Life Experiences (ABLE), to cadets in the Class of 1994. The second data set was based on an administration of the NEO Personality Inventory (NEO-PI) to cadets in the Class of 1996. Between these two inventories, scale scores on 12 dimensions of personality were used as archival criteria. Archival predictors were then sought from other survey and questionnaire items administered to cadets at the same point in time as the original personality measures. A variety of archival predictors was found for each personality scale, with most being drawn from a national survey of entering freshmen administered at many colleges and universities each year under the sponsorship of the American Council on Education and the University of California at Los Angeles.

For each personality scale, a different 20-item pool of predictors was developed from the archival items having the strongest zero-order correlations with a particular scale. A series of multiple regression analyses was then used to predict scores on each personality scale. Initially, a stepwise regression analysis was used to establish an upper bound for prediction, in a situation where all predictors could be used. For 10 of the 12 scales, a second stepwise regression was performed with some of the archival items removed from the predictor pools. These items were removed because they had not also been administered to the Class of 1998, the focal cadets in an ongoing longitudinal research program. Using the predictors remaining in the final stepwise model obtained for each scale, a

simultaneous regression analysis was then performed on each random half of the cadet sample for the purpose of double cross-validation. Mean parameter estimates obtained from the two random groups were used to compute analogs of each scale. Lastly, the comparative relationships of the original scales and their analogs to two external USMA criteria, leadership performance and attrition, were examined.

Findings:

Most analog scales were found to account for a substantial proportion of the variance in their corresponding original scales after cross-validation. Specifically, an average cross-validated $\underline{R}^2$ of .39 per scale was obtained. In most instances, both the original and analog scales manifested roughly similar relationships with the two external criteria examined. For example, the Work Orientation scale of the ABLE and the Conscientiousness scale of the NEO-PI were most strongly related to mean leadership grades. Likewise, the Analog Work Orientation and Analog Conscientiousness scales were among those analog scales most strongly related to mean leadership grades. Regarding attrition, the ABLE's Total and Emotional Stability scales and the NEO-PI's Extraversion and Conscientiousness scales were best able to differentiate between graduates and non-graduates. To a similar degree, the corresponding analogs of those scales were also able to differentiate between cadets who graduated and those who did not graduate.

Utilization of Findings:

The present investigation demonstrated the viability of using archival data to estimate a variety of personality constructs. Estimates of personality constructs developed from archival sources appear to be particularly well-suited for use in those research situations where resource constraints preclude the routine administration of personality inventories. Given the preponderance of archival predictors drawn from the national survey of entering freshmen, the present findings suggest nearly equivalent estimates of a number of personality constructs could be developed from that survey instrument alone. Thus, the methodology used in the present investigation has potential applicability to all institutions of higher education administering that survey on an annual basis.

ESTIMATING PERSONALITY CONSTRUCTS FROM ARCHIVAL DATA

CONTENTS

LIST OF TABLES

Page

LIST OF TABLES (continued)

Page

LIST OF TABLES (continued)

Page

LIST OF TABLES (continued)

Page

LIST OF TABLES (continued)

ESTIMATING PERSONALITY CONSTRUCTS FROM ARCHIVAL DATA

Introduction

In 1994 the Center For Leadership and Organizations Research (CLOR) at the United States Military Academy (USMA) began a longitudinal leadership development research program focusing on USMA cadets in the Class of 1998. During their first week at West Point, a variety of research instruments was administered to these new cadets. As is often the case in research, some instruments that had been proposed for inclusion in this initial data collection could not be administered due to the limited amount of cadet time available. It was decided that personality measures would not be administered, even though certain dimensions of personality have been found to be consistently, though not strongly, related to leadership effectiveness (Hogan, Curphy, & Hogan, 1994).

The decision to omit personality measures from the initial data collection session was made, in part, because such measures had been administered to entering cadets on two recent occasions in support of other research projects. On the first occasion, a short form of a personality inventory, the Assessment of Background and Life Experiences (ABLE; Hough, Eaton, Dunnette, Kamp, & McCloy, 1990), was administered to cadets in the Class of 1994, as part of an investigation of the utility of incorporating objective biodata in the USMA admissions process (Mael & Hirsch, 1993; Mael & Schwartz, 1991; Mael & White, 1994). In brief, this research involved the creation of biodata analogs of selected ABLE scales and a subsequent evaluation of the differential ability of the ABLE scales and their biodata analogs to predict two important USMA criteria: leadership grades (Mael & Hirsch, 1993; Mael & Schwartz, 1991; Mael & White, 1994) and attrition (Mael & Schwartz, 1991). On the second occasion, the NEO Personality Inventory (NEO-PI; Costa & McCrae, 1985) was administered to the Class of 1996, as part of an ongoing study examining the effects of psychosocial stressors and stress adaptation on cadet health and performance (Friedman & Lifrak, 1993).

Both the ABLE and the NEO-PI appear to measure many of the personality dimensions found to be consistently related to leadership, as outlined by Hogan et al. (1994). Consisting of 11 content scales (Dominance, Energy Level, Self-Esteem, Work Orientation, Emotional Stability, Cooperativeness, Traditional Values, Nondelinquency, Conscientiousness, Internal Control, and Physical Condition) and 4 response validity scales (Nonrandom Response, Social Desirability, Poor Impression, and Self-Knowledge), the ABLE was developed to assess a variety of job-related criteria with U.S. Army personnel (Hough et al., 1990; White, Nord, Mael, & Young, 1993). Its estimated utility as a screening tool for enlistment has been demonstrated by White et al. (1993). Although the ABLE scales seem only weakly related to

measures of general and technical proficiency, stronger relationships have been found with measures of leadership, effort, discipline, physical fitness, and military bearing (Hough et al., 1990; White et al., 1993).

Appearing to have some conceptual similarity with a number of the ABLE scales, the five scales of the NEO-PI each measure one of the major dimensions of normal adult personality: Neuroticism, Extraversion, Openness to Experience, Agreeableness, and Conscientiousness (Costa & McCrae, 1985). Interestingly, the NEO-PI can be based on either observer ratings (Form R) or self-reports (Form S), which was used in the present investigation. Compared with self-ratings of personality dimensions, observer ratings often are more strongly related to many job criteria (Hogan et al., 1994; Mount, Barrick, & Strauss, 1994).

Given the availability of archival personality data on the Classes of 1994 and 1996, consideration was given to how similar measures might be developed for cadets in the Class of 1998, the focal class in our longitudinal leadership research. It was known some success had been achieved in developing biodata analogs of selected ABLE scales (Mael & Hirsch, 1993; Mael & Schwartz, 1991; Mael & White, 1994). However, time constraints precluded administering either biodata or personality instruments to the Class of 1998. The only available option in our situation was to rely on available archival predictors, specifically those the Class of 1998 had in common with either the Class of 1994 or 1996, in order to estimate scores on archival personality criteria (ABLE and NEO-PI dimensions).

Fortunately, potential sources of archival predictors were found in two other self-report measures administered annually to entering USMA classes in recent years. The first of these measures is a national survey administered to entering freshmen at hundreds of colleges and universities each year, as part of the Cooperative Institutional Research Program (CIRP) sponsored by the American Council on Education and the University of California at Los Angeles (Astin, Korn, & Berz, 1990; Dey, Astin, Korn, & Riggs, 1992; Astin, Korn, Sax, & Mahoney, 1994). The major portion of the CIRP's survey instrument, the Student Information Form, remains consistent from one year to the next, though it is revised annually to address contemporary research questions of the academic community. At USMA the 1990 Student Information Form (Astin et al., 1990) was administered to the Class of 1994, the 1992 Student Information Form (Dey et al., 1992) was administered to the Class of 1996, and the 1994 Student Information Form (Astin et al., 1994) was administered to the Class of 1998. Astin (1993) has demonstrated how data from this survey and follow-up surveys can be used to track temporal changes in a variety of student characteristics (e.g., personality, leadership, attitudes, values, and self-concept).

The second self-report measure administered on an annual basis to entering cadets is the Class Characteristics Inventory,

developed by the Institutional Research and Analysis Branch (IRAB) of USMA's Office of Policy, Planning, and Analysis. The major purpose of this measure is to describe each entering class, as a whole, on a variety of characteristics important to USMA and its mission. The Class Characteristics Inventories for the Classes of 1994 (IRAB, 1990), 1996 (IRAB, 1992), and 1998 (IRAB, 1994) are similar to the CIRP freshman surveys in the sense that the major portion of their items remain consistent from one inventory to the next. They are also revised annually to meet changing research requirements. In general, the Class Characteristics Inventories tend to have more biographical items than the CIRP freshman surveys, while the latter tend to have more items related to personality, attitudes, values, and personal goals.

The present investigation sought to determine if a variety of personality constructs could be estimated for cadets in the USMA Class of 1998, without having to directly administer personality measures to those cadets. By relying exclusively on archival data from earlier USMA classes, this investigation attempted to develop analogs of the ABLE and NEO-PI scales using predictors from the CIRP freshman surveys and Class Characteristics Inventories administered to those earlier classes. Analog scales could then be used with cadets in the Class of 1998 to the extent they closely approximated the original scales in two ways. First, the analog scales needed to account for a substantial proportion of the variance in the original scales after cross validation. Second, both the analog scales and the original scales needed to display similar relationships with external criteria (e.g., measures of leadership or attrition).

Estimation of Selected ABLE Scales

Method

Sample

Of the 1,325 cadets in the USMA Class of 1994 who completed a short form of the ABLE in July of 1990 (Mael & Schwartz, 1991; Mael & White, 1994), 727 also responded to an initial set of 52 predictor items drawn from two other instruments administered at the same time as the ABLE. The next two sections provide information about the predictor items, the instruments from which they were obtained, and the representativeness of the sample of 727 cadets.

Instruments

ABLE. Five content scales (Dominance, Energy Level, Work Orientation, Emotional Stability, and Traditional Values) and one response validity scale (Social Desirability) were included in the short form of the ABLE administered to the Class of 1994

(Mael & Schwartz, 1991; Mael & White, 1994). An ABLE total score, a composite of all items on the five content scales, was also computed. The ABLE total score is thought to measure adaptability, broadly defined (White et al., 1993). Definitions and descriptions of each ABLE scale have been provided by Hough et al. (1990).

ABLE scale statistics for the 727-cadet sample are presented in Table 1. These statistics are extremely close to those of the larger cadet sample from which they were obtained (Mael & Schwartz, 1991; Mael & White, 1994). This suggests the 727-cadet sample is representative of the larger cadet sample, in terms of its ABLE scale characteristics. Compared with a sample of over 44,000 U.S. Army recruits (White et al., 1993), the sample of 727 cadets differed in two notable ways, as they had much higher scores on the Dominance scale and somewhat lower scores on the Social Desirability scale. The 727-cadet sample also had less response variability than the recruit sample on most scales. The moderate level of intercorrelation among ABLE scales shown in

Table 1

ABLE Scale Statistics

Scale	Items	M	SD	Intercorrelations 1	2	3	4	5	6	7
1. Dominance	12	2.55	.32	--	.45	.34	.34	.11	.64	.08
2. Energy Level	18	2.36	.28		--	.53	.55	.32	.86	.25
3. Work Orientation	14	2.38	.36			--	.17	.39	.69	.42
4. Emotional Stability	21	2.37	.29				--	.17	.72	.17
5. Traditional Values	10	2.55	.29					--	.49	.34
6. ABLE Total	75	2.42	.22						--	.36
7. Social Desirability	11	1.41	.24							--

Note. N = 727. Each ABLE item had a three-point response scale. All scale intercorrelations were significant ($p < .05$).

Table 1 is not unusual, and it appears to be in line with what has been reported previously (Mael & Hirsch, 1993; Mael & Schwartz, 1991; Mael & White, 1994; White et al., 1993).

Predictor instruments. Used in the 1990 CIRP Freshman Survey (Astin et al., 1990), the 1990 Student Information Form was administered to cadets in the USMA Class of 1994 at the same time as the ABLE. The 1990 Student Information Form became the major source of predictor items used in estimating ABLE scale scores. A second source of predictors was the Class Characteristics Inventory for the Class of 1994 (IRAB, 1990), also administered at the same time as the ABLE.

Procedure

ABLE scale scores were initially correlated with items from both the Student Information Form and the Class Characteristics Inventory using the maximum pairwise sample available for each correlation ($893 < n < 1{,}298$). For each of the seven ABLE scales, the 20 items having the strongest zero-order correlations with a scale were selected as potential predictors of that scale.[1] A total of 52 different predictor items were selected across the seven ABLE scales, with most items being related to more than one scale. Of these 52 items, 42 were drawn from the Student Information Form and 10 were drawn from the Class Characteristics Inventory. Cadets who did not respond to each of the 52 items were dropped from further analysis. This listwise deletion resulted in a final sample of 727 cadets, which was described previously.

Correlations between ABLE scale scores and the 52 predictor items were then recomputed using the 727-cadet sample. For each scale, the 20 items having the strongest zero-order correlations were again identified. The 20-item predictor pools for the seven ABLE scales are shown in Appendix A. Each of the 52 different predictor items had highly significant zero-order correlations ($p < .0001$) with one or more of the ABLE scales. However, one of these items did not appear in the predictor pool for any scale

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[1] The decision to use 20 predictors per scale was based on several competing considerations. Fortunately, there was an abundance of potential predictor items from which to choose, each having statistically significant ($p < .05$) correlations with one or more of the ABLE scales. As many cadets did not complete all of the items on the predictor instruments, increasing the number of predictors would have reduced the size of the available sample. Further, this sample was expected to be halved during later cross-validation. In an attempt to increase the sample size, a strategy of using 15 predictors per scale was examined also. The resulting sample size increase was not appreciable. Additionally, having five fewer predictors per scale led to instances where the loss of prediction was substantial.

after the final sample recomputation. Of the remaining 51 items, 19 were included in only one pool, 7 were included in two pools, 5 were included in three pools, 12 were included in four pools, 5 were included in five pools, 2 were included in six pools, and one (i.e., self-rated drive to achieve) was included in all seven pools.

A series of multiple regression analyses was used to predict scores on each ABLE scale. Initially, a stepwise regression analysis was used to identify the combination of predictors from a 20-item pool that was most closely related to the scores obtained on a particular scale (p = .15 to enter and stay in the model). This initial analysis served to establish an upper bound for describing the strength of a relationship, in a situation where all available predictors could be used. Unfortunately, 13 of the 52 original predictor items did not appear in later versions of the Student Information Form (Astin et al., 1994) and Class Characteristics Inventory (IRAB, 1994) administered to cadets in the Class of 1998. After removing these 13 items from the predictor pools in which they appeared, a second stepwise regression analysis was performed (p = .15 to enter and stay in the model). Depending upon the scale, there were between three and eight fewer items in the predictor pools for these second-round analyses (as noted in Appendix A). A third analysis then randomly assigned the 727 cadets in the sample to either one group of 364 cadets or to a second group of 363 cadets. For each random group, predictor variables remaining in the second stepwise model were entered into a simultaneous regression model. Mean parameter estimates of the two random groups were used to compute analogs of the ABLE scales.

Subsequently, a double cross-validation procedure was used to gauge the stability of the simultaneous regression model across samples. Specifically, parameter estimates (i.e., unstandardized weights) obtained from the first random group were applied to the predictor (i.e., item) scores of those in the second random group, while parameter estimates from the second random group were applied to the predictor scores of those in the first random group. For each scale, the mean of the cross-validated R^2 values for the two random groups was considered to be the cross-validated R^2 for that scale.

Finally, the relationships of both the original and analog scale scores to external criteria were examined. Leadership performance and attrition were the criteria selected for examination. Leadership grades, which are formal evaluations of a cadet's overall performance in a series of progressively more responsible leadership roles, were used to measure leadership performance (Schwager & Evans, 1996; U.S. Corps of Cadets, 1995). Using a forced distribution system limiting the number of higher grades given, leadership grades are assigned to cadets at the end of each academic semester and Summer detail period. Summer details are devoted primarily to developing the military leadership skills of cadets in a field training environment.

Mael and his colleagues have noted that behaviors and experiences predicting cadet leadership grades during the early academic semesters are different from those predicting leadership grades during the early Summer details, suggesting the presence of two leadership performance dimensions (Mael & Hirsch, 1993; Mael & Schwartz, 1991; Mael & White, 1994). Similar findings have been obtained in earlier research with junior officers, where differences between "technical or administrative" leadership and "combat" leadership were examined (Willemin, 1964; Helme, Willemin, & Grafton, 1971; Mays-Terry & Dyer, 1986). For these reasons, it was thought best to examine leadership grades associated with a cadet's eight academic semesters separately from their grades associated with their four Summer detail periods. This differential examination was limited to those cadets who actually graduated, for whom a complete set of leadership grades were available. In examining attrition, both the original and analog scale scores of cadets who graduated were compared with those of cadets who did not.

Results

For ease of comparison and interpretation, the results of the three regression analyses predicting each ABLE scale are grouped together. Table 2 presents the results of a stepwise multiple regression analysis predicting the ABLE Dominance scale from a set of 20 archival items drawn from the 1990 Student Information Form (Astin et al., 1990) and the Class Characteristics Inventory for the Class of 1994 (IRAB, 1990). The full set of 20 predictors is shown in Appendix A. Table 3 presents the results of a stepwise multiple regression analysis predicting the Dominance scale from only 14 of the 20 archival items. Six items were excluded from the second stepwise regression because they did not appear in subsequent versions of the Student Information Form or Class Characteristics Inventory administered to the Class of 1998 (Astin et al., 1994; IRAB, 1994). The six excluded items are marked with an asterisk in Appendix A. After randomly dividing the 727-cadet sample into two groups, a simultaneous multiple regression model was used to predict Dominance scale scores from the 10 archival items remaining in the second stepwise regression model. The results of the simultaneous regression analysis for each random group are presented in Table 4.

In a similar fashion, Tables 5-7 present the results of the three multiple regression analyses predicting the Energy Level scale. Tables 8-10 present the results for the Work Orientation scale, Tables 11-13 present the results for the Emotional Stability scale, Tables 14-16 present the results for the Traditional Values scale, Tables 17-19 present the results for the ABLE Total scale, and Tables 20-22 present the results for the Social Desirability scale. A summary of the $\underline{R}^2$ findings from all of these analyses is in Table 23.

Table 2

Summary of Stepwise Regression Analysis Predicting the ABLE Dominance Scale from 20 Archival Items

Step and Item	F	p	ΔR^2	R^2
1. self-rated leadership ability	652.62	.0001	.47	.47
2. self-rated social self-confidence	45.44	.0001	.03	.50
3. importance of having administrative responsibility for the work of others	26.82	.0001	.02	.52
4. self-rated public speaking ability	18.57	.0001	.01	.53
5. importance of influencing the political structure	11.69	.0007	.01	.54
6. self-rated competitiveness	5.55	.0187	.00	.55
7. self-rated emotional health	4.74	.0298	.00	.55
8. estimation of performance in cadet basic training, based on first 24 hours	5.87	.0156	.00	.55
9. importance of becoming an authority in one's field	4.49	.0344	.00	.55
10. chances of election to a student office	3.95	.0472	.00	.56
11. importance, in choosing a career, of having the work be challenging	3.29	.0702	.00	.56
12. self-rated popularity with the opposite sex	3.37	.0668	.00	.56
13. self-rated intellectual self-confidence	2.62	.1062	.00	.56

Note. N = 727 with p =.15 to enter and stay in the model.

Table 3

Summary of Stepwise Regression Analysis Predicting the ABLE Dominance Scale from 14 Archival Items

Step and Item	F	p	ΔR^2	R^2
1. self-rated leadership ability	652.62	.0001	.47	.47
2. self-rated social self-confidence	45.44	.0001	.03	.50
3. importance of having administrative responsibility for the work of others	26.82	.0001	.02	.52
4. self-rated public speaking ability	18.57	.0001	.01	.53
5. importance of influencing the political structure	11.69	.0007	.01	.54
6. self-rated competitiveness	5.55	.0187	.00	.55
7. self-rated emotional health	4.74	.0298	.00	.55
8. importance of becoming an authority in one's field	5.23	.0225	.00	.55
9. chances of election to a student office	4.76	.0294	.00	.55
10. self-rated intellectual self-confidence	3.19	.0745	.00	.56

Note. N = 727 with p =.15 to enter and stay in the model. Only 14 archival items were included in the predictor pool for this analysis, as six items were not administered to cadets in the Class of 1998.

Table 4

Summary of Simultaneous Regression Analysis Predicting the ABLE Dominance Scale from 10 Archival Items

Item	Group 1 (n = 364) B	SE B	B	Group 2 (n = 363) B	SE B	B
self-rated leadership ability	.23	.02	.49	.23	.02	.48
self-rated social self-confidence	.07	.02	.18	.04	.02	.11
importance of having administrative responsibility for the work of others	.03	.01	.08	.05	.02	.13
self-rated public speaking ability	.06	.02	.16	.05	.02	.12
importance of influencing the political structure	.03	.01	.09	.02	.01	.05
self-rated competitiveness	.03	.02	.07	.04	.02	.09
self-rated emotional health	-.02	.02	-.05	-.03	.02	-.08
importance of becoming an authority in one's field	.03	.02	.08	.02	.02	.06
chances of election to a student office	.01	.02	.02	.04	.02	.09
self-rated intellectual self-confidence	-.03	.02	-.06	-.02	.02	-.04

Note. R^2 = .59 for Group 1 and .53 for Group 2. Cross-validated R^2 = .58 for Group 1 and .52 for Group 2. The 10 archival items in this analysis were those remaining in the preceding stepwise regression model (see Table 3).

Table 5

Summary of Stepwise Regression Analysis Predicting the ABLE Energy Level Scale from 20 Archival Items

Step and Item	F	p	ΔR^2	R^2
1. self-rated drive to achieve	163.76	.0001	.18	.18
2. felt depressed during the past year	78.53	.0001	.08	.26
3. estimation of performance in cadet basic training, based on first 24 hours	61.71	.0001	.06	.32
4. self-rated physical health	39.48	.0001	.04	.36
5. chances of being satisfied with one's college	38.29	.0001	.03	.39
6. did extra (unassigned) work or reading for a class during the past year	28.04	.0001	.02	.41
7. importance, in choosing a career, of being able to be helpful to others	21.34	.0001	.02	.43
8. felt overwhelmed during the past year	17.51	.0001	.01	.44
9. importance of leadership training, as a reason for seeking appointment to USMA	10.42	.0013	.01	.45
10. chances of transfer to another college before graduation	7.75	.0055	.01	.46
11. self-rated public speaking ability	8.64	.0034	.01	.46
12. self-rated competitiveness	5.73	.0170	.00	.47
13. importance, in choosing a career, of having the work be challenging	4.95	.0264	.00	.47

Note. N = 727 with p =.15 to enter and stay in the model.

Table 6

Summary of Stepwise Regression Analysis Predicting the ABLE Energy Level Scale from 14 Archival Items

Step and Item	F	p	ΔR^2	R^2
1. self-rated drive to achieve	163.76	.0001	.18	.18
2. felt depressed during the past year	78.53	.0001	.08	.26
3. chances of being satisfied with one's college	54.27	.0001	.05	.32
4. self-rated physical health	59.10	.0001	.05	.37
5. importance of leadership training, as a reason for seeking appointment to USMA	22.15	.0001	.02	.39
6. felt overwhelmed during the past year	16.45	.0001	.01	.40
7. self-rated leadership ability	14.16	.0002	.01	.41
8. chances of dropping out permanently	8.35	.0040	.01	.42
9. self-rated public speaking ability	8.19	.0043	.01	.42
10. self-rated competitiveness	3.08	.0795	.00	.43
11. self-rated emotional health	2.37	.1239	.00	.43

Note. N = 727 with p =.15 to enter and stay in the model. Only 14 archival items were included in the predictor pool for this analysis, as six items were not administered to cadets in the Class of 1998.

Table 7

Summary of Simultaneous Regression Analysis Predicting the ABLE Energy Level Scale from 11 Archival Items

Item	Group 1 (n = 364)			Group 2 (n = 363)		
	B	SE B	B	B	SE B	B
self-rated drive to achieve	.14	.02	.30	.03	.02	.07
felt depressed during the past year	-.09	.03	-.15	-.04	.03	-.08
chances of being satisfied with one's college	.07	.02	.14	.08	.02	.18
self-rated physical health	.08	.02	.17	.08	.02	.20
importance of leadership training, as a reason for seeking appointment to USMA	-.05	.02	-.12	-.04	.02	-.11
felt overwhelmed during the past year	-.07	.02	-.12	-.07	.02	-.15
self-rated leadership ability	.01	.02	.02	.04	.02	.10
chances of dropping out permanently	-.05	.02	-.13	-.02	.02	-.04
self-rated public speaking ability	.04	.02	.12	.02	.01	.05
self-rated competitiveness	.01	.02	.03	.03	.02	.09
self-rated emotional health	.02	.02	.04	.03	.02	.09

Note. R^2 = .50 for Group 1 and .39 for Group 2. Cross-validated R^2 = .42 for Group 1 and .28 for Group 2. The 11 archival items in this analysis were those remaining in the preceding stepwise regression model (see Table 6).

Table 8

Summary of Stepwise Regression Analysis Predicting the ABLE Work Orientation Scale from 20 Archival Items

Step and Item	F	p	ΔR^2	R^2
1. self-rated drive to achieve	286.79	.0001	.28	.28
2. hours spent in a typical week studying or doing homework during last year in high school	97.40	.0001	.09	.37
3. failed to complete a home-work assignment on time during the past year	62.08	.0001	.05	.42
4. importance, in choosing a career, of being able to be helpful to others	30.53	.0001	.02	.44
5. did extra (unassigned) work or reading for a class during the past year	26.96	.0001	.02	.46
6. chances of transfer to another college before graduation	22.37	.0001	.02	.48
7. self-reported academic rank in high school graduating class	18.75	.0001	.01	.49
8. importance of being made more cultured, in deciding to go to college	14.23	.0002	.01	.50
9. estimation of performance in cadet basic training, based on first 24 hours	9.80	.0018	.01	.51
10. was bored in class during the past year	8.36	.0039	.01	.51
11. importance, in choosing a career, of having the work be challenging	5.89	.0155	.00	.52

(table continues)

Table 8 (continued)

Step and Item	F	p	ΔR^2	R^2
12. self-rated physical health	5.36	.0209	.00	.52
13. importance of becoming an authority in one's field	3.64	.0569	.00	.52

Note. N = 727 with p =.15 to enter and stay in the model.

Table 9

Summary of Stepwise Regression Analysis Predicting the ABLE Work Orientation Scale from 12 Archival Items

Step and Item	F	p	ΔR^2	R^2
1. self-rated drive to achieve	286.79	.0001	.28	.28
2. hours spent in a typical week studying or doing homework during last year in high school	97.40	.0001	.09	.37
3. failed to complete a homework assignment on time during the past year	62.08	.0001	.05	.42
4. importance of being made more cultured, in deciding to go to college	27.45	.0001	.02	.44
5. self-reported academic rank in high school graduating class	18.33	.0001	.01	.45
6. was bored in class during the past year	15.90	.0001	.01	.47
7. importance of becoming an authority in one's field	14.82	.0001	.01	.48
8. self-rated physical health	7.36	.0068	.01	.48
9. self-rated cooperativeness	4.54	.0335	.00	.48

Note. N = 727 with p =.15 to enter and stay in the model. Only 12 archival items were included in the predictor pool for this analysis, as eight items were not administered to cadets in the Class of 1998.

Table 10

Summary of Simultaneous Regression Analysis Predicting the ABLE Work Orientation Scale from 9 Archival Items

Item	Group 1 (n = 364)			Group 2 (n = 363)		
	B	SE B	B	B	SE B	B
self-rated drive to achieve	.20	.02	.38	.15	.02	.29
hours spent in a typical week studying or doing homework during last year in high school	.05	.01	.21	.05	.01	.19
failed to complete a home-work assignment on time during the past year	-.12	.03	-.19	-.14	.03	-.20
importance of being made more cultured, in deciding to go to college	.04	.02	.08	.07	.02	.15
self-reported academic rank in high school graduating class	-.05	.02	-.12	-.06	.02	-.14
was bored in class during the past year	-.10	.03	-.14	-.07	.03	-.09
importance of becoming an authority in one's field	.04	.02	.09	.05	.02	.11
self-rated physical health	.03	.02	.05	.05	.02	.09
self-rated cooperativeness	.03	.02	.06	.03	.02	.06

Note. R^2 = .51 for Group 1 and .47 for Group 2. Cross-validated R^2 = .49 for Group 1 and .45 for Group 2. The nine archival items in this analysis were those remaining in the preceding stepwise regression model (see Table 9).

Table 11

Summary of Stepwise Regression Analysis Predicting the ABLE Emotional Stability Scale from 20 Archival Items

Step and Item	F	p	ΔR^2	R^2
1. felt depressed during the past year	217.17	.0001	.23	.23
2. estimation of performance in cadet basic training, based on first 24 hours	135.23	.0001	.12	.35
3. self-rated emotional health	78.33	.0001	.06	.41
4. felt overwhelmed during the past year	47.80	.0001	.04	.45
5. chances of seeking counseling for personal problems	31.73	.0001	.02	.47
6. importance, in choosing a career, of being able to avoid pressure	18.22	.0001	.01	.49
7. self-rated social self-confidence	19.04	.0001	.01	.50
8. chances of transfer to another college before graduation	8.85	.0030	.01	.51
9. self-rated intellectual self-confidence	2.96	.0857	.00	.51

Note. N = 727 with p =.15 to enter and stay in the model.

Table 12

Summary of Stepwise Regression Analysis Predicting the ABLE Emotional Stability Scale from 14 Archival Items

Step and Item	F	p	ΔR^2	R^2
1. felt depressed during the past year	217.17	.0001	.23	.23
2. self-rated emotional health	107.84	.0001	.10	.33
3. felt overwhelmed during the past year	52.31	.0001	.05	.38
4. chances of being satisfied with one's college	27.55	.0001	.02	.40
5. self-rated social self-confidence	21.16	.0001	.02	.42
6. chances of dropping out permanently	15.71	.0001	.01	.43
7. present career intention	7.81	.0053	.01	.43
8. self-rated physical health	3.11	.0781	.00	.44
9. self-rated understanding of others	2.13	.1444	.00	.44

Note. N = 727 with p =.15 to enter and stay in the model. Only 14 archival items were included in the predictor pool for this analysis, as six items were not administered to cadets in the Class of 1998.

Table 13

Summary of Simultaneous Regression Analysis Predicting the ABLE Emotional Stability Scale from 9 Archival Items

Item	Group 1 (n = 364) B	SE B	B	Group 2 (n = 363) B	SE B	B
felt depressed during the past year	-.11	.03	-.21	-.14	.03	-.23
self-rated emotional health	.10	.02	.25	.05	.02	.14
felt overwhelmed during the past year	-.11	.02	-.22	-.12	.03	-.21
chances of being satisfied with one's college	.03	.02	.06	.08	.02	.17
self-reported social self-confidence	.05	.01	.14	.04	.02	.11
chances of dropping out permanently	-.04	.02	-.11	-.04	.02	-.09
present career intention	-.03	.01	-.10	-.02	.01	-.07
self-rated physical health	.01	.02	.03	.03	.02	.07
self-rated understanding of others	.00	.02	.01	.03	.02	.07

Note. R^2 = .45 for Group 1 and .44 for Group 2. Cross-validated R^2 = .42 for Group 1 and .41 for Group 2. The nine archival items in this analysis were those remaining in the preceding stepwise regression model (see Table 12).

Table 14

Summary of Stepwise Regression Analysis Predicting the ABLE Traditional Values Scale from 20 Archival Items

Step and Item	F	p	ΔR^2	R^2
1. chances of transfer to another college before graduation	84.30	.0001	.10	.10
2. view that marijuana should be legalized	71.43	.0001	.08	.18
3. drank beer during the past year	39.67	.0001	.04	.23
4. choice of present college	33.84	.0001	.03	.26
5. was bored in class during the past year	29.81	.0001	.03	.29
6. helpfulness of USMA catalog in college decision-making process	22.50	.0001	.02	.31
7. self-rated cooperativeness	16.87	.0001	.02	.33
8. desire to be an Army officer, as a reason for seeking appointment to USMA	17.10	.0001	.02	.34
9. failed to complete a home-work assignment on time during the past year	13.31	.0003	.01	.36
10. view that if two people really like each other, it's all right for them to have sex even if they've known each other for only a very short time	8.70	.0033	.01	.36
11. chances of being satisfied with one's college	8.94	.0029	.01	.37

(table continues)

Table 14 (continued)

Step and Item	F	p	ΔR^2	R^2
12. hours spent in a typical week studying or doing homework during last year in high school	6.08	.0139	.01	.38
13. chances of dropping out of USMA temporarily	5.02	.0253	.00	.38

Note. N = 727 with p =.15 to enter and stay in the model.

Table 15

Summary of Stepwise Regression Analysis Predicting the ABLE Traditional Values Scale from 17 Archival Items

Step and Item	F	p	ΔR^2	R^2
1. chances of being satisfied with one's college	68.64	.0001	.09	.09
2. view that marijuana should be legalized	66.39	.0001	.08	.16
3. desire to be an Army officer, as a reason for seeking appointment to USMA	44.53	.0001	.05	.21
4. drank beer during the past year	39.57	.0001	.04	.25
5. choice of present college	30.25	.0001	.03	.28
6. failed to complete a homework assignment on time during the past year	25.14	.0001	.02	.31
7. self-rated cooperativeness	20.11	.0001	.02	.33
8. was bored in class during the past year	13.99	.0002	.01	.34
9. helpfulness of USMA catalog in college decision-making process	12.47	.0004	.01	.35
10. view that if two people really like each other, it's all right for them to have sex even if they've known each other for only a very short time	8.65	.0034	.01	.36
11. chances of dropping out permanently	8.77	.0032	.01	.37

(table continues)

Table 15 (continued)

Step and Item	F	p	ΔR^2	R^2
12. hours spent in a typical week studying or doing homework during last year in high school	5.23	.0225	.00	.37
13. present career intention	3.98	.0465	.00	.37

Note. N = 727 with p =.15 to enter and stay in the model. Only 17 archival items were included in the predictor pool for this analysis, as three items were not administered to cadets in the Class of 1998.

Table 16

Summary of Simultaneous Regression Analysis Predicting the ABLE Traditional Values Scale from 13 Archival Items

Item	Group 1 (n = 364)			Group 2 (n = 363)		
	B	SE B	B	B	SE B	B
chances of being satisfied with one's college	.06	.02	.12	.06	.02	.13
view that marijuana should be legalized	-.09	.02	-.20	-.07	.02	-.19
desire to be an Army officer, as a reason for seeking appointment to USMA	-.04	.01	-.15	-.03	.02	-.12
drank beer during the past year	-.05	.02	-.11	-.06	.02	-.14
choice of present college	.06	.03	.10	.13	.03	.19
failed to complete a home-work assignment on time during the past year	-.04	.02	-.08	-.07	.02	-.12
self-rated cooperativeness	.03	.02	.07	.05	.02	.13
was bored in class during the past year	-.07	.03	-.12	-.05	.03	-.08
helpfulness of USMA catalog in college decision-making process	-.01	.01	-.04	-.04	.01	-.14
view that if two people really like each other, it's all right for them to have sex even if they've known each other for only a very short time	-.03	.01	-.11	-.02	.01	-.09
chances of dropping out permanently	-.05	.02	-.12	-.02	.02	-.04

(table continues)

Table 16 (continued)

Item	Group 1 (n = 364) B	SE B	B	Group 2 (n = 363) B	SE B	B
hours spent in a typical week studying or doing homework during last year in high school	.01	.01	.07	.01	.01	.07
present career intention	-.03	.01	-.10	-.01	.02	-.03

Note. R^2 = .38 for Group 1 and .38 for Group 2. Cross-validated R^2 = .34 for Group 1 and .35 for Group 2. The 13 archival items in this analysis were those remaining in the preceding stepwise regression model (see Table 15).

Table 17

Summary of Stepwise Regression Analysis Predicting the ABLE Total Scale from 20 Archival Items

Step and Item	F	p	ΔR^2	R^2
1. self-rated leadership ability	274.64	.0001	.27	.27
2. estimation of performance in cadet basic training, based on first 24 hours	126.94	.0001	.11	.38
3. felt depressed during the past year	82.72	.0001	.06	.45
4. self-rated drive to achieve	83.15	.0001	.06	.50
5. was bored in class during the past year	44.50	.0001	.03	.53
6. chances of transfer to another college before graduation	41.39	.0001	.03	.56
7. self-rated emotional health	21.13	.0001	.01	.57
8. importance, in choosing a career, of having the work be challenging	19.06	.0001	.01	.58
9. felt overwhelmed during the past year	13.99	.0002	.01	.59
10. self-rated public speaking ability	11.39	.0008	.01	.60
11. self-rated physical health	10.25	.0014	.01	.60
12. chances of being satisfied with one's college	11.04	.0009	.01	.61
13. present career intention	6.54	.0107	.00	.61
14. self-rated social self-confidence	3.54	.0605	.00	.61

(table continues)

Table 17 (continued)

Step and Item	F	p	ΔR^2	R^2
15. chances of dropping out permanently	2.35	.1258	.00	.61

Note. N = 727 with p =.15 to enter and stay in the model.

Table 18

Summary of Stepwise Regression Analysis Predicting the ABLE Total Scale from 16 Archival Items

Step and Item	F	p	ΔR^2	R^2
1. self-rated leadership ability	274.64	.0001	.27	.27
2. chances of being satisfied with one's college	100.30	.0001	.09	.36
3. self-rated drive to achieve	86.15	.0001	.07	.43
4. felt depressed during the past year	78.01	.0001	.06	.49
5. was bored in class during the past year	38.59	.0001	.03	.51
6. chances of dropping out permanently	25.92	.0001	.02	.53
7. self-rated physical health	23.29	.0001	.01	.54
8. present career intention	17.10	.0001	.01	.55
9. self-rated emotional health	13.59	.0002	.01	.56
10. felt overwhelmed during the past year	11.40	.0008	.01	.57
11. self-rated public speaking ability	10.06	.0016	.01	.58
12. self-rated understanding of others	5.86	.0157	.00	.58
13. self-rated social self-confidence	2.60	.1076	.00	.58

Note. N = 727 with p =.15 to enter and stay in the model. Only 16 archival items were included in the predictor pool for this analysis, as four items were not administered to cadets in the Class of 1998.

Table 19

Summary of Simultaneous Regression Analysis Predicting the ABLE Total Scale from 13 Archival Items

Item	Group 1 (n = 364) B	SE B	B	Group 2 (n = 363) B	SE B	B
self-rated leadership ability	.04	.01	.13	.08	.01	.25
chances of being satisfied with one's college	.04	.01	.12	.06	.01	.17
self-rated drive to achieve	.10	.01	.29	.04	.01	.14
felt depressed during the past year	-.05	.02	-.11	-.05	.02	-.12
was bored in class during the past year	-.08	.02	-.18	-.06	.02	-.14
chances of dropping out permanently	-.04	.01	-.13	-.03	.01	-.09
self-rated physical health	.03	.01	.08	.03	.01	.11
present career intention	-.02	.01	-.11	-.02	.01	-.11
self-rated emotional health	.02	.01	.08	.02	.01	.09
felt overwhelmed during the past year	-.04	.02	-.10	-.05	.02	-.12
self-rated public speaking ability	.02	.01	.09	.01	.01	.05
self-rated understanding of others	.02	.01	.09	.01	.01	.02
self-rated social self-confidence	.02	.01	.07	.01	.01	.03

Note. R^2 = .61 for Group 1 and .57 for Group 2. Cross-validated R^2 = .57 for Group 1 and .53 for Group 2. The 13 archival items in this analysis were those remaining in the preceding stepwise regression model (see Table 18).

Table 20

Summary of Stepwise Regression Analysis Predicting the ABLE Social Desirability Scale from 20 Archival Items

Step and Item	F	p	ΔR^2	R^2
1. failed to complete a home-work assignment on time during the past year	64.99	.0001	.08	.08
2. self-rated cooperativeness	44.73	.0001	.05	.14
3. desire to be an Army officer, as a reason for seeking appointment to USMA	26.17	.0001	.03	.17
4. hours spent in a typical week socializing with friends during last year in high school	22.38	.0001	.03	.19
5. was bored in class during the past year	16.68	.0001	.02	.21
6. drank wine or liquor during the past year	9.07	.0027	.01	.22
7. I made up my own mind in choosing a college	8.28	.0041	.01	.23
8. came late to class during the past year	8.65	.0034	.01	.24
9. importance of being able to make more money, in deciding to go to college	6.12	.0136	.01	.24
10. importance, in choosing a career, of being able to make an important contribution to society	4.59	.0326	.00	.25
11. hours spent in a typical week studying or doing homework during last year in high school	3.14	.0769	.00	.25

(table continues)

Table 20 (continued)

Step and Item	F	p	ΔR^2	R^2
12. felt depressed during the past year	3.38	.0665	.00	.26
13. chances of dropping out permanently	2.36	.1250	.00	.26

Note. N = 727 with p =.15 to enter and stay in the model.

Table 21

Summary of Stepwise Regression Analysis Predicting the ABLE Social Desirability Scale from 14 Archival Items

Step and Item	F	p	ΔR^2	R^2
1. failed to complete a home-work assignment on time during the past year	64.99	.0001	.08	.08
2. self-rated cooperativeness	44.73	.0001	.05	.14
3. desire to be an Army officer, as a reason for seeking appointment to USMA	26.17	.0001	.03	.17
4. hours spent in a typical week socializing with friends during last year in high school	22.38	.0001	.03	.19
5. was bored in class during the past year	16.68	.0001	.02	.21
6. drank wine or liquor during the past year	9.07	.0027	.01	.22
7. came late to class during the past year	8.18	.0044	.01	.23
8. importance of being able to make more money, in deciding to go to college	6.37	.0118	.01	.23
9. chances of dropping out permanently	5.07	.0246	.01	.24
10. hours spent in a typical week studying or doing homework during last year in high school	4.11	.0430	.00	.24
11. felt depressed during the past year	3.94	.0474	.00	.25

Note. N = 727 with p =.15 to enter and stay in the model. Only 14 archival items were included in the predictor pool for this analysis, as six items were not administered to cadets in the Class of 1998.

Table 22

Summary of Simultaneous Regression Analysis Predicting the ABLE Social Desirability Scale from 11 Archival Items

Item	Group 1 (n = 364) B	SE B	B	Group 2 (n = 363) B	SE B	B
failed to complete a homework assignment on time during the past year	-.07	.02	-.16	-.08	.02	-.17
self-rated cooperativeness	.06	.02	.19	.06	.02	.17
desire to be an Army officer, as a reason for seeking appointment to USMA	-.02	.01	-.10	-.02	.01	-.10
hours spent in a typical week socializing with friends during last year	-.01	.01	-.07	-.02	.01	-.14
was bored in class during the past year	-.06	.02	-.14	-.03	.02	-.06
drank wine or liquor during the past year	-.04	.02	-.09	-.03	.02	-.08
came late to class during the past year	-.04	.02	-.11	-.03	.02	-.07
importance of being able to make more money, in deciding to go to college	-.04	.02	-.09	-.03	.02	-.07
chances of dropping out permanently	-.01	.02	-.03	-.04	.02	-.10
hours spent in a typical week studying or doing homework during last year	.01	.01	.05	.02	.01	.09
felt depressed during the past year	-.03	.02	-.06	-.04	.02	-.07

Note. R^2 = .26 for Group 1 and .25 for Group 2. Cross-validated R^2 = .24 for Group 1 and .23 for Group 2. The 11 archival items in this analysis were those remaining in the preceding stepwise regression model (see Table 21).

Table 23

Summary of ABLE Scale Variance Explained by Three Regression Models

Scale	R^2		
	Stepwise Model Using 20 Predictors	Stepwise Model Using < 20 Predictors[a]	Cross-Validated Simultaneous Model[b]
Dominance	.56	.56	.55
Energy Level	.47	.43	.35
Work Orientation	.52	.48	.47
Emotional Stability	.51	.44	.42
Traditional Values	.38	.37	.35
ABLE Total	.61	.58	.55
Social Desirability	.26	.25	.24

Note. N = 727.

[a]Not all original predictors were administered four years later to cadets in the Class of 1998, resulting in a smaller pool of predictor items for these analyses.

[b]Mean cross-validated R^2 for two random groups drawn from the sample of 727 cadets. The archival predictors in these analyses were those remaining in the immediately preceding stepwise regression model for each scale.

Archival predictors explained the largest percentage of variance on the ABLE Total scale and the smallest percentage on the Social Desirability scale. Results for the five ABLE content scales fell between these two extremes, with archival predictors explaining almost half of the variance in the original scales using the initial stepwise models. Overall, the unavailability of some predictors for the Class of 1998 resulted in an average loss of about 3% per scale in the amount of variance explained. The Dominance scale was least affected and the Emotional Stability scale was most affected by these predictor losses. In addition, the double cross-validation procedure resulted in an average loss of about 2% per scale in the amount of variance explained. The level of $\underline{R}^2$ shrinkage resulting from cross-validation was generally minimal (1-3%), with the notable exception of the Energy Level scale (8%).

To calculate analog scale scores, regression equations based on the mean parameter estimates of the two random groups were used. These equations are presented in Appendix B. Overall, the seven equations included a total of 35 different predictors, 30 from the Student Information Form and 5 from the Class Characteristics Inventory. Of the 35 predictors, 16 were used to estimate only one of the scales, 4 were used to estimate two scales, 9 were used to estimate three scales, 5 were used to estimate four scales, and 1 (i.e., chances of dropping out permanently) was used to estimate five scales.

Table 24 presents the correlations between the original and analog scales for the sample of 727 cadets. With few exceptions each analog scale tended to be most strongly related to the original scale it was intended to estimate, though there was a moderately high level of overall intercorrelation between the original and analog scales. This level of intercorrelation appears to be influenced, at least partially, by the existing level of intercorrelation among the original scales, as shown in Table 1 earlier.

Table 25 compares the relationships of original and analog scales to the average leadership grades earned by cadets over eight academic semesters and four Summer detail periods. Neither the original nor the analog scales were strongly related to these external criteria. ABLE analogs tended to be less strongly related to the two types of leadership grades than were the original scales, though the differences were relatively small. Among the original ABLE scales, the Work Orientation scale was most strongly related to leadership during the academic year, followed by the ABLE Total, Traditional Values, and Social Desirability scales. This pattern was mirrored by the analog scales, except for the Analog Total scale. The original scales most strongly related to Summer leadership were ABLE Total, Social Desirability, Energy Level, and Work Orientation. Among the analog scales, only the Analog Social Desirability and Analog Work Orientation scales were related to Summer leadership grades. Both the original Emotional Stability and Analog Emotional

Stability scales were not related to either type of leadership. The correlation between mean academic semester and Summer leadership grades was .54 ($p < .0001$).

Table 26 compares graduates with non-graduates on the basis of their original and analog scale scores. Graduate mean scores were higher than non-graduate mean scores on all original and analog scales. Differences between the two groups were statistically significant on all of the analog scales and on five of the seven original scales ($p < .05$). Despite the consistency of these findings, the magnitude of the differences obtained was relatively small. Thus, it appears unlikely that either original or analog scales would have a high level of utility in predicting cadet attrition at USMA.

Table 24

Correlations Between ABLE and Analog Scales

	Analog Scale						
ABLE Scale	DO	EL	WO	ES	TV	AT	SD
Dominance (DO)	.75	.51	.35	.39	.15	.58	.14
Energy Level (EL)	.44	.65	.46	.56	.39	.64	.39
Work Orientation (WO)	.35	.45	.70	.23	.47	.49	.53
Emotional Stability (ES)	.29	.55	.20	.66	.25	.56	.27
Traditional Values (TV)	.12	.28	.37	.21	.61	.33	.48
ABLE Total (AT)	.56	.73	.59	.63	.51	.76	.51
Social Desirability (SD)	.09	.24	.38	.21	.38	.28	.50

Note. $N = 727$. All correlations were significant ($p < .05$). The correlation of each ABLE scale with its corresponding analog is underlined ($p < .0001$).

Table 25

Correlations of ABLE and Analog Scale Scores with Mean Leadership Grades for Graduating Cadets

Scale	Mean Leadership Grades	
	Academic Semester	Summer Detail Period
ABLE Dominance	.09*	.09*
Analog Dominance	.06	.03
ABLE Energy Level	.08*	.13**
Analog Energy Level	.04	.06
ABLE Work Orientation	.26****	.13**
Analog Work Orientation	.22****	.08*
ABLE Emotional Stability	-.02	.06
Analog Emotional Stability	-.06	.03
ABLE Traditional Values	.15***	.10*
Analog Traditional Values	.14**	.06
ABLE Total	.15***	.14***
Analog Total	.05	.05
ABLE Social Desirability	.13**	.14***
Analog Social Desirability	.17****	.11*

Note. N = 553.

*p < .05. **p < .01. ***p < .001. ****p < .0001.

Table 26

A Comparison of the Mean ABLE and Analog Scale Scores of Graduates and Non-Graduates

	Graduates (n = 553)		Non-Graduates (n = 174)				
Scale	M	SD	M	SD	t or t'	df	p
ABLE Dominance	2.56	.31	2.49	.34	2.55	725.0	.0109
Analog Dominance	2.56	.23	2.51	.26	2.09	264.6	.0378
ABLE Energy Level	2.38	.27	2.29	.32	3.41	257.3	.0008
Analog Energy Level	2.37	.17	2.30	.22	4.07	247.2	.0001
ABLE Work Orient.	2.39	.34	2.34	.40	1.53	259.1	.1272
Analog Work Orient.	2.40	.24	2.32	.28	3.18	255.4	.0017
ABLE Emotional St.	2.39	.28	2.29	.31	4.05	725.0	.0001
Analog Emotional St.	2.38	.19	2.31	.22	4.22	258.6	.0001
ABLE Trad. Values	2.57	.28	2.49	.33	3.13	255.9	.0020
Analog Trad. Values	2.57	.18	2.52	.18	3.34	725.0	.0009
ABLE Total	2.44	.20	2.36	.24	4.11	255.9	.0001
Analog Total	2.44	.15	2.37	.19	4.38	247.6	.0001
ABLE Social Desir.	1.42	.24	1.39	.24	1.29	725.0	.1989
Analog Social Desir.	1.42	.12	1.38	.13	3.79	725.0	.0002

Note. The approximate t statistic, or t', is reported when equality of variances could not be assumed. In such cases, degrees of freedom were computed using the Satterthwaite approximation (SAS Institute Inc., 1988).

Estimation of NEO-PI Scales

The same general method used to estimate the ABLE scales was used to estimate the NEO-PI scales. For this reason, the NEO-PI Method and Results sections closely parallel the ABLE Method and Results sections.

Method

Sample

From an administration of Form S of the NEO-PI to cadets in the USMA Class of 1996 during the Summer of 1992 (Friedman & Lifrak, 1993), the NEO-PI scale scores of 1,049 cadets were obtained. Of this group of cadets, 635 also responded to an initial set of 76 predictor items drawn from two other instruments administered at the same time as the NEO-PI. The next two sections provide information about the predictor items, the instruments from which they were obtained, and the representativeness of the sample of 635 cadets, of which 559 were male and 76 were female.

Instruments

NEO-PI. The NEO-PI consists of 181 items with a five-point response scale. It provides scores on five major dimensions of normal adult personality: neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness (Costa & McCrae, 1985). Definitions and descriptions of each NEO-PI scale have been provided by Costa and McCrae (1985).

NEO-PI scale statistics for the 635-cadet sample are presented in Table 27. These statistics are extremely close to those of the overall sample of 1,049 cadets, suggesting the sample of 635 cadets is representative of the larger sample in terms of its NEO-PI scale characteristics. Compared with the normative male and female adult samples of Costa and McCrae (1985), those in the sample of 635 cadets tended to have higher average scores on each NEO-PI scale. Female cadets tended to score higher than male cadets on every scale but Conscientiousness, as cadet gender differences across scales generally paralleled those found in the normative samples (Costa & McCrae, 1985).

Predictor instruments. Used in the 1992 CIRP Freshman Survey (Dey et al., 1992), the 1992 Student Information Form was administered to cadets in the USMA Class of 1996 at the same time as the NEO-PI. The 1992 Student Information Form became the major source of predictor items used in estimating NEO-PI scale scores. A second source of predictors was the Class Characteristics Inventory for the Class of 1996 (IRAB, 1992), also administered at the same time as the NEO-PI.

Table 27

NEO-PI Scale Statistics

Scale	M	SD	Intercorrelations 1	2	3	4	5
1. Neuroticism	91.26	22.48	--	-.24	.04	-.13	-.49
2. Extraversion	119.27	18.16		--	.30	.12	.27
3. Openness	112.28	17.51			--	.10	-.07
4. Agreeableness	107.91	17.53				--	.08
5. Conscientiousness	116.53	19.89					--

Note. N = 635. Scale intercorrelations greater than .07 or less than -.07 were significant ($p < .05$).

Procedure

NEO-PI scale scores were initially correlated with items from both the Student Information Form and the Class Characteristics Inventory using the maximum pairwise sample available for each correlation ($797 < n < 1,020$). For each of the five NEO-PI scales, the 20 items having the strongest zero-order correlations with a scale were selected as potential predictors of that scale (the decision to use 20 predictors per scale was based on several competing considerations, as outlined on p. 5 for the ABLE). A total of 76 different predictor items were selected across the five NEO-PI scales, with a number of items being related to more than one scale. Of these 76 items, 72 were drawn from the Student Information Form and four were drawn from the Class Characteristics Inventory. Cadets who did not respond to each of the 76 items were dropped from further analysis. This listwise deletion resulted in a final sample of 635 cadets, which was described previously.

Correlations between NEO-PI scale scores and the 76 predictor items were then recomputed using the 635-cadet sample. For each scale, the 20 items having the strongest zero-order correlations were again identified. The 20-item predictor pools for the five NEO-PI scales are shown in Appendix C. Each of the 76 different predictor items had highly significant zero-order correlations ($p < .0001$) with one or more of the NEO-PI scales. However, six of these items did not appear in the predictor pool of any scale after the final sample recomputation. Of the

remaining 70 items, 46 were included in only one pool, 18 were included in two pools, and 6 were included in three pools.

Similar to the procedure used to estimate ABLE scales earlier, a series of multiple regression analyses was used to predict scores on each NEO-PI scale. Initially, a stepwise regression analysis was used to identify the combination of predictors from a 20-item pool that was most closely related to the scores obtained on a particular scale (p = .15 to enter and stay in the model). Unfortunately, six of the original 76 predictors did not appear in the later version of the Student Information Form (Astin et al., 1994) administered to cadets in the Class of 1998. After removing these six items from the three predictor pools in which they appeared, a second stepwise regression analysis was performed (p = .15 to enter and stay in the model). Depending upon the scale, there were either two or three fewer items in the predictor pools for these second-round analyses (as noted in Appendix C). No second-round analyses were conducted with the Neuroticism and Conscientiousness scales, as all of their predictors were available for use with the Class of 1998. A third analysis then randomly assigned the 635 cadets in the sample to either one group of 318 cadets or to a second group of 317 cadets. For each random group, predictor variables remaining in the last stepwise model were entered into a simultaneous regression model. Mean parameter estimates of the two random groups were used to compute analogs of the NEO-PI scales.

Subsequently, a double cross-validation procedure was used to gauge the stability of the simultaneous regression model across samples. Details of the double cross-validation procedure were presented earlier (see p. 6). Finally, the relationships of both the NEO-PI and analog scale scores to external criteria were examined. As with the ABLE scales, leadership performance and attrition were the external criteria examined (see pp. 6-7).

Results

For ease of comparison and interpretation, the results of the two or three multiple regression analyses predicting each NEO-PI scale are grouped together. Tables 28 and 29 present the results of the regression analyses predicting the Neuroticism scale. Tables 30-32 similarly present the results for the Extraversion scale, Tables 33-35 present the results for the Openness to Experience scale, Tables 36-38 present the results for the Agreeableness scale, and Tables 39 and 40 present the results for the Conscientiousness scale.

The first table in each of these groups presents the results of a stepwise multiple regression analysis predicting a NEO-PI scale from a set of 20 archival items (see Appendix C). For three NEO-PI scales (Extraversion, Openness to Experience, and Agreeableness) an additional table presents the results of a

Table 28

Summary of Stepwise Regression Analysis Predicting the NEO-PI Neuroticism Scale from 20 Archival Items

Step and Item	F	p	ΔR^2	R^2
1. self-rated emotional health	259.25	.0001	.29	.29
2. felt depressed during the past year	60.51	.0001	.06	.35
3. likelihood of graduation from USMA	21.30	.0001	.02	.37
4. was bored in class during the past year	19.04	.0001	.02	.39
5. self-rated intellectual self-confidence	18.37	.0001	.02	.41
6. importance, in deciding to attend this college, of relatives wanting me to come here	11.44	.0008	.01	.42
7. chances of election to a student office	11.26	.0008	.01	.43
8. chances of changing career choice	8.57	.0035	.01	.44
9. felt overwhelmed during the past year	6.22	.0129	.01	.44
10. chances of failing one or more courses	2.26	.1336	.00	.45
11. self-rated public speaking ability	2.22	.1364	.00	.45

Note. N = 635 with p =.15 to enter and stay in the model.

Table 29

Summary of Simultaneous Regression Analysis Predicting the NEO-PI Neuroticism Scale from 11 Archival Items

Item	Group 1 (n = 318)			Group 2 (n = 317)		
	B	SE B	B	B	SE B	B
self-rated emotional health	-10.65	1.49	-.37	-6.07	1.38	-.23
felt depressed during the past year	5.25	2.17	.12	10.97	2.14	.26
likelihood of graduation from USMA	2.60	0.96	.13	0.53	0.86	.03
was bored in class during the past year	4.77	1.69	.12	5.14	1.79	.13
self-rated intellectual self-confidence	-4.15	1.61	-.13	-1.64	1.58	-.05
importance, in deciding to attend this college, of relatives wanting me to come here	3.02	1.40	.09	3.75	1.51	.12
chances of election to a student office	-2.22	1.38	-.07	-3.26	1.30	-.11
chances of changing career choice	1.36	1.25	.05	2.45	1.22	.09
felt overwhelmed during the past year	3.54	1.81	.09	2.18	1.68	.06
chances of failing one or more courses	2.14	1.48	.06	1.46	1.55	.05
self-rated public speaking ability	0.54	1.22	.02	-2.64	1.18	-.11

Note. R^2 = .48 for Group 1 and .45 for Group 2. Cross-validated R^2 = .43 for Group 1 and .38 for Group 2. The 11 archival items in this analysis were those remaining in the preceding stepwise regression model (see Table 28).

Table 30

Summary of Stepwise Regression Analysis Predicting the NEO-PI Extraversion Scale from 20 Archival Items

Step and Item	F	p	ΔR^2	R^2
1. self-rated popularity	204.29	.0001	.24	.24
2. self-rated social self-confidence	69.05	.0001	.07	.32
3. self-rated leadership ability	29.08	.0001	.03	.35
4. dicussed "safe sex" during the past year	12.98	.0003	.01	.36
5. importance of becoming a community leader	11.55	.0007	.01	.37
6. importance of raising a family	7.21	.0074	.01	.38
7. chances of election to a student office	6.99	.0084	.01	.39
8. self-rated drive to achieve	4.42	.0359	.00	.39
9. hours spent in a typical week partying during last year in high school	4.23	.0401	.00	.40
10. self-rated originality	3.80	.0518	.00	.40
11. self-rated understanding of others	2.42	.1201	.00	.40

Note. N = 635 with p =.15 to enter and stay in the model.

Table 31

Summary of Stepwise Regression Analysis Predicting the NEO-PI Extraversion Scale from 18 Archival Items

Step and Item	F	p	ΔR^2	R^2
1. self-rated popularity	204.29	.0001	.24	.24
2. self-rated social self-confidence	69.05	.0001	.07	.32
3. self-rated leadership ability	29.08	.0001	.03	.35
4. importance of becoming a community leader	12.67	.0004	.01	.36
5. importance of raising a family	7.73	.0056	.01	.37
6. chances of election to a student office	6.66	.0101	.01	.38
7. self-rated understanding of others	5.12	.0239	.01	.38
8. hours spent in a typical week partying during last year in high school	5.42	.0202	.01	.39
9. self-rated drive to achieve	4.13	.0425	.00	.39
10. self-rated public speaking ability	2.67	.1027	.00	.39
11. self-rated physical health	2.20	.1390	.00	.39

Note. N = 635 with p =.15 to enter and stay in the model. Only 18 archival items were included in the predictor pool for this analysis, as two items were not administered to cadets in the Class of 1998.

Table 32

Summary of Simultaneous Regression Analysis Predicting the NEO-PI Extraversion Scale from 11 Archival Items

Item	Group 1 (n = 318)			Group 2 (n = 317)		
	B	SE B	B	B	SE B	B
self-rated popularity	5.73	1.49	.23	5.12	1.22	.22
self-rated social self-confidence	2.47	1.23	.12	5.17	1.26	.23
self-rated leadership ability	2.12	1.50	.08	2.00	1.47	.08
importance of becoming a community leader	0.53	1.06	.03	3.06	1.03	.15
importance of raising a family	2.26	0.99	.11	1.17	0.89	.06
chances of election to a student office	2.34	1.22	.09	1.48	1.13	.06
self-rated understanding of others	2.92	1.26	.12	0.36	1.14	.02
hours spent in a typical week partying during last year in high school	0.94	0.55	.08	0.91	0.47	.09
self-rated drive to achieve	2.24	1.60	.07	1.48	1.45	.05
self-rated public speaking ability	1.08	1.13	.05	1.28	1.04	.06
self-rated physical health	1.12	1.17	.05	1.61	1.22	.06

Note. R^2 = .37 for Group 1 and .43 for Group 2. Cross-validated R^2 = .32 for Group 1 and .39 for Group 2. The 11 archival items in this analysis were those remaining in the preceding stepwise regression model (see Table 31).

Table 33

Summary of Stepwise Regression Analysis Predicting the NEO-PI Openness Scale from 20 Archival Items

Step and Item	F	p	ΔR^2	R^2
1. importance of writing original works	106.29	.0001	.14	.14
2. importance of developing a meaningful philosophy of life	60.23	.0001	.07	.22
3. self-rated originality	48.75	.0001	.06	.27
4. view that the Federal government is not doing enough to control environmental pollution	48.25	.0001	.05	.33
5. view that student publications should be cleared by college officials	29.09	.0001	.03	.36
6. view that it is important to have laws prohibiting homosexual relationships	23.84	.0001	.02	.38
7. importance of becoming accomplished in one of the performing arts	18.48	.0001	.02	.40
8. view that marijuana should be legalized	17.20	.0001	.02	.41
9. importance of gaining a general education and appreciation of ideas, in deciding to go to college	13.24	.0003	.01	.43
10. self-rated artistic ability	10.65	.0012	.01	.44
11. attended a recital or concert during the past year	8.13	.0045	.01	.44

(table continues)

Table 33 (continued)

Step and Item	F	p	ΔR^2	R^2
12. importance of helping to promote racial understanding	7.74	.0056	.01	.45
13. view that abortion should be legal	5.78	.0165	.01	.45
14. view that activities of married women are best confined to the home and family	5.01	.0256	.00	.46
15. importance of learning more about things that interest oneself, in deciding to go to college	5.15	.0235	.00	.46
16. characterization of one's political views	2.92	.0880	.00	.47
17. importance of helping others who are in difficulty	2.58	.1090	.00	.47

Note. N = 635 with p =.15 to enter and stay in the model.

Table 34

Summary of Stepwise Regression Analysis Predicting the NEO-PI Openness Scale from 17 Archival Items

Step and Item	F	p	ΔR^2	R^2
1. importance of writing original works	106.29	.0001	.14	.14
2. importance of developing a meaningful philosophy of life	60.23	.0001	.07	.22
3. view that the Federal government is not doing enough to control environmental pollution	48.72	.0001	.06	.27
4. self-rated artistic ability	31.42	.0001	.03	.31
5. view that marijuana should be legalized	29.67	.0001	.03	.34
6. view that activities of married women are best confined to the home and family	18.94	.0001	.02	.36
7. importance of learning more about things that interest oneself, in deciding to go to college	15.07	.0001	.02	.37
8. importance of becoming accomplished in one of the performing arts	13.59	.0002	.01	.39
9. view that abortion should be legal	11.80	.0006	.01	.40
10. importance of helping to promote racial understanding	9.14	.0026	.01	.41

(table continues)

Table 34 (continued)

Step and Item	F	p	ΔR^2	R^2
11. importance of gaining a general education and appreciation of ideas, in deciding to go to college	6.34	.0120	.01	.41
12. view that it is important to have laws prohibiting homosexual relationships	4.46	.0352	.00	.42
13. importance of helping others who are in difficulty	3.81	.0514	.00	.42

Note. N = 635 with p =.15 to enter and stay in the model. Only 17 archival items were included in the predictor pool for this analysis, as three items were not administered to cadets in the Class of 1998.

Table 35

Summary of Simultaneous Regression Analysis Predicting the NEO-PI Openness Scale from 13 Archival Items

Item	Group 1 (n = 318) B	SE B	B	Group 2 (n = 317) B	SE B	B
importance of writing original works	6.15	1.42	.20	4.71	1.29	.18
importance of developing a meaningful philosophy of life	1.45	0.83	.09	3.10	0.87	.18
view that the Federal government is not doing enough to control environmental pollution	2.77	0.93	.13	4.98	1.01	.23
self-rated artistic ability	2.20	0.75	.13	2.94	0.80	.17
view that marijuana should be legalized	4.07	0.95	.19	3.15	1.00	.15
view that activities of married women are best confined to the home and family	-1.17	0.82	-.07	-1.76	0.85	-.10
importance of learning more about things that interest oneself, in deciding to go to college	2.35	1.39	.08	3.59	1.53	.11
importance of becoming accomplished in one of the performing arts	3.47	1.41	.11	3.11	1.51	.10
view that abortion should be legal	1.49	0.68	.10	1.40	0.70	.10
importance of helping to promote racial understanding	2.07	1.01	.11	0.80	0.98	.04

(table continues)

Table 35 (continued)

Item	Group 1 (n = 318) B	SE B	B	Group 2 (n = 317) B	SE B	B
importance of gaining a general education and appreciation of ideas, in deciding to go to college	2.22	1.36	.08	2.74	1.36	.09
view that it is important to have laws prohibiting homosexual relationships	-1.94	0.77	-.12	-0.53	0.82	-.03
importance of helping others who are in difficulty	2.19	1.07	.10	0.61	1.13	.03

Note. R^2 = .46 for Group 1 and .40 for Group 2. Cross-validated R^2 = .42 for Group 1 and .36 for Group 2. The 13 archival items in this analysis were those remaining in the preceding stepwise regression model (see Table 34).

Table 36

Summary of Stepwise Regression Analysis Predicting the NEO-PI Agreeableness Scale from 20 Archival Items

Step and Item	F	p	ΔR^2	R^2
1. self-rated cooperativeness	46.81	.0001	.07	.07
2. importance of being very well off financially	36.23	.0001	.05	.12
3. argued with a teacher in class during the past year	25.63	.0001	.03	.15
4. importance of helping others who are in difficulty	26.10	.0001	.03	.19
5. view that the death penalty should be abolished	19.96	.0001	.02	.21
6. view that if two people really like each other, it's all right for them to have sex even if they've known each other for only a very short time	15.32	.0001	.02	.23
7. view that there is too much concern in the courts for the rights of criminals	10.55	.0012	.01	.24
8. view that colleges should prohibit racist and sexist speech on campus	9.70	.0019	.01	.26
9. view that an individual can do little to bring about changes in our society	9.49	.0022	.01	.27
10. attended a religious service during the past year	8.23	.0043	.01	.28
11. drank wine or liquor during the past year	6.51	.0110	.01	.28

(table continues)

Table 36 (continued)

Step and Item	F	p	ΔR^2	R^2
12. hours spent in a typical week partying during last year in high school	3.62	.0576	.00	.29
13. view that if two people really like each other, it's all right for them to have sex even if they've known each other for only a very short time (item was removed from model)	1.74	.1872	.00	.29
14. was bored in class during the past year	3.69	.0552	.00	.29

Note. N = 635 with p =.15 to enter and stay in the model.

Table 37

Summary of Stepwise Regression Analysis Predicting the NEO-PI Agreeableness Scale from 18 Archival Items

Step and Item	F	p	ΔR^2	R^2
1. self-rated cooperativeness	46.81	.0001	.07	.07
2. importance of being very well off financially	36.23	.0001	.05	.12
3. importance of helping others who are in difficulty	25.29	.0001	.03	.15
4. drank wine or liquor during the past year	20.97	.0001	.03	.18
5. view that the death penalty should be abolished	19.04	.0001	.02	.20
6. view that an individual can do little to bring about changes in our society	11.85	.0006	.01	.22
7. view that colleges should prohibit racist and sexist speech on campus	11.43	.0008	.01	.23
8. view that there is too much concern in the courts for the rights of criminals	10.23	.0015	.01	.25
9. attended a religious service during the past year	11.05	.0009	.01	.26
10. hours spent in a typical week partying during last year in high school	6.08	.0139	.01	.27
11. was bored in class during the past year	6.48	.0111	.01	.27

Note. N = 635 with p =.15 to enter and stay in the model. Only 18 archival items were included in the predictor pool for this analysis, as two items were not administered to cadets in the Class of 1998.

Table 38

Summary of Simultaneous Regression Analysis Predicting the NEO-PI Agreeableness Scale from 11 Archival Items

Item	Group 1 (n = 318)			Group 2 (n = 317)		
	B	SE B	B	B	SE B	B
self-rated cooperativeness	4.54	1.11	.19	4.18	1.27	.18
importance of being very well off financially	-2.94	0.97	-.14	-3.16	1.09	-.16
importance of helping others who are in difficulty	3.41	1.06	.15	3.08	1.23	.13
drank wine or liquor during the past year	-1.85	1.41	-.06	-3.21	1.77	-.11
view that the death penalty should be abolished	3.84	1.08	.17	0.92	1.22	.04
view that an individual can do little to bring about changes in our society	-3.85	0.98	-.18	-0.62	1.07	-.03
view that colleges should prohibit racist and sexist speech on campus	2.18	0.76	.13	1.63	0.90	.10
view that there is too much concern in the courts for the rights of criminals	-1.93	1.03	-.09	-2.88	1.13	-.14
attended a religious service during the past year	4.00	1.29	.14	2.69	1.37	.10
hours spent in a typical week partying	-1.45	0.54	-.13	-0.69	0.58	-.07
was bored in class during past year	-4.39	1.41	-.14	-1.05	1.72	-.03

Note. R^2 = .40 for Group 1 and .18 for Group 2. Cross-validated R^2 = .33 for Group 1 and .11 for Group 2. The 11 archival items in this analysis were those remaining in the preceding stepwise regression model (see Table 37).

Table 39

Summary of Stepwise Regression Analysis Predicting the NEO-PI Conscientiousness Scale from 20 Archival Items

Step and Item	F	p	ΔR^2	R^2
1. self-rated drive to achieve	190.14	.0001	.23	.23
2. present career intention	47.06	.0001	.05	.28
3. failed to complete a homework assignment on time during the past year	36.20	.0001	.04	.32
4. self-rated emotional health	31.83	.0001	.03	.36
5. importance of having administrative responsibility for the work of others	18.60	.0001	.02	.37
6. came late to class during the past year	19.23	.0001	.02	.39
7. chances of being elected to an academic honor society	12.94	.0003	.01	.41
8. chances of being satisfied with one's college	9.49	.0022	.01	.41
9. felt depressed during the past year	4.45	.0352	.00	.42
10. self-rated cooperativeness	2.59	.1079	.00	.42
11. self-rated public speaking ability	2.17	.1409	.00	.42

Note. N = 635 with p =.15 to enter and stay in the model.

Table 40

Summary of Simultaneous Regression Analysis Predicting the NEO-PI Conscientiousness Scale from 11 Archival Items

	Group 1 (n = 318)			Group 2 (n = 317)		
Item	B	SE B	B	B	SE B	B
self-rated drive to achieve	10.27	1.60	.30	6.79	1.65	.23
present career intention	-2.91	0.89	-.15	-1.76	0.87	-.10
failed to complete a home-work assignment on time during the past year	-8.22	1.69	-.23	-2.00	1.81	-.05
self-rated emotional health	3.65	1.34	.15	1.88	1.33	.08
importance of having admin-istrative responsibility for the work of others	2.98	1.06	.12	3.40	1.08	.15
came late to class during the past year	-2.33	1.66	-.07	-6.58	1.71	-.18
chances of being elected to an academic honor society	1.96	1.24	.07	2.98	1.17	.12
chances of being satisfied with one's college	4.41	1.47	.14	2.10	1.39	.07
felt depressed during the past year	-1.92	1.82	-.05	-3.45	1.84	-.09
self-rated cooperativeness	-0.21	1.20	-.01	3.24	1.36	.12
self-rated public speaking ability	1.09	1.07	.05	1.07	1.07	.05

Note. R^2 = .47 for Group 1 and .41 for Group 2. Cross-validated R^2 = .41 for Group 1 and .33 for Group 2. The 11 archival items in this analysis were those remaining in the preceding stepwise regression model (see Table 39).

second stepwise regression analysis performed with either two or three archival items removed from each predictor set, because these items were not subsequently administered to the Class of 1998. Items removed from consideration in these second stepwise analyses are marked with an asterisk in Appendix C. The final table in each group presents the results of a simultaneous multiple regression model predicting a NEO-PI scale from those items remaining in the stepwise regression model immediately preceding it. These results are presented separately for each of two groups randomly selected from the sample of 635 cadets.

A summary of the R^2 findings from all of the multiple regression analyses is presented in Table 41. Archival predictors explained an average of 41% of the variance in each NEO-PI scale during the initial stepwise regression analyses. The unavailability of some predictors for the Class of 1998

Table 41

Summary of NEO-PI Scale Variance Explained by Three Regression Models

	R^2		
Scale	Stepwise Model Using 20 Predictors	Stepwise Model Using < 20 Predictors[a]	Cross-Validated Simultaneous Model[b]
Neuroticism	.45		.40
Extraversion	.40	.39	.35
Openness	.47	.42	.39
Agreeableness	.29	.27	.22
Conscientiousness	.42		.37

Note. N = 635.

[a]Not all original predictors were administered two years later to cadets in the Class of 1998, resulting in a smaller pool of predictor items for three scales.

[b]Mean cross-validated R^2 for two random groups drawn from the sample of 635 cadets. The archival predictors in these analyses were those remaining in the immediately preceding stepwise regression model for each scale.

resulted in an average loss of less than 3% per scale for the three scales affected (i.e., Extraversion, Openness, and Agreeableness). The Openness scale was most negatively affected by the loss of predictors. Further, cross-validation resulted in an average loss of over 4% per scale in the amount of variance explained.

Regression equations based on the mean parameter estimates of the two random groups were used to calculate analog scale scores. These equations are presented in Appendix D. Overall, the five equations included a total of 47 different predictors, 45 from the Student Information Form and only 2 from the Class Characteristics Inventory. Of the 47 predictors, 38 were used to estimate only one scale, 8 were used to estimate two scales, and 1 (i.e., self-rated public speaking ability) was used to estimate three scales.

Table 42 presents the correlations between the original and analog scales for the sample of 635 cadets. Without exception, each analog scale was most strongly related to the original scale it was intended to estimate. In addition, each analog scale was related to the other four original scales in a pattern that

Table 42

Correlations Between NEO-PI and Analog Scales

	Analog Scale				
NEO-PI Scale	N	E	O	A	C
Neuroticism (N)	.67	-.30	-.02	-.10	-.44
Extraversion (E)	-.29	.63	.14	.14	.33
Openness to Experience (O)	.00	.11	.65	.13	-.00
Agreeableness (A)	-.01	-.01	.08	.52	.07
Conscientiousness (C)	-.48	.27	.01	.22	.65

Note. N = 635. Correlations greater than .07 or less than -.07 were significant ($p < .05$). The correlation of each NEO-PI scale with its corresponding analog is underlined ($p < .0001$).

closely mirrored the intercorrelations found among the original scales (see Table 27).

Table 43 compares the relationships of original and analog scales to the average leadership grades earned by cadets over eight academic semesters and four Summer detail periods. Neither the original nor the analog scales were strongly related to these external measures. In most instances, the original and analog scales had similar relationships with the two types of leadership grades. NEO-PI Conscientiousness, Analog Conscientiousness, NEO-PI Agreeableness, and Analog Agreeableness were the scales most strongly related to mean leadership grades earned during academic semesters. NEO-PI Conscientiousness, Analog Conscientiousness, NEO-PI Extraversion, and Analog Extraversion were most strongly related to mean leadership grades earned during Summer detail periods. The correlation between mean academic semester and Summer leadership grades was .55 ($p < .0001$).

Table 43

Correlations of NEO-PI and Analog Scale Scores with Mean Leadership Grades for Graduating Cadets

	Mean Leadership Grades	
Scale	Academic Semester	Summer Detail Period
NEO-PI Neuroticism	-.04	-.09
Analog Neuroticism	-.06	-.12**
NEO-PI Extraversion	.04	.16***
Analog Extraversion	.02	.16***
NEO-PI Openness	-.09*	-.06
Analog Openness	-.02	-.05
NEO-PI Agreeableness	.14**	.10*
Analog Agreeableness	.13**	.06
NEO-PI Conscientiousness	.29****	.22****
Analog Conscientiousness	.19****	.22****

Note. $N = 496$.

*$p < .05$. **$p < .01$. ***$p < .001$. ****$p < .0001$.

Table 44 compares graduates with non-graduates on the basis of their original and analog scores. The Openness and Agreeableness scales, whether originals or analogs, were not related to attrition. However, graduates scored significantly higher than non-graduates on NEO-PI Extraversion, Analog Extraversion, and Analog Conscientiousness. Also, the difference between graduates and non-graduates approached statistical significance on the NEO-PI Conscientiousness scale. Although non-graduates scored higher than graduates on both the NEO-PI Neuroticism and Analog Neuroticism scales, the difference was statistically significant on only the Analog Neuroticism scale. Despite the general consistency of these findings, the magnitude of the differences obtained was small. Thus, it seems unlikely that either original or analog scales would have a high level of utility in predicting cadet attrition at USMA.

Table 44

A Comparison of the Mean NEO-PI and Analog Scale Scores of Graduates and Non-Graduates

	Graduates (n = 496)		Non-Graduates (n = 139)				
Scale	M	SD	M	SD	t or t'	df	p
NEO-PI Neuroticism	90.76	21.73	93.04	25.01	0.97	200.1	.3317
Analog Neuroticism	89.90	14.37	95.54	17.06	3.56	196.2	.0005
NEO-PI Extraver.	120.21	17.71	115.93	19.38	-2.47	633.0	.0140
Analog Extraver.	119.85	11.31	116.81	11.76	-2.71	633.0	.0057
NEO-PI Openness	111.93	17.48	113.54	17.63	0.96	633.0	.3384
Analog Openness	112.42	11.52	112.12	11.22	-0.28	633.0	.7823
NEO-PI Agreeable.	108.38	17.29	106.22	18.33	-1.28	633.0	.1999
Analog Agreeable.	108.00	9.08	107.35	9.23	-0.74	633.0	.4615
NEO-PI Conscient.	117.32	19.42	113.73	21.34	-1.89	633.0	.0598
Analog Conscient.	117.50	12.72	112.82	13.86	-3.75	633.0	.0002

Note. The approximate t statistic, or t', is reported when equality of variances could not be assumed. In such cases, degrees of freedom were computed using the Satterthwaite approximation (SAS Institute Inc., 1988).

Discussion

The present investigation demonstrated the viability of using archival data to estimate a variety of personality constructs. Most analog scales were found to account for a substantial proportion of the variance in their corresponding original scales after cross-validation. Specifically, an average cross-validated $\underline{R}^2$ of .39 per scale was obtained for a dozen scales across two personality inventories (see Tables 23 and 41). It should be noted that most of the archival predictors exhibited a reasonable degree of face validity regarding their apparent relatedness to particular personality constructs (see Appendixes A and C). In fact, many of the archival items were not unlike those items found on the original scales.

In most instances the original and analog scales manifested roughly similar relationships with the two external criteria examined, though these relationships were not particularly strong. For example, the Work Orientation scale of the ABLE and the Conscientiousness scale of the NEO-PI were most strongly related to mean leadership grades. Likewise, the Analog Work Orientation and Analog Conscientiousness scales were among those analog scales most strongly related to mean leadership grades, particularly those awarded during academic semesters (see Tables 25 and 43). Regarding attrition, the ABLE's Total and Emotional Stability scales and the NEO-PI's Extraversion and Conscientiousness scales were best able to differentiate between those cadets who graduated and those who did not graduate. To a similar degree, the corresponding analogs of those scales were also able to differentiate between graduates and non-graduates (see Tables 26 and 44).

Overall, the ABLE scales appeared to be somewhat more strongly related to the external criteria than were the NEO-PI scales. Six of the seven ABLE scales were significantly related to both types of mean leadership grades (i.e., academic semester grades and Summer detail grades), while significant differences were found between graduates and non-graduates on five of the scales. In comparison, three of the five NEO-PI scales were significantly related to each type of leadership grade, though significant differences between graduates and non-graduates were found on only one scale. Perhaps these differences between the two inventories are due to the fact that the ABLE was designed specifically to predict job performance in the U.S. Army (Hough et al., 1990; White et al., 1993).

In general, original scales were more strongly related to leadership grades than were analog scales (see Tables 25 and 43). However, analog scales appeared to be more closely related to attrition than original scales. The finding that non-graduates were significantly different from graduates on 10 of the analog scales, compared with only six of the original scales, was not expected. A closer inspection of the Tables 26 and 44 suggests this unexpected result may have been due to a statistical

artifact. Despite the fact that the mean differences between groups on eight of the original scales were greater than they were on the analog scales, the group standard deviations were consistently lower on the analog scales. Thus, the closer apparent relationship of analog scales to attrition is largely a function of there being less variation among the analog scores than among the original scores.

The ABLE analogs reported herein had much closer relationships to the original ABLE scales than did the ABLE analogs developed solely from biodata items by Mael and his colleagues (Mael & Hirsch, 1993; Mael & Schwartz, 1991; Mael & White, 1994). However, their analogs were developed for potential use in an admissions environment. As such, they were less related to social desirability than were the original scales (Mael & White, 1994). In contrast, many of the items used to develop the ABLE analog scales presented in Appendix B would be considered inappropriate for the purposes of personnel selection or admissions, due to their highly personal and subjective nature. In a highly competitive selection environment, one would also be concerned that responses to many of the same items could be easily exaggerated or faked in a socially desirable direction. Although less immune to the effects of socially desirable responding than analogs developed solely from biodata (Mael & White, 1994), the analog scales shown in Appendix B appear to be generally equivalent to the ABLE content scales in terms of their relationship with the ABLE Social Desirability scale (see Tables 1 and 24).

The relationships found between ABLE scale scores and leadership grades in the present investigation are largely consistent with those reported in previous research (Mael & Hirsch, 1993; Mael & Schwartz, 1991; Mael & White, 1994). One exception was that previous research found a significant relationship between the Emotional Stability scale and leadership grades during the first two Summer detail periods, while the present research found no significant relationship between the Emotional Stability scale and the mean of all four Summer leadership grades. As both investigations were based on cadets in the USMA Class of 1994, one can surmise from these disparate findings that emotional stability tends to become less important to Summer leadership performance over time. It should also be noted that the present investigation only examined the leadership performance of graduates, while the previous research sample undoubtedly included some cadets who subsequently did not graduate. Thus, it seems possible that emotional stability could exert an early influence on Summer leadership performance primarily through its influence on attrition. Lending support to this view was the significantly different level of emotional stability found between graduates and non-graduates (see Table 26), as well as the number of archival predictors of the Emotional Stability scale having to do with estimated Summer performance (i.e., cadet basic training), the likelihood of

dropping out, or the likelihood of transferring to another college before graduation (see Tables 11 through 13).

Although not addressed in previous research by Mael and his colleagues (Mael & Hirsch, 1993; Mael & Schwartz, 1991; Mael & White, 1994), the Social Desirability scale was significantly related to both types of leadership grades in the present investigation. Specifically, it was found that cadets with higher Social Desirability scores tended to have higher leadership grades. Such a finding is consistent with the notion that good military officers have both the willingness and ability to present a favorable impression in a wide range of situations. In this instance, the ABLE's Social Desirability scale may be useful as both a content scale and a response validity scale.

Direct comparisons between the ABLE and NEO-PI inventories cannot be made, because they were administered to entirely different cadet samples. However, there appeared to be similarities between certain ABLE and NEO-PI scales, as they shared some of the same key predictors. For instance, the ABLE's Emotional Stability scale and the NEO-PI's Neuroticism scale had three predictors in common (self-rated emotional health, felt depressed during the past year, and felt overwhelmed during the past year). Comparing Tables 12 and 28, these three predictors accounted for 38% of the variance in Emotional Stability and 36% of the variance in Neuroticism. As another example, the ABLE's Work Orientation scale and the NEO-PI's Conscientiousness scale also had three predictors in common (self-rated drive to achieve, failed to complete a homework assignment on time during the past year, and self-rated cooperativeness). Comparing Tables 9 and 39, the first two of these three predictors accounted for 33% of the variance in Work Orientation and 27% of the variance in Conscientiousness.

In conclusion, the personality estimates developed in the present investigation from archival data were found to be reasonably close approximations to the original scales in most cases. Not only did most analog scales account for a substantial proportion of the variance in the original scales after cross-validation, but both the original and analog scales tended to exhibit similar relationships with external criteria. For these reasons, the ABLE and NEO-PI analog scales will be used to estimate personality constructs in a longitudinal leadership research program currently focusing on cadets in the USMA Class of 1998.

Although none of the analog scales represent exact replicas of the original scales (see Tables 23 and 41), relatively greater caution should be used in interpreting the nature of the Analog Social Desirability scale and the Analog Agreeableness scale. These two analogs had noticeably weaker relationships with the original scales than did the other 10 analog scales (see Tables 24 and 42). Compared with other scales, the Analog Agreeableness scale was more negatively affected by random sample variation as

well, as its simultaneous regression models evidenced relatively greater disparity (see Table 38).

Given the present findings, estimates of personality constructs developed from archival sources appear to be particularly suitable candidates for use in those research situations where resource constraints preclude the routine administration of personality inventories. Because the preponderance of archival predictors were drawn from the Student Information Form, the present findings also suggest nearly equivalent estimates of a number of personality constructs could be developed from that survey instrument alone. Thus, the methodology used in the present investigation has potential applicability to all institutions of higher education administering that survey annually.

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Appendix A

Predictor Items Most Strongly Related to Seven ABLE Scales

Item Description	Source	Response Scale	r
Dominance Scale			
self-rated leadership ability	SIF	highest 10% (5) to lowest 10% (1)	.69
self-rated social self-confidence	SIF	highest 10% (5) to lowest 10% (1)	.48
self-rated public speaking ability	SIF	highest 10% (5) to lowest 10% (1)	.46
self-rated competitiveness	SIF	highest 10% (5) to lowest 10% (1)	.40
self-rated drive to achieve	SIF	highest 10% (5) to lowest 10% (1)	.37
*self-rated popularity with the opposite sex	SIF	highest 10% (5) to lowest 10% (1)	.36
importance of having administrative responsibility for the work of others	SIF	essential (4) to not important (1)	.35
self-rated popularity	SIF	highest 10% (5) to lowest 10% (1)	.35
self-rated intellectual self-confidence	SIF	highest 10% (5) to lowest 10% (1)	.33
chances of election to a student office	SIF	very good chance (4) to no chance (1)	.30
self-rated understanding of others	SIF	highest 10% (5) to lowest 10% (1)	.29
importance of influencing the political structure	SIF	essential (4) to not important (1)	.29
importance of becoming an authority in one's field	SIF	essential (4) to not important (1)	.28

Item Description	Source	Response Scale	r
self-rated emotional health	SIF	highest 10% (5) to lowest 10% (1)	.28
*importance, in choosing a career, of being able to work with people	SIF	essential (4) to not important (1)	.28
*importance, in choosing a career, of having the work be challenging	SIF	essential (4) to not important (1)	.27
*importance, in choosing a career, of being able to be helpful to others	SIF	essential (4) to not important (1)	.26
importance of obtaining recognition from colleagues for contributions to one's special field	SIF	essential (4) to not important (1)	.23
*estimation of performance in cadet basic training, based on first 24 hours	CCI	will do very well (1) to will do very poorly (5)	-.23
*importance, in choosing a career, of being able to make an important contribution to society	SIF	essential (4) to not important (1)	.23
<u>Energy Level Scale</u>			
self-rated drive to achieve	SIF	highest 10% (5) to lowest 10% (1)	.43
self-rated leadership ability	SIF	highest 10% (5) to lowest 10% (1)	.41
self-rated emotional health	SIF	highest 10% (5) to lowest 10% (1)	.40
self-rated physical health	SIF	highest 10% (5) to lowest 10% (1)	.38
*estimation of performance in cadet basic training, based on first 24 hours	CCI	will do very well (1) to will do very poorly (5)	-.37

Item Description	Source	Response Scale	r
self-rated competitiveness	SIF	highest 10% (5) to lowest 10% (1)	.36
chances of being satisfied with one's college	SIF	very good chance (4) to no chance (1)	.35
self-rated social self-confidence	SIF	highest 10% (5) to lowest 10% (1)	.34
*chances of transfer to another college before graduation	CCI	no chance (1) to very good chance (4)	-.33
felt depressed during the past year	SIF	frequently (3) to not at all (1)	-.33
*importance, in choosing a career, of having the work be challenging	SIF	essential (4) to not important (1)	.32
*chances of dropping out of USMA temporarily	CCI	no chance (1) to very good chance (4)	-.31
self-rated public speaking ability	SIF	highest 10% (5) to lowest 10% (1)	.29
self-rated intellectual self-confidence	SIF	highest 10% (5) to lowest 10% (1)	.28
felt overwhelmed during the past year	SIF	frequently (3) to not at all (1)	-.28
chances of dropping out permanently	SIF	very good chance (4) to no chance (1)	-.26
*importance, in choosing a career, of being able to be helpful to others	SIF	essential (4) to not important (1)	.25
importance of leadership training, as a reason for seeking appointment to USMA	CCI	number one priority (1) to irrelevant (5)	-.25
self-rated cooperativeness	SIF	highest 10% (5) to lowest 10% (1)	.24

Item Description	Source	Response Scale	r
*did extra (unassigned) work or reading for a class during the past year	SIF	frequently (3) to not at all (1)	.24
Work Orientation Scale			
self-rated drive to achieve	SIF	highest 10% (5) to lowest 10% (1)	.53
hours spent in a typical week studying or doing homework during last year in high school	SIF	over 20 hours (8) to none (1)	.40
failed to complete a homework assignment on time during the past year	SIF	frequently (3) to not at all (1)	-.38
self-rated cooperativeness	SIF	highest 10% (5) to lowest 10% (1)	.33
self-rated leadership ability	SIF	highest 10% (5) to lowest 10% (1)	.33
*importance, in choosing a career, of being able to be helpful to others	SIF	essential (4) to not important (1)	.29
*importance, in choosing a career, of having the work be challenging	SIF	essential (4) to not important (1)	.29
was bored in class during the past year	SIF	frequently (3) to not at all (1)	-.29
self-rated competitiveness	SIF	highest 10% (5) to lowest 10% (1)	.29
*did extra (unassigned) work or reading for a class during the past year	SIF	frequently (3) to not at all (1)	.27
*importance, in choosing a career, of being able to make an important contribution to society	SIF	essential (4) to not important (1)	.26

Item Description	Source	Response Scale	r
*estimation of performance in cadet basic training, based on first 24 hours	CCI	will do very well (1) to will do very poorly (5)	-.25
self-reported academic rank in high school graduating class	CCI	top 10% (1) to lowest 20 % (6)	-.25
*chances of transfer to another college before graduation	CCI	no chance (1) to very good chance (4)	-.25
self-rated physical health	SIF	highest 10% (5) to lowest 10% (1)	.25
importance of being made more cultured, in deciding to go to college	SIF	very important (3) to not important (1)	.24
*chances of dropping out of USMA temporarily	CCI	no chance (1) to very good chance (4)	-.24
self-rated understanding of others	SIF	highest 10% (5) to lowest 10% (1)	.24
*importance, in choosing a career, of being able to work with people	SIF	essential (4) to not important (1)	.23
importance of becoming an authority in one's field	SIF	essential (4) to not important (1)	.23
Emotional Stability Scale			
felt depressed during the past year	SIF	frequently (3) to not at all (1)	-.48
self-rated emotional health	SIF	highest 10% (5) to lowest 10% (1)	.46
felt overwhelmed during the past year	SIF	frequently (3) to not at all (1)	-.43
*estimation of performance in cadet basic training, based on first 24 hours	CCI	will do very well (1) to will do very poorly (5)	-.42

Item Description	Source	Response Scale	r
*chances of transfer to another college before graduation	CCI	no chance (1) to very good chance (4)	-.35
self-rated social self-confidence	SIF	highest 10% (5) to lowest 10% (1)	.34
chances of being satisfied with one's college	SIF	very good chance (4) to no chance (1)	.33
*chances of seeking counseling for personal problems	SIF	very good chance (4) to no chance (1)	-.30
*importance, in choosing a career, of being able to avoid pressure	SIF	essential (4) to not important (1)	-.29
self-rated leadership ability	SIF	highest 10% (5) to lowest 10% (1)	.29
self-rated intellectual self-confidence	SIF	highest 10% (5) to lowest 10% (1)	.28
*chances of dropping out of USMA temporarily	CCI	no chance (1) to very good chance (4)	-.26
chances of dropping out permanently	SIF	very good chance (4) to no chance (1)	-.26
present career intention	CCI	stay in Army until retirement (1) to definitely leave after obligation (5)	-.24
self-rated physical health	SIF	highest 10% (5) to lowest 10% (1)	.24
self-rated public speaking ability	SIF	highest 10% (5) to lowest 10% (1)	.22
self-rated understanding of others	SIF	highest 10% (5) to lowest 10% (1)	.22
self-rated drive to achieve	SIF	highest 10% (5) to lowest 10% (1)	.21
*self-rated popularity with the opposite sex	SIF	highest 10% (5) to lowest 10% (1)	.20

Item Description	Source	Response Scale	r
desire to be an Army officer, as a reason for seeking appointment to USMA	CCI	number one priority (1) to irrelevant (5)	-.20
Traditional Values Scale			
*chances of transfer to another college before graduation	CCI	no chance (1) to very good chance (4)	-.32
chances of being satisfied with one's college	SIF	very good chance (4) to no chance (1)	.29
view that marijuana should be legalized	SIF	agree strongly (4) to disagree strongly (1)	-.29
desire to be an Army officer, as a reason for seeking appointment to USMA	CCI	number one priority (1) to irrelevant (5)	-.28
*chances of dropping out of USMA temporarily	CCI	no chance (1) to very good chance (4)	-.28
drank beer during the past year	SIF	frequently (3) to not at all (1)	-.28
view that if two people really like each other, it's all right for them to have sex even if they've known each other for only a very short time	SIF	agree strongly (4) to disagree strongly (1)	-.27
present career intention	CCI	stay in Army until retirement (1) to definitely leave after obligation (5)	-.26
choice of present college	SIF	first choice (4) to less than third choice (1)	.26
hours spent in a typical week partying during last year in high school	SIF	over 20 hours (8) to none (1)	-.26

Item Description	Source	Response Scale	r
was bored in class during the past year	SIF	frequently (3) to not at all (1)	-.26
drank wine or liquor during the past year	SIF	frequently (3) to not at all (1)	-.26
self-rated cooperativeness	SIF	highest 10% (5) to lowest 10% (1)	.25
self-rated drive to achieve	SIF	highest 10% (5) to lowest 10% (1)	.23
helpfulness of USMA catalog in college decision-making process	CCI	very helpful (1) to poor (5)	-.23
importance of leadership training, as a reason for seeking appointment to USMA	CCI	number one priority (1) to irrelevant (5)	-.23
failed to complete a home-work assignment on time during the past year	SIF	frequently (3) to not at all (1)	-.22
chances of dropping out permanently	SIF	very good chance (4) to no chance (1)	-.22
hours spent in a typical week studying or doing homework during last year in high school	SIF	over 20 hours (8) to none (1)	.22
*importance, in choosing a career, of having the work be challenging	SIF	essential (4) to not important (1)	.20
<u>ABLE Total Scale</u>			
self-rated leadership ability	SIF	highest 10% (5) to lowest 10% (1)	.52
self-rated drive to achieve	SIF	highest 10% (5) to lowest 10% (1)	.51
self-rated emotional health	SIF	highest 10% (5) to lowest 10% (1)	.47

Item Description	Source	Response Scale	r
*estimation of performance in cadet basic training, based on first 24 hours	CCI	will do very well (1) to will do very poorly (5)	-.44
*chances of transfer to another college before graduation	CCI	no chance (1) to very good chance (4)	-.41
self-rated social self-confidence	SIF	highest 10% (5) to lowest 10% (1)	.40
chances of being satisfied with one's college	SIF	very good chance (4) to no chance (1)	.39
self-rated competitiveness	SIF	highest 10% (5) to lowest 10% (1)	.38
*importance, in choosing a career, of having the work be challenging	SIF	essential (4) to not important (1)	.37
*chances of dropping out of USMA temporarily	CCI	no chance (1) to very good chance (4)	-.37
felt depressed during the past year	SIF	frequently (3) to not at all (1)	-.36
self-rated public speaking ability	SIF	highest 10% (5) to lowest 10% (1)	.35
self-rated physical health	SIF	highest 10% (5) to lowest 10% (1)	.35
self-rated intellectual self-confidence	SIF	highest 10% (5) to lowest 10% (1)	.35
chances of dropping out permanently	SIF	very good chance (4) to no chance (1)	-.32
self-rated cooperativeness	SIF	highest 10% (5) to lowest 10% (1)	.32
self-rated understanding of others	SIF	highest 10% (5) to lowest 10% (1)	.31

Item Description	Source	Response Scale	r
present career intention	CCI	stay in Army until retirement (1) to definitely leave after obligation (5)	-.29
felt overwhelmed during the past year	SIF	frequently (3) to not at all (1)	-.29
was bored in class during the past year	SIF	frequently (3) to not at all (1)	-.28
Social Desirability Scale			
failed to complete a home-work assignment on time during the past year	SIF	frequently (3) to not at all (1)	-.29
self-rated cooperativeness	SIF	highest 10% (5) to lowest 10% (1)	.26
was bored in class during the past year	SIF	frequently (3) to not at all (1)	-.25
hours spent in a typical week studying or doing homework during last year in high school	SIF	over 20 hours (8) to none (1)	.22
came late to class during the past year	SIF	frequently (3) to not at all (1)	-.22
self-rated drive to achieve	SIF	highest 10% (5) to lowest 10% (1)	.21
hours spent in a typical week socializing with friends during last year in high school	SIF	over 20 hours (8) to none (1)	-.20
drank wine or liquor during the past year	SIF	frequently (3) to not at all (1)	-.20
desire to be an Army officer, as a reason for seeking appointment to USMA	CCI	number one priority (1) to irrelevant (5)	-.20

Item Description	Source	Response Scale	r
*chances of transfer to another college before graduation	CCI	no chance (1) to very good chance (4)	-.19
*importance, in choosing a career, of having the work be challenging	SIF	essential (4) to not important (1)	.18
importance of being able to make more money, in deciding to go to college	SIF	very important (3) to not important (1)	-.18
*I made up my own mind in choosing a college	CCI	completely true (1) to completely false (4)	-.18
chances of dropping out permanently	SIF	very good chance (4) to no chance (1)	-.17
*importance, in choosing a career, of being able to make an important contribution to society	SIF	essential (4) to not important (1)	.17
*importance, in choosing a career, of being able to be helpful to others	SIF	essential (4) to not important (1)	.17
present career intention	CCI	stay in Army until retirement (1) to definitely leave after obligation (5)	-.16
hours spent in a typical week partying during last year in high school	SIF	over 20 hours (8) to none (1)	-.16
*I always wanted to come here	CCI	completely true (1) to completely false (4)	-.16
felt depressed during the past year	SIF	frequently (3) to not at all (1)	-.16

Note. N = 727. ABLE = Assessment of Background and Life Experiences; SIF = Student Information Form (Astin et al., 1990); CCI = Class Characteristics Inventory (IRAB, 1990). Items marked with an asterisk were not on the SIF or CCI administered to the Class of 1998. All correlations were highly significant ($p < .0001$).

Appendix B

Prediction Equations for Seven ABLE Scales

Analog Dominance = 0.90 + .23(self-rated leadership ability) + .06(self-rated social self-confidence) + .04(importance of having administrative responsibility for the work of others) + .05(self-rated public speaking ability) + .02(importance of influencing the political structure) + .04(self-rated competitiveness) - .02(self-rated emotional health) + .03(importance of becoming an authority in one's field) + .02(chances of election to a student office) - .02(self-rated intellectual self-confidence)

Analog Energy Level = 1.39 + .08(self-rated drive to achieve) - .06(felt depressed during the past year) + .07(chances of being satisfied with one's college) + .08(self-rated physical health) - .04(importance of leadership training, as a reason for seeking appointment to USMA) - .07(felt overwhelmed during the past year) + .03(self-rated leadership ability) - .03(chances of dropping out permanently) + .03(self-rated public speaking ability) + .02(self-rated competitiveness) + .02(self-rated emotional health)

Analog Work Orientation = 1.32 + .18(self-rated drive to achieve) + .05(hours spent in a typical week studying or doing homework during last year in high school) - .13(failed to complete a homework assignment on time during the past year) + .06(importance of being made more cultured, in deciding to go to college) - .06(self-reported academic rank in high school graduating class) - .08(was bored in class during the past year) + .04(importance of becoming an authority in one's field) + .04(self-rated physical health) + .03(self-rated cooperativeness)

Analog Emotional Stability = 2.08 - .13(felt depressed during the past year) + .07(self-rated emotional health) - .12(felt overwhelmed during the past year) + .06(chances of being satisfied with one's college) + .04(self-reported social self-confidence) - .04(chances of dropping out permanently) - .02(present career intention) + .02(self-rated physical health) + .02(self-rated understanding of others)

Analog Traditional Values = 2.47 + .06(chances of being satisfied with one's college) - .08(view that marijuana should be legalized) - .04(desire to be an Army officer, as a reason for seeking appointment to USMA) - .06(drank beer during the past year) + .09(choice of present college) - .05(failed to complete a homework assignment on time during the past year) + .04(self-rated cooperativeness) - .06(was bored in class during the past year) - .03(helpfulness of USMA catalog in college decision-making process) - .03(view that if two people really like each other, it's all right for them to have sex even if they've known each other for only a very short time) - .03(chances of dropping out permanently) + .01(hours spent in a typical week studying or doing homework during last year in high school) - .02(present career intention)

Analog Total = 1.71 + .06(self-rated leadership ability) + .05(chances of being satisfied with one's college) + .07(self-rated drive to achieve) - .05(felt depressed during the past year) - .07(was bored in class during the past year) - .03(chances of dropping out permanently) + .03(self-rated physical health) - .02(present career intention) + .02(self-rated emotional health) - .04(felt overwhelmed during the past year) + .02(self-rated public speaking ability) + .02(self-rated understanding of others) + .01(self-rated social self-confidence)

Analog Social Desirability = 1.77 - .07(failed to complete a homework assignment on time during the past year) + .06(self-rated cooperativeness) - .02(desire to be an Army officer, as a reason for seeking appointment to USMA) - .02(hours spent in a typical week socializing with friends during last year in high school) - .05(was bored in class during the past year) - .03(drank wine or liquor during the past year) - .04(came late to class during the past year) - .03(importance of being able to make more money, in deciding to go to college) - .02(chances of dropping out permanently) + .01(hours spent in a typical week studying or doing homework during last year in high school) - .03(felt depressed during the past year)

Note. The above weights represent the mean of two unstandardized parameter estimates, developed from random halves of a 727-cadet sample.

Appendix C

Predictor Items Most Strongly Related to NEO-PI Scales

Item Description	Source	Response Scale	r
Neuroticism Scale			
self-rated emotional health	SIF	highest 10% (5) to lowest 10% (1)	-.54
felt depressed during the past year	SIF	frequently (3) to not at all (1)	.46
likelihood of graduation from USMA	CCI	99% sure (1) to only 1% chance (7)	.36
self-rated intellectual self-confidence	SIF	highest 10% (5) to lowest 10% (1)	-.35
chances of transfer to another college before graduation	SIF	very good chance (4) to no chance (1)	.35
felt overwhelmed during the past year	SIF	frequently (3) to not at all (1)	.33
self-rated social self-confidence	SIF	highest 10% (5) to lowest 10% (1)	-.33
chances of being satisfied with one's college	SIF	very good chance (4) to no chance (1)	-.29
importance, in deciding to attend this college, of relatives wanting me to come here	SIF	very important (3) to not important (1)	.27
self-rated leadership ability	SIF	highest 10% (5) to lowest 10% (1)	-.26
chances of dropping out permanently	SIF	very good chance (4) to no chance (1)	.25
self-rated drive to achieve	SIF	highest 10% (5) to lowest 10% (1)	-.25

Item Description	Source	Response Scale	r
self-rated public speaking ability	SIF	highest 10% (5) to lowest 10% (1)	-.23
chances of failing one or more courses	SIF	very good chance (4) to no chance (1)	.23
importance of family influence, as a reason for seeking appointment to USMA	CCI	number one priority (1) to irrelevant (5)	-.23
chances of changing career choice	SIF	very good chance (4) to no chance (1)	.22
self-rated physical health	SIF	highest 10% (5) to lowest 10% (1)	-.22
was bored in class during the past year	SIF	frequently (3) to not at all (1)	.21
chances of election to a student office	SIF	very good chance (4) to no chance (1)	-.21
present career intention	CCI	stay in Army until retirement (1) to definitely leave after obligation (5)	.21
Extraversion Scale			
self-rated popularity	SIF	highest 10% (5) to lowest 10% (1)	.49
self-rated social self-confidence	SIF	highest 10% (5) to lowest 10% (1)	.49
self-rated leadership ability	SIF	highest 10% (5) to lowest 10% (1)	.40
self-rated public speaking ability	SIF	highest 10% (5) to lowest 10% (1)	.34
self-rated understanding of others	SIF	highest 10% (5) to lowest 10% (1)	.33
self-rated drive to achieve	SIF	highest 10% (5) to lowest 10% (1)	.32

Item Description	Source	Response Scale	r
importance of becoming a community leader	SIF	essential (4) to not important (1)	.31
self-rated competitiveness	SIF	highest 10% (5) to lowest 10% (1)	.30
chances of election to a student office	SIF	very good chance (4) to no chance (1)	.29
self-rated physical health	SIF	highest 10% (5) to lowest 10% (1)	.27
importance of having administrative responsibility for the work of others	SIF	essential (4) to not important (1)	.25
*self-rated originality	SIF	highest 10% (5) to lowest 10% (1)	.25
self-rated cooperativeness	SIF	highest 10% (5) to lowest 10% (1)	.25
self-rated emotional health	SIF	highest 10% (5) to lowest 10% (1)	.23
importance of raising a family	SIF	essential (4) to not important (1)	.23
*discussed "safe sex" during the past year	SIF	frequently (3) to not at all (1)	.21
hours spent in a typical week socializing with friends during last year in high school	SIF	over 20 hours (8) to none (1)	.21
hours spent in a typical week partying during last year in high school	SIF	over 20 hours (8) to none (1)	.21
importance of participating in a community action program	SIF	essential (4) to not important (1)	.21
importance of influencing social values	SIF	essential (4) to not important (1)	.21

Item Description	Source	Response Scale	r
Openness to Experience Scale			
importance of writing original works	SIF	essential (4) to not important (1)	.38
importance of developing a meaningful philosophy of life	SIF	essential (4) to not important (1)	.37
*self-rated originality	SIF	highest 10% (5) to lowest 10% (1)	.35
importance of helping to promote racial understanding	SIF	essential (4) to not important (1)	.30
view that the Federal government is not doing enough to control environmental pollution	SIF	agree strongly (4) to disagree strongly (1)	.29
*attended a recital or concert during the past year	SIF	frequently (3) to not at all (1)	.28
importance of becoming involved in programs to clean up the environment	SIF	essential (4) to not important (1)	.28
view that marijuana should be legalized	SIF	agree strongly (4) to disagree strongly (1)	.28
importance of creating artistic work	SIF	essential (4) to not important (1)	.27
importance of becoming accomplished in one of the performing arts	SIF	essential (4) to not important (1)	.27
self-rated artistic ability	SIF	highest 10% (5) to lowest 10% (1)	.27
characterization of one's political views	SIF	far left (5) to far right (1)	.26

Item Description	Source	Response Scale	r
*view that student publications should be cleared by college officials	SIF	agree strongly (4) to disagree strongly (1)	-.25
importance of being made more cultured, in deciding to go to college	SIF	very important (3) to not important (1)	.24
view that it is important to have laws prohibiting homosexual relationships	SIF	agree strongly (4) to disagree strongly (1)	-.23
view that abortion should be legal	SIF	agree strongly (4) to disagree strongly (1)	.22
view that activities of married women are best confined to the home and family	SIF	agree strongly (4) to disagree strongly (1)	-.22
importance of learning more about things that interest oneself, in deciding to go to college	SIF	very important (3) to not important (1)	.22
importance of gaining a general education and appreciation of ideas, in deciding to go to college	SIF	very important (3) to not important (1)	.21
importance of helping others who are in difficulty	SIF	essential (4) to not important (1)	.20
<u>Agreeableness Scale</u>			
self-rated cooperativeness	SIF	highest 10% (5) to lowest 10% (1)	.26
importance of being very well off financially	SIF	essential (4) to not important (1)	-.24

Item Description	Source	Response Scale	r
view that if two people really like each other, it's all right for them to have sex even if they've known each other for only a very short time	SIF	agree strongly (4) to disagree strongly (1)	-.23
*argued with a teacher in class during the past year	SIF	frequently (3) to not at all (1)	-.23
view that an individual can do little to bring about changes in our society	SIF	agree strongly (4) to disagree strongly (1)	-.23
importance of helping others who are in difficulty	SIF	essential (4) to not important (1)	.23
drank wine or liquor during the past year	SIF	frequently (3) to not at all (1)	-.22
chances of participating in volunteer or community service work	SIF	very good chance (4) to no chance (1)	.21
hours spent in a typical week partying during last year in high school	SIF	over 20 hours (8) to none (1)	-.19
attended a religious service during the past year	SIF	frequently (3) to not at all (1)	.18
importance of participating in a community action program	SIF	essential (4) to not important (1)	.18
drank beer during the past year	SIF	frequently (3) to not at all (1)	-.18
*view that the chief benefit of a college education is that it increases one's earning power	SIF	agree strongly (4) to disagree strongly (1)	-.17
view that the death penalty should be abolished	SIF	agree strongly (4) to disagree strongly (1)	.17

Item Description	Source	Response Scale	r
importance of helping to promote racial understanding	SIF	essential (4) to not important (1)	.16
was bored in class during the past year	SIF	frequently (3) to not at all (1)	-.16
view that there is too much concern in the courts for the rights of criminals	SIF	agree strongly (4) to disagree strongly (1)	-.16
view that colleges should prohibit racist and sexist speech on campus	SIF	agree strongly (4) to disagree strongly (1)	.16
importance of being able to make more money, in deciding to go to college	SIF	very important (3) to not important (1)	-.16
hours spent in a typical week studying or doing homework during last year in high school	SIF	over 20 hours (8) to none (1)	.16
Conscientiousness Scale			
self-rated drive to achieve	SIF	highest 10% (5) to lowest 10% (1)	.48
self-rated emotional health	SIF	highest 10% (5) to lowest 10% (1)	.39
self-rated competitiveness	SIF	highest 10% (5) to lowest 10% (1)	.33
likelihood of graduation from USMA	CCI	99% sure (1) to only 1% chance (7)	-.32
chances of transfer to another college before graduation	SIF	very good chance (4) to no chance (1)	-.31
chances of being satisfied with one's college	SIF	very good chance (4) to no chance (1)	.31

Item Description	Source	Response Scale	r
failed to complete a homework assignment on time during the past year	SIF	frequently (3) to not at all (1)	-.30
self-rated leadership ability	SIF	highest 10% (5) to lowest 10% (1)	.30
present career intention	CCI	stay in Army until retirement (1) to definitely leave after obligation (5)	-.30
importance of having administrative responsibility for the work of others	SIF	essential (4) to not important (1)	.29
self-rated intellectual self-confidence	SIF	highest 10% (5) to lowest 10% (1)	.29
self-rated cooperativeness	SIF	highest 10% (5) to lowest 10% (1)	.28
came late to class during the past year	SIF	frequently (3) to not at all (1)	-.27
desire to be an Army officer, as a reason for seeking appointment to USMA	CCI	number one priority (1) to irrelevant (5)	-.25
chances of being elected to an academic honor society	SIF	very good chance (4) to no chance (1)	.25
felt depressed during the past year	SIF	frequently (3) to not at all (1)	-.25
chances of dropping out permanently	SIF	very good chance (4) to no chance (1)	-.24
self-rated public speaking ability	SIF	highest 10% (5) to lowest 10% (1)	.24
importance of becoming a community leader	SIF	essential (4) to not important (1)	.24

Item Description	Source	Response Scale	r
self-rated physical health	SIF	highest 10% (5) to lowest 10% (1)	.23

Note. N = 635. SIF = Student Information Form (Dey et al., 1992); CCI = Class Characteristics Inventory (IRAB, 1992). Items marked with an asterisk were not on the SIF or CCI administered to the Class of 1998. All correlations were highly significant ($p < .0001$).

Appendix D

Prediction Equations for NEO-PI Scales

Analog Neuroticism = 99.35 - 8.36(self-rated emotional health) + 8.11(felt depressed during the past year) + 1.57(likelihood of graduation from USMA) + 4.96(was bored in class during the past year) - 2.90(self-rated intellectual self-confidence) + 3.39(importance, in deciding to attend this college, of relatives wanting me to come here) - 2.74(chances of election to a student office) + 1.90(chances of changing career choice) + 2.86(felt overwhelmed during the past year) + 1.80(chances of failing one or more courses) - 1.05(self-rated public speaking ability)

Analog Extraversion = 33.36 + 5.43(self-rated popularity) + 3.82(self-rated social self-confidence) + 2.06(self-rated leadership ability) + 1.80(importance of becoming a community leader) + 1.71(importance of raising a family) + 1.91(chances of election to a student office) + 1.64(self-rated understanding of others) + 0.93(hours spent in a typical week partying during last year in high school) + 1.86(self-rated drive to achieve) + 1.18(self-rated public speaking ability) + 1.37(self-rated physical health)

Analog Openness to Experience = 52.21 + 5.43(importance of writing original works) + 2.28(importance of developing a meaningful philosophy of life) + 3.88(view that the Federal government is not doing enough to control environmental pollution) + 2.57(self-rated artistic ability) + 3.61(view that marijuana should be legalized) - 1.47(view that activities of married women are best confined to the home and family) + 2.97(importance of learning more about things that interest oneself, in deciding to go to college) + 3.29(importance of becoming accomplished in one of the performing arts) + 1.45(view that abortion should be legal) + 1.44(importance of helping to promote racial understanding) + 2.48(importance of gaining a general education and appreciation of ideas, in deciding to go to college) - 1.23(view that it is important to have laws prohibiting homosexual relationships) + 1.40(importance of helping others who are in difficulty)

Analog Agreeableness = 99.25 + 4.36(self-rated cooperativeness) - 3.05(importance of being very well off financially) + 3.24(importance of helping others who are in difficulty) - 2.53(drank wine or liquor during the past year) + 2.38(view that the death penalty should be abolished) - 2.23(view that an individual can do little to bring about changes in our society) + 1.91(view that colleges should prohibit racist or sexist speech on campus) - 2.40(view that there is too much concern in the courts for the rights of criminals) + 3.34(attended a religious service during the past year) - 1.07(hours spent in a typical week partying during last year in high school) - 2.72(was bored in class during the past year)

Analog Conscientiousness = 56.91 + 8.53(self-rated drive to achieve) - 2.33(present career intention) -5.11(failed to complete a homework assignment on time during the past year) + 2.77(self-rated emotional health) + 3.19(importance of having administrative responsibility for the work of others) - 4.46(came late to class during the past year) + 2.47(chances of being elected to an academic honor society) + 3.25(chances of being satisfied with one's college) - 2.69(felt depressed during the past year) + 1.52(self-rated cooperativeness) + 1.08(self-rated public speaking ability)

Note. The above weights represent the mean of two unstandardized parameter estimates, developed from random halves of a 635-cadet sample.