Technical Paper 276

THE ARMY ADAPTATION INVENTORY: DEVELOPMENT AND STANDARDIZATION

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PERSONNEL ACCESSION AND UTILIZATION TECHNICAL AREA

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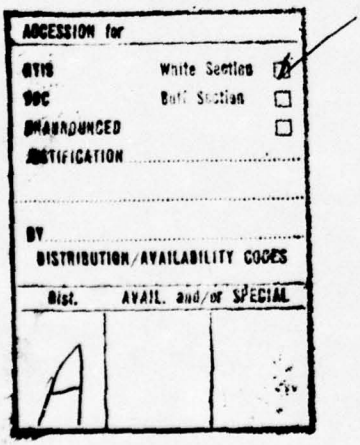

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The Army Adaptation Inventory (AAI) is a 150-item paper and pencil instrument developed to measure military orientation (MO) and motivation and drive (M/D) and is to be used in selecting and placing new U.S. Army officers. Initially attitude and self-perception items were administered to 600 ROTC cadets and 323 Army officers. Item analyses were conducted to develop highly reliable scales measuring MO and M/D. Correlation coefficients were obtained between the item responses and peer and evaluator ratings of cadets at ROTC Advanced Summer Camp. For the operational instrument the

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20. form was revised, administered to another sample of 924 ROTC cadets and analyzed for differences between males and females. Army Standard Score distributions were computed. The AAI is used in the on-campus phase of the ROTC Cadet Evaluation System, replacing the ROTC Inventory (RI).

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FOREWORD

The Personnel Accession and Utilization Technical Area of the Army Research Institute for the Behavioral and Social Sciences (ARI) performs research in recruiting, selection, classification, and development of officer and enlisted personnel to aid in producing an efficient, effective Army with long-term career personnel. Many young officers enter the Army from ROTC programs; ARI has developed the ROTC Evaluation System for use in selection for Regular Army commissions, placement, and developmental counseling of the cadet. This report presents the development and standardization of a part of the Evaluation System, the Army Adaptation Inventory (AAI), which assesses cadets' military career potential and which replaced the older ROTC Inventory (RI) as an operational instrument in May 1976.

The entire task is responsive to the special requirements of the Director of Military Personnel Management, Officer Division, Office of the Deputy Chief of Staff for Personnel, and to RDTE Project 2Q762717A712.

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THE ARMY ADAPTATION INVENTORY: DEVELOPMENT AND STANDARDIZATION

BRIEF

Requirement:

To develop a new paper-and-pencil instrument to measure military orientation and motivation and drive, to replace the outdated ROTC Inventory (RI) in the ROTC Evaluation System.

Procedure:

Attitude and self-perception items, identified in previous research as measuring military career potential, were administered to 600 ROTC cadets and 323 Army officers. Item analyses were conducted to develop highly reliable scales measuring military orientation and motivation and drive. Correlation coefficients were obtained between these and peer and evaluator ratings of ROTC cadets at Advanced Summer Camp. A revised form was administered to another sample of 924 ROTC cadets, analyzed for differences between males and females, and Army Standard Score distributions were computed.

Findings:

Data show the instrument to be a highly reliable measure of military orientation and motivation. No mean score differences between sexes were found.

Utilization of findings:

The Army Adaptation Inventory (AAI) is developed and standardized for use in placing and counseling Advanced ROTC course cadets; it is an operational ROTC instrument, replacing the ROTC Inventory.

THE ARMY ADAPTATION INVENTORY: DEVELOPMENT AND STANDARDIZATION

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THE ARMY ADAPTATION INVENTORY: DEVELOPMENT AND STANDARDIZATION

The Army has a continuing need to select and develop young men and women with the potential to become effective Army officers. Research efforts by the U.S. Army Research Institute for the Behavioral and Social Sciences (ARI) have produced the ROTC Evaluation System to assist the Army in meeting this need. The system uses a ''whole man'' multimethod approach in which ROTC cadets are evaluated at specific points in their college careers.

The Army Adaptation Inventory (AAI) is a self-report inventory which is part of the on-campus phase of the ROTC Evaluation System. The AAI is designed to supply the Evaluation System with measures of motivation and drive (M/D) and military orientation (MO). These two measures will complement other measures obtained on-campus and from the ROTC Advanced Summer Camp in accomplishing the purposes of the total ROTC Evaluation System, i.e. selection for Regular Army commissions, placement, and individualized developmental counseling of the cadet.

The AAI replaces the ROTC Inventory (RI) in the ROTC Evaluation System. The predictive validity of the RI was last assessed in 1958;[1] it needed item content revision to keep pace with the changing U.S. culture. Its replacement is at this time a logical and economical step.

DEVELOPMENT OF THE AAI EXPERIMENTAL FORM

Construction of the Initial Instrument

The compilation of an item pool for the experimental form was guided by the two factors, motivation and drive (M/D) and military orientation (MO). The first of these, motivation and drive resembles what Guilford called ''General Activity'' and Murray referred to as ''N Endurance''. It was hypothesized that if items credible to would-be Army officers were written, then a persistent and critical characteristic of temperament could be tapped.

The second factor, military orientation, was divided into three categories for the purpose of composing items. One category, called professional style, was limited to those items which deal with behaviors which a cadet or officer might observe in himself and which are commonly associated with Army officers. Similarly, the category called military values was established to generate items about beliefs and attitudes

[1] Kotula, L. J., and Haggerty, H. R. Research on the selection of officer candidates and cadets. ARI Technical Research Report 1146. May 1966. (AD 634 314)

which appear to be part of the Army subculture. The third category, career motivation, subsumed items which ask for opinions, intentions, and self-perceptions with regard to being a career officer.

From the initial pool of items, 150 were selected for Part I of the experimental form and 60 for Part II. In Part I, the examinee rated the degree to which each statement applied to himself on a five-point Likert scale ranging from ''completely applicable'' to ''not at all applicable''. In Part II the examinee rated how important certain values were to him on a five-point scale ranging from ''highest importance''to ''no importance''. There were 87 items in the M&D scale and 123 items in the MO scale.

Method

The 210-item experimental Form 1X, PT 4953, was administered to 600 ROTC cadets during their fifth week of Advanced Summmer Camp in 1973 (218 at Fort Lewis and 382 at Fort Riley). Concurrent criterion data were obtained in the form of peer and platoon evaluator nominations on three dimensions. The cadets and platoon evaluators were asked to nominate the ten most and ten least energetic cadets in their platoon. This dimension was called Energy and Drive (E/D). They were also asked to nominate the ten highest and ten lowest cadets in their platoon on ''Compatibility with the Lifestyle of the Army Officer''. This dimension was designated LS (for Lifestyle). A score of +1 was assigned to each ''most'' or ''highest'' nomination and -1 to each ''least'' or ''lowest'' nomination; these were summed , and the resulting net raw scores were converted to Army Standard Scores (mean = 100, standard deviation = 20) with the platoon as the basis for standardization. Each cadet thus received both peer scores and evaluator scores. For the third dimension, as part of the regular ROTC Evaluation System an overall leadership peer rating was obtained in which the cadets were asked to nominate the ten cadets whom they would be most willing to follow into combat and the ten cadets whom they would be least willing to follow into combat. This dimension was labeled L-P for leadership-peer rating. Scores were computed in the same manner as above.

The items of the experimental form of the AAI were scored using an a priori key. Items which from past research and other considerations were expected to be related to the criteria were scaled from 1 to 5 or from 5 to 1 depending on the item content. Frequency counts of the responses to each item were obtained.

The experimental form was also administered to 167 officers in the Infantry Officer Basic Course (IOBC) and 156 officers in the Infantry Officer advanced Course (IOAC) at Fort Benning. These two samples were designated as criterion groups. Membership in these groups represents attainment of progressively higher levels of success in an Army officer career. The ROTC, IOBC, and IOAC samples thus provide three cross-sections with which to compare item means across levels. It was reasoned that a desirable feature of an MO scale item would be a progressive increase of its mean from ROTC to IOBC to IOAC.

Results of Analyses of the Experimental Form

Item means, item standard deviations, and frequency distributions were computed for the three samples (ROTC, IOBC, and IOAC). For the ROTC sample, correlation coefficients were computed between predictor scales, individual items, and the criterion data. Of the 210 items included in the experimental form, 83 had means which increased progressively from ROTC to IOBC to IOAC, whereas 28 had progressively decreasing means.

For the ROTC sample, 181 of the 210 items showed positive correlations with both peer and evaluator criteria on the scales they were expected to predict. The Motivation & Drive scale items were expected to predict the Energy and Drive nominations; the Military Orientation scale items were expected to predict the Compatibility with the Lifestyle of an Army Officer nominations. Positive correlations were those occurring in the same direction as the a priori item scaling with most $\underline{r}$ values occurring between .25 and .10, $\underline{n}$ = 600.

Validity Indications

In Table 1 the correlation coefficients are shown among the two scales from the experimental form and the five criterion variables. The criterion variables E/D-P, LS-P, and L-P result from peer nominations; E/D-E and LS-E result from evaluator nominations.

The Fort Lewis sample yielded generally higher correlation coefficients than the Fort Riley sample. This may have occurred because of the difference in testing conditions at the two locations: a hot afternoon in a non-air conditioned auditorium at Fort Riley vs. a cool morning at Fort Lewis. Platoons at Fort Riley were also much larger than at Fort Lewis--average size of 40 vs. average size 30. This may have reduced the degree of familiarity between cadets and evaluators, thereby reducing the accuracy of the criterion nominations.

Table 1 shows that a high degree of common variance exists in the criteria; for the total sample, the average intercorrelation among the three peer ratings LS-P, E/D-P, and L-P is about .93, and the intercorrelation between instructor evaluations, LS-E and E/P-E, is .85. Thus the cadets' peers and evaluators did not differentiate between E/D and LS. This lack of differentiation may stem from two sources: a) most criterion nominations were obtained at the same time and b) the two dimensions were actually perceived as correlated, particularly as far as observable Advanced Summer Camp behavior was concerned. Peers and evaluators did, however, make their nominations independently, and although they found it difficult to distinguish the Energy and Drive dimension from that of Compatibility with the Life Style of an Army Officer, they were in close agreement regarding who were the better members of their platoons.

Table 1

INTER-SCALE CORRELATION MATRICES

	M/D	MO	E/D-P	LS-P	E/D-E	LS-E
Fort Lewis Advanced ROTC Camp, n = 218						
MO	.71					
E/D-P	.29	.34				
LS-P	.27	.40	.93			
E/D-E	.23	.32	.70	.67		
LS-E	.25	.36	.72	.71	.93	
L-P	.27	.32	.94	.93	.68	.71
Fort Riley Advanced Camp, n = 382						
MO	.66					
E/D-P	.18	.21				
LS-P	.17	.22	.94			
E/D-E	.20	.25	.70	.67		
LS-E	.17	.20	.68	.67	.81	
L-P	.15	.18	.92	.92	.62	.61
Total ROTC Sample, n = 600						
MO	.68					
E/D-P	.22	.26				
LS-P	.21	.29	.94			
E/D-E	.21	.28	.70	.67		
LS-E	.20	.26	.69	.68	.85	
L-P	.19	.23	.93	.93	.64	.65

Note. *M/D:* *Motivation and Drive*
MO: *Military Orientation*
E/D-P: *Energy and Drive - Peer rating*
LS-P: *Lifestyle of Army Officer - Peer rating*
E/D-E: *Energy and Drive - Platoon Officer Rating*
LS-E: *Lifestyle of Army Officer - Platoon Officer Rating*
L-P: *Leadership - Peer Rating*

The average validity coefficient for the M/D scale with the three peer ratings is .21 and with the two evaluator ratings is .20. The MO scale correlates, on the average, about .26 with peer ratings and .27 with evaluator ratings.

DEVELOPMENT OF THE OPERATIONAL FORM

In order to produce an operational instrument, the items of the experimental AAI were subjected to a series of selective screens.

An item was eliminated if it had a negative correlation with either peer or evaluator nominations on the dimension for which it was intended. On this basis 29 items were eliminated. No attempt was made to reverse item scoring in order to salvage any of these items. In most cases the negative correlations were very small (less than .10), and it seemed that changing item scoring would produce illogical relationships.

An additional eight items whose means decreased progressively from ROTC to IOBC to IOAC were eliminated solely on this basis. Twelve heavily skewed items were eliminated. An item in Part I of the experimental form was designated as ''heavily skewed'' if 90% of the responses to it were in the same direction on the Likert scale; in Part II, a 50% or more endorsement of the most extreme alternative was grounds for rejection of the item.

In anticipation of administering the AAI to women in ROTC, the items were reviewed for sex-biased content, and two items were eliminated.

After the item screening, 159 items remained of the 210 items of the experimental form. An additional nine items, mostly of low criterion correlation, were eliminated.

Item and Scale Analysis of the Operational Form

The 150-item operational form was administered during the period November 1974 through January 1975 to a sample of more than 900 ROTC cadets from 22 different institutions (Table 2). It was administered during the regular classes as an Army research project. The respondents were college juniors (MS 3), both male and female, and seniors (MS 4), who were all male (Table 3). The MS 3 females are the first women to be admitted to ROTC on a large scale and may be dissimilar to later classes of women in characteristics measured by the AAI; sufficient information is not available at this time.

Scale intercorrelations, item consistency reliability coefficients, and item means, standard deviations, and item-scale correlations were computed. Table 4 shows the scale intercorrelation with Cronbach's alpha, an internal consistency reliability coefficient, in the diagonal.

Table 2

ROTC INSTITUTIONS IN STANDARDIZATION SAMPLE

Institution	n	Institution	n
Alabama A & M Univ.	47	Rider College	21
Univ. of Calif. at Davis	70	Hofstra Univ.	13
Florida A&M Univ.	55	Appalachian State Univ.	30
Univ. of Hawaii	32	North Dakota State Univ. A & AS	32
Univ. of Idaho	42	Univ. of Dayton	22
DePaul Univ. Chicago	13	South Carolina State Univ.	119
Purdue Univ.	22	East Tenn. State college	40
Western Michigan Univ.	15	Univ. of Texas at El Paso	30
Jackson State College, Miss.	52	Univ. of Wisc. at Madison	31
NE Missouri College	27	New Mexico Military Institute	185
Montana State Univ.	20	Seattle Univ.	10

Table 3

OPERATIONAL FORM STANDARDIZATION, SAMPLE AND POPULATION

Category	Sample n	Population n
MS 3 Males	504	5415
MS 3 Females	47	295
MS 4 Males	366	4500
Total	917	10,210

*$p \leq .05$

**$p \leq .01$

Table 4

SCALE INTERCORRELATION, ALPHA RELIABILITIES IN THE DIAGONAL
($n = 924$)

Scale	MO	M/D
MO	.94	
M/D	.71	.94

In Table 4 the scale intercorrelation has not been corrected for unreliability within the two sub-scales. The corrected scale intercorrelation of .76 represents the theoretical interrelationship between the constructs as measured had the scales been perfectly reliable. The scale intercorrelation of .71 uncorrected compares with an uncorrected .68 scale intercorrelation in the earlier experimental form.

Item statistics, based on the total sample and on the MS 3 males and females separately, are reported in Appendixes A and B. Mean item responses are high. The MO scale mean item response is 3.86, and the M/D scale mean item response is 3.93; these are on Likert five-response-category scales and are based on the total sample.

Standardization of the Operational Form

The instrument was standardized on the senior year male cadet sample after an analysis of scale scores categorized by sex and college class level (Table 5). Table 6 shows the results of *t*-tests.

Table 5

SCALE MEANS AND STANDARD DEVIATIONS CATEGORIZED BY SEX AND YEAR IN ROTC

		MO		M&D		Total	
Category	n	Mean	SD	Mean	SD	Mean	SD
MALE, MS 4	366	325.16	31.66	265.96	26.93	591.11	54.24
MALE, MS 3	504	318.88	36.86	262.24	29.02	581.11	61.19
FEMALE MS 3	47	308.98	29.52	258.79	22.92	567.77	46.30
TOTAL	917	320.85	34.62	263.43	27.97	584.28	57.99

Table 6

COMPARISON AMONG SCALE MEANS

Comparison	df	Scale	t	Type of Test
MS 3, Male vs Female	549	Total	1.83	Two-tailed
MS 3 vs MS 4, Males	868	MO	2.69**	Two-tailed
MS 3 vs MS 4, Males	868	M&D	1.95	Two-tailed
MS 3 vs MS 4, Males	868	Total	2.54*	Two-tailed

*$p \leq .05$

**$p \leq .01$

Table 7 shows the MS 3 group scale means as percentiles of the MS 3 and MS 4 male group means. The female MS 3 Total scale mean is .21 standard deviations below the male MS 3 mean, the 39th percentile on the male distribution; this difference is not statistically significant. The male MO scale increases significantly from MS 3 to MS 4; this is expected, as this scale was built with the premise that military orientation increases as length of association with the military increases.

Table 7

SCALE MEANS OF MS 3 GROUPS EXPRESSED
AS PERCENTILES OF MS 3 AND MS 4 MALE GROUP MEANS

		MS 3 Males			MS 4 Males		
		MO	M/D	TOTAL	MO	M/D	TOTAL
MS 3:	Male	50	50	50	42	44	44
	Female	39	45	41	31	40	37

The distribution of scores, for the total sample n = 924, on each scale and the total AAI are sufficiently normal; however there is a curtailing of scores in the upper parts of the total possible score ranges. For example, on the Total AAI, the possible range of scores is 130 to 750, the actual range is 283 to 740, and $\pm$ 3 SD. are 410 and 750. This results in a mild ceiling effect.

Two separate standardization samples were chosen. These are the MS 3 male and female combined group, and the MS 4 male group. Only the Total AAI score is standardized, as the high intercorrelation the MO and M/D scales exhibit makes their separate use less valuable. The Army Standard Score is used. Tables 8 and 9 show the raw score and Army Standard Score conversions for the two samples.

DISCUSSION AND SUMMARY

The Army Adaptation Inventory (AAI) is a 150-item paper and pencil instrument developed to measure an Army officer applicant's military orientation (MO) and motivation and drive (M/D). The instrument exhibits high internal consistency reliability and high scale intercorrelation when applied to ROTC junior and senior year cadets. No significant mean score differences between sexes were found; however the female sample is small and may not optimally represent the female cadet population. There are mean score differences between junior and senior cadets, especially on the MO scale which was designed to reflect increasing knowledge and positive affect towards the military.

Additional analyses are in order. The instrument should be administered to samples of junior and middle grade officers to determine whether scores on the MO scale increase as familiarity, identification, and success with the Army increase. This would help establish the construct validity of the scale. These administrations could best be carried out in Officer Basic and Advanced Courses. A factor analysis would provide further information on the implementation success of the rational construct method by which the instrument was developed. Racial, ethnic, and regional differences should be studied systematically. Scores on the instrument should be related to other evaluations in the ROTC Evaluation System, both on and off campus. Also the AAI scores should be longitudinally related to Officer Basic Course and First Duty Tour performance indices.

Table 8

CONVERSION TABLE: RAW SCORE TO ARMY STANDARD SCORE; AAI TOTAL SCALE, THIRD YEAR ROTC MALES AND FEMALES

Raw Score	Standard Score	Raw Score	Standard Score	Raw Score	Standard Score	Raw Score	Standard Score	Raw Score	Standard Score	Raw Score	Standard Score	Raw Score	Standard Score	Raw Score	Standard Score	Raw Score	Standard Score
750	157	710	143	670	130	630	117	590	103	550	90	510	77	470	63	430	50
749	156	709	143	669	130	629	116	589	103	549	90	509	76	469	63	429	50
748	156	708	143	668	129	628	116	588	103	548	89	508	76	468	63	428	49
747	156	707	142	667	129	627	116	587	102	547	89	507	76	467	62	427	49
746	155	706	142	666	129	626	115	586	102	546	89	506	75	466	62	426	49
745	155	705	142	665	128	625	115	585	102	545	88	505	75	465	62	425	48
744	155	704	141	664	128	624	115	584	101	544	88	504	75	464	61	424	48
743	154	703	141	663	128	623	114	583	101	543	88	503	74	463	61	423	48
742	154	702	141	662	127	622	114	582	101	542	87	502	74	462	61	422	47
741	154	701	140	661	127	621	114	581	100	541	87	501	74	461	60	421	47
740	153	700	140	660	127	620	113	580	100	540	87	500	73	460	60	420	47
739	153	699	140	659	126	619	113	579	100	539	86	499	73	459	60	419	46
738	153	698	139	658	126	618	113	578	99	538	86	498	73	458	59	418	46
737	152	697	139	657	126	617	112	577	99	537	86	497	72	457	59	417	46
736	152	696	139	656	125	616	112	576	99	536	85	496	72	456	59	416	45
735	152	695	138	655	125	615	112	575	98	535	85	495	72	455	58	415	45
734	151	694	138	654	125	614	111	574	98	534	85	494	71	454	58	414	45
733	151	693	138	653	124	613	111	573	98	533	84	493	71	453	58	413	44
732	151	692	137	652	124	612	111	572	97	532	84	492	71	452	57	412	44
731	150	691	137	651	124	611	110	571	97	531	84	491	70	451	57	411	44
730	150	690	137	650	123	610	110	570	97	530	83	490	70	450	57	410	43
729	150	689	136	649	123	609	110	569	96	529	83	489	70	449	56	409	43
728	149	688	136	648	123	608	109	568	96	528	83	488	69	448	56	408	43
727	149	687	136	647	122	607	109	567	96	527	82	487	69	447	56	407	42
726	149	686	135	646	122	606	109	566	95	526	82	486	69	446	55	406	42
725	148	685	135	645	122	605	108	565	95	525	82	485	68	445	55	405	42
724	148	684	135	644	121	604	108	564	95	524	81	484	68	444	55	404	41
723	148	683	134	643	121	603	108	563	94	523	81	483	68	443	54	403	41
722	147	682	134	642	121	602	107	562	94	522	81	482	67	442	54	402	41
721	147	681	134	641	120	601	107	561	94	521	80	481	67	441	54	401	40
720	147	680	133	640	120	600	107	560	93	520	80	480	67	440	53	401 or	
719	146	679	133	639	120	599	106	559	93	519	80	479	66	439	53	less 40	
718	146	678	133	638	119	598	106	558	93	518	79	478	66	438	53		
717	146	677	132	637	119	597	106	557	92	517	79	477	66	437	52		
716	145	676	132	636	119	596	105	556	92	516	79	476	65	436	52		
715	145	675	132	635	118	595	105	555	92	515	78	475	65	435	52	Mean = 579.84	
714	145	674	131	634	118	594	105	554	91	514	78	474	65	434	51	SD = 59.93	
713	144	673	131	633	118	593	104	553	91	513	78	473	64	433	51		
712	144	672	131	632	117	592	104	552	91	512	77	472	64	432	51		
711	144	671	130	631	117	591	104	551	90	511	77	471	64	431	50		

Table 9

CONVERSION TABLE: RAW SCORE TO ARMY STANDARD SCORE; AAI TOTAL SCALE, FOURTH YEAR ROTC MALES

Raw Score	Standard Score	Raw Score	Standard Score	Raw Score	Standard Score	Raw Score	Standard Score	Raw Score	Standard Score
750	159	717	146	684	134	651	122	618	110
749	158	716	146	683	134	650	122	617	110
748	158	715	146	682	134	649	121	616	109
747	157	714	145	681	133	648	121	615	109
746	157	713	145	680	133	647	121	614	108
745	157	712	145	679	132	646	120	613	108
744	156	711	144	678	132	645	120	612	108
743	156	710	144	677	132	644	120	611	107
742	156	709	143	676	131	643	119	610	107
741	155	708	143	675	131	642	119	609	107
740	155	707	143	674	131	641	118	608	106
739	155	706	142	673	130	640	118	607	106
738	154	705	142	672	130	639	118	606	105
737	154	704	142	671	129	638	117	605	105
736	153	703	141	670	129	637	117	604	105
735	153	702	141	669	129	636	117	603	104
734	153	701	141	668	128	635	116	602	104
733	152	700	140	667	128	634	116	601	104
732	152	699	140	666	128	633	115	600	103
731	152	698	139	665	127	632	115	599	103
730	151	697	139	664	127	631	115	598	103
729	151	696	139	663	127	630	114	597	102
728	150	695	138	662	126	629	114	596	102
727	150	694	138	661	126	628	114	595	101
726	150	693	138	660	125	627	113	594	101
725	149	692	137	659	125	626	113	593	101
724	149	691	137	658	125	625	112	592	100
723	149	690	136	657	124	624	112	591	100
722	148	689	136	656	124	623	112	590	100
721	148	688	136	655	124	622	111	589	99
720	148	687	135	654	123	621	111	588	99
719	147	686	135	653	123	620	111	587	98
718	147	685	135	652	122	619	110	586	98
585	98	552	86	519	73	486	61	453	49
584	97	551	85	518	73	485	61	452	49
583	97	550	85	517	73	484	61	451	48
582	97	549	84	516	72	483	60	450	48
581	96	548	84	515	72	482	60	449	48
580	96	547	84	514	72	481	59	448	47
579	96	546	83	513	71	480	59	447	47
578	95	545	83	512	71	479	59	446	46
577	95	544	83	511	70	478	58	445	46
576	94	543	82	510	70	477	58	444	46
575	94	542	82	509	70	476	58	443	45
574	94	541	82	508	69	475	57	442	45
573	93	540	81	507	69	474	57	441	45
572	93	539	81	506	69	473	56	440	44
571	93	538	80	505	68	472	56	439	44
570	92	537	80	504	68	471	56	438	44
569	92	536	80	503	68	470	55	437	43
568	91	535	79	502	67	469	55	436	43
567	91	534	79	501	67	468	55	435	42
566	91	533	79	500	66	467	54	434	42
565	90	532	78	499	66	466	54	433	42
564	90	531	78	498	66	465	53	432	41
563	90	530	77	497	65	464	53	431	41
562	89	529	77	496	65	463	53	430	41
561	89	528	77	495	65	462	52	429	40
560	89	527	76	494	64	461	52	428 or less	40
559	88	526	76	493	64	460	52		
558	88	525	76	492	63	459	51		
557	87	524	75	491	63	458	51		
556	87	523	75	490	63	457	51		
555	87	522	75	489	62	456	50	Mean = 591.11	
554	86	521	74	488	62	455	50	SD = 54.24	
553	86	520	74	487	62	454	49		

APPENDIXES

APPENDIX A

ITEM STATISTICS, MO SCALE ITEMS, OPERATIONAL FORM

	Total Sample (MS 3 + 4) n = 929				MS 3 Males n = 504		MS 3 Females n = 47	
Item	Mean	SD	r MO	r M/D	Mean	SD	Mean	SD
3	4.04	.83	.58	.42	3.98	.86	3.60	.90
4	4.07	.91	.35	.38	4.02	.95	3.77	.98
5	4.63	.72	.46	.27	4.61	.73	4.77	.60
6	3.72	1.25	.58	.32	3.72	1.27	3.04	1.18
7	3.23	1.33	.45	.26	3.18	1.35	3.49	1.30
13	4.20	1.02	.50	.32	4.14	1.05	4.00	1.00
14	4.23	1.04	.46	.37	4.18	1.08	4.30	1.06
20	4.42	.85	.64	.38	4.41	.88	4.40	.85
23	3.69	1.12	.59	.35	3.67	1.14	3.81	1.08
24	3.81	1.02	.48	.33	3.72	1.04	3.13	1.03
26	4.25	1.16	.27	.18	4.22	1.17	4.21	1.37
28	4.13	1.03	.33	.37	4.15	1.03	3.96	1.04
30	4.05	1.15	.49	.31	4.04	1.18	3.62	1.13
31	3.75	1.13	.53	.36	3.72	1.15	3.79	1.12
34	4.51	.80	.40	.37	4.50	.82	4.04	.91
35	4.07	.92	.62	.49	4.07	.96	3.81	.92
37	4.07	.93	.62	.42	4.00	.98	3.77	.84
38	3.97	.89	.53	.48	3.93	.91	3.86	.79
42	4.11	.68	.42	.48	4.08	.69	4.09	.62
43	3.58	1.18	.53	.37	3.55	1.22	3.62	1.01
44	4.61	.65	.52	.34	4.61	.69	4.47	.75
45	4.10	.89	.66	.50	4.06	.94	3.72	.97
49	3.19	1.11	.11	.10	3.16	1.14	3.49	1.08
52	2.88	1.55	.34	.23	2.83	1.57	2.09	1.40
53	3.28	1.50	.42	.21	3.20	1.51	2.96	1.46
55	3.66	1.18	.57	.36	3.57	1.23	3.09	1.19
57	4.09	.92	.62	.41	4.07	.98	4.19	.85
58	3.79	1.11	.37	.21	3.76	1.14	3.98	1.13
59	4.43	.77	.60	.38	4.42	.80	4.45	.80
63	3.72	.91	.32	.44	3.71	.94	3.45	.88
66	3.78	1.12	.42	.41	3.75	1.11	2.66	1.22
67	3.96	1.02	.63	.41	3.90	1.06	3.85	.91
69	3.69	.88	.42	.45	3.64	.88	3.62	.87
70	4.05	.96	.35	.43	4.02	.99	4.00	.88
71	3.51	1.20	.37	.34	3.46	1.23	3.04	1.25
72	4.09	1.06	.38	.41	4.04	1.10	3.62	1.11
73	4.00	1.03	.43	.33	4.00	1.02	4.09	1.00
74	4.02	1.12	.47	.34	4.00	1.17	4.13	1.08
77	4.04	1.14	.42	.17	4.06	1.17	4.19	.92
79	4.29	1.07	.32	.23	4.28	1.10	4.53	.97

APPENDIX A (Cont'd)

	Total Sample (MS 3 + 4) n = 929				MS 3 Males n = 504		MS 3 Females n = 47	
Item	Mean	SD	r MO	r M/D	Mean	SD	Mean	SD
89	3.26	1.24	.27	.05	3.22	1.28	3.38	1.23
90	4.40	.91	.38	.35	4.39	.94	4.13	1.06
102	4.18	.90	.58	.46	4.13	.95	4.26	.79
103	4.09	1.16	.37	.26	4.05	1.22	4.15	1.08
105	4.34	1.10	.55	.28	4.39	1.06	4.09	1.16
112	4.17	1.01	.64	.33	4.16	1.02	3.77	1.27
113	2.89	1.39	.16	.18	2.95	1.42	3.47	1.37
114	3.34	1.34	.54	.25	3.26	1.38	3.72	1.17
116	3.61	.94	.22	.11	3.60	.95	3.79	.81
117	3.85	.92	.51	.42	3.82	.98	3.40	.95
118	4.51	.67	.52	.40	4.44	.71	4.38	.71
119	4.31	.70	.41	.50	4.30	.72	4.32	.69
120	3.59	1.16	.38	.35	3.54	1.19	3.50	1.15
121	3.81	.77	.30	.28	3.80	.79	3.43	.85
122	3.99	.84	.48	.38	3.98	.86	3.77	.84
123	4.48	.82	.36	.21	4.46	.82	4.43	.83
124	3.95	.81	.36	.32	3.95	.84	3.81	.85
125	4.17	.95	.55	.39	4.17	.98	3.79	1.10
126	4.31	.81	.52	.35	4.30	.84	4.30	.75
127	4.29	.81	.45	.31	4.22	.86	4.30	.83
128	4.35	.77	.48	.35	4.34	.78	4.23	.89
129	4.31	.80	.57	.36	4.27	.85	4.51	.72
130	4.39	.78	.34	.26	4.43	.78	4.26	.92
131	3.28	1.21	.32	.13	3.21	1.23	3.02	1.15
132	4.01	.89	.31	.27	4.01	.91	3.87	.82
133	2.93	1.02	.00	.07	2.96	1.06	2.38	.90
134	3.23	1.06	.33	.29	3.27	1.08	3.09	.93
135	3.25	1.23	.43	.21	3.24	1.23	2.94	1.13
136	3.21	.99	.45	.19	3.17	1.01	3.11	1.01
137	3.61	.96	.31	.18	3.58	.98	3.79	.83
138	3.47	1.05	.47	.26	3.45	1.04	2.70	1.04
139	3.47	1.02	.54	.28	3.44	1.01	3.21	1.08
140	3.79	.96	.50	.42	3.75	1.01	3.43	1.10
141	2.64	1.10	-.04	.06	2.66	1.12	2.83	1.13
142	4.27	.79	.46	.26	4.24	.82	4.13	.74
143	4.43	.71	.40	.34	4.46	.72	4.11	.96
144	3.43	.92	.52	.28	3.43	.98	3.30	.83
145	4.42	.69	.45	.30	4.42	.73	4.36	.64
146	3.24	1.03	.52	.25	3.21	1.07	3.30	.88
147	2.33	1.18	-.03	.07	2.35	1.22	2.21	1.12
148	3.68	.99	.17	.09	3.72	1.03	3.34	.84
149	4.09	.85	.33	.22	4.10	.89	4.19	.71
150	4.16	.89	.36	.29	4.15	.95	4.15	.96

Note. *r MO refers to correlation of item with MO scale*
r M/D refers to correlation of item with M/D scale

APPENDIX B

ITEM STATISTICS, M/D SCALE ITEMS, OPERATIONAL FORM

	Total Sample (MS 3 + 4) n = 929				MS 3 Males n = 504		MS 3 Females n = 47	
Item	Mean	SD	r M/D	r MO	Mean	SD	Mean	SD
1	4.33	.58	.39	.31	4.31	.58	4.23	.48
2	4.16	.87	.38	.27	4.16	.90	4.28	.80
8	4.01	.94	.46	.31	3.97	.98	3.98	.85
9	3.83	.83	.44	.31	3.81	.84	3.91	.75
10	4.40	.65	.46	.36	4.43	.67	4.47	.72
11	4.36	.66	.52	.44	4.37	.69	4.19	.74
12	3.57	1.14	.37	.22	3.55	1.15	3.55	1.23
15	4.19	1.12	.34	.18	4.16	1.16	4.36	.92
16	3.72	1.07	.43	.25	3.65	1.11	3.51	1.10
17	4.05	.98	.47	.26	4.02	1.01	4.09	.97
18	3.70	1.09	.47	.26	3.67	1.11	3.40	1.17
19	3.76	.85	.43	.28	3.76	.85	3.45	.83
21	4.43	.67	.51	.42	4.41	.71	4.45	.58
22	4.00	.77	.51	.41	3.97	.81	3.89	.80
25	2.85	1.15	.24	.09	2.87	1.18	2.79	1.25
27	3.98	.78	.39	.30	3.96	.79	3.91	.80
29	3.67	.95	.47	.27	3.68	.95	3.62	.92
32	4.46	.67	.46	.30	4.46	.68	4.45	.62
33	4.18	.87	.37	.40	4.17	.88	3.68	1.09
36	4.29	.74	.55	.41	4.25	.78	4.32	.69
39	4.37	.68	.52	.41	4.36	.72	4.23	.73
40	4.25	.76	.58	.52	4.26	.78	4.09	.83
41	3.85	1.23	.36	.30	3.70	1.28	4.19	.99
46	3.32	1.22	.14	.09	3.29	1.23	3.06	1.26
47	4.08	.73	.53	.41	4.05	.75	4.09	.68
48	4.27	.70	.66	.54	4.24	.77	4.26	.71
50	4.00	.97	.55	.35	4.00	.98	3.98	.90
51	3.90	1.00	.45	.36	3.87	1.02	4.02	.94
54	4.13	.88	.54	.50	4.07	.94	4.21	.81
56	3.77	1.15	.47	.37	3.76	1.17	3.68	1.24
60	3.60	1.16	.28	.16	3.55	1.19	3.38	1.19
61	3.29	1.20	.35	.25	3.26	1.22	3.02	1.21
62	3.72	.87	.58	.44	3.64	.92	3.77	.63
64	4.16	.88	.43	.31	4.14	.88	3.87	1.01
65	3.85	.92	.54	.45	3.85	.94	3.57	.95
68	3.28	1.13	.36	.25	3.27	1.13	3.43	1.10
75	4.20	.83	.50	.31	4.22	.85	3.98	.82
76	3.32	1.31	.47	.38	3.29	1.34	3.06	1.36
78	4.22	.69	.60	.45	4.20	.73	4.13	.61

APPENDIX B (Cont'd)

	Total Sample (MS 3 + 4) n = 929				MS 3 Males n = 504		MS 3 Females n = 47	
Item	Mean	SD	r M/D	r MO	Mean	SD	Mean	SD
80	4.27	.88	.45	.36	4.26	.87	4.15	1.00
81	4.24	.98	.53	.37	4.20	1.03	4.11	.98
82	4.00	.83	.48	.33	3.95	.86	3.83	.73
83	3.50	1.00	.55	.44	3.46	1.02	3.40	.97
84	4.13	.69	.65	.47	4.14	.73	3.91	.72
85	4.29	.75	.50	.37	4.28	.79	4.13	.74
86	4.21	.86	.38	.30	4.17	.90	4.38	.71
87	2.90	1.27	.17	.10	2.90	1.29	2.68	1.22
88	3.70	1.04	.46	.32	3.66	1.07	3.45	1.06
90	3.21	1.14	.18	.02	3.24	1.16	2.94	1.07
91	3.63	.88	.46	.37	3.57	.90	3.72	.85
92	4.36	.73	.57	.49	4.38	.72	4.19	.92
93	4.17	.74	.57	.41	4.17	.76	3.81	.68
95	4.13	.77	.62	.46	4.15	.81	4.06	.73
96	4.06	.92	.51	.35	4.07	.98	4.13	.85
97	4.29	.90	.58	.39	4.29	.92	4.26	.77
98	4.07	.78	.51	.42	4.07	.79	4.00	.66
99	3.61	1.07	.45	.42	3.62	1.10	3.06	1.24
100	3.93	.86	.55	.36	3.96	.87	3.81	.92
101	4.56	.60	.48	.39	4.57	.62	4.50	.50
104	4.06	.78	.60	.44	4.06	.82	4.06	.67
106	3.99	1.20	.47	.37	4.01	1.18	3.81	1.21
107	3.97	1.15	.44	.26	3.89	1.18	4.30	.91
108	3.99	.82	.46	.28	3.99	.84	3.94	.70
109	3.88	.95	.50	.35	3.87	.98	4.17	.73
110	4.07	.95	.42	.35	4.04	.99	4.19	.85
111	3.42	1.20	.42	.27	3.40	1.24	3.43	1.25
115	3.59	1.22	.45	.24	3.54	1.26	3.83	1.26

Note. *r MO refers to correlation of item with MO scale*
r M/D refers to correlation of item with M/D scale

DISTRIBUTION

ARI Distribution List

4 OASD (M&RA)
2 HQDA (DAMI-CSZ)
1 HQDA (DAPE-PBR
1 HQDA (DAMA-AR)
1 HQDA (DAPE-HRE-PO)
1 HQDA (SGRD-ID)
1 HQDA (DAMI-DOT-C)
1 HQDA (DAPC-PMZ-A)
1 HQDA (DACH-PPZ-A)
1 HQDA (DAPE-HRE)
1 HQDA (DAPE-MPO-C)
1 HQDA (DAPE-DW)
1 HQDA (DAPE-HRL)
1 HQDA (DAPE-CPS)
1 HQDA (DAFD-MFA)
1 HQDA (DARD-ARS-P)
1 HQDA (DAPC-PAS-A)
1 HQDA (DUSA-OR)
1 HQDA (DAMO-RQR)
1 HQDA (DASG)
1 HQDA (DA10-PI)
1 Chief, Consult Div (DA-OTSG), Adelphi, MD
1 Mil Asst, Hum Res, ODDR&E, OAD (E&LS)
1 HQ USARAL, APO Seattle, ATTN: ARAGP-R
1 HQ First Army, ATTN: AFKA-OI-TI
2 HQ Fifth Army, Ft Sam Houston
1 Dir, Army Stf Studies Ofc, ATTN: OAVCSA (DSP)
1 Ofc Chief of Stf, Studies Ofc
1 DCSPER, ATTN: CPS/OCP
1 The Army Lib, Pentagon, ATTN: RSB Chief
1 The Army Lib, Pentagon, ATTN: ANRAL
1 Ofc, Asst Sect of the Army (R&D)
1 Tech Support Ofc, OJCS
1 USASA, Arlington, ATTN: IARD-T
1 USA Rsch Ofc, Durham, ATTN: Life Sciences Dir
2 USARIEM, Natick, ATTN: SGRD-UE-CA
1 USATTC, Ft Clayton, ATTN: STETC-MO-A
1 USAIMA, Ft Bragg, ATTN: ATSU-CTD-OM
1 USAIMA, Ft Bragg, ATTN: Marquat Lib
1 US WAC Ctr & Sch, Ft McClellan, ATTN: Lib
1 US WAC Ctr & Sch, Ft McClellan, ATTN: Tng Dir
1 USA Quartermaster Sch, Ft Lee, ATTN: ATSM-TE
1 Intelligence Material Dev Ofc, EWL, Ft Holabird
1 USA SE Signal Sch, Ft Gordon, ATTN: ATSO-EA
1 USA Chaplain Ctr & Sch, Ft Hamilton, ATTN: ATSC-TE-RD
1 USATSCH, Ft Eustis, ATTN: Educ Advisor
1 USA War College, Carlisle Barracks, ATTN: Lib
2 WRAIR, Neuropsychiatry Div
1 DLI, SDA, Monterey
1 USA Concept Anal Agcy, Bethesda, ATTN: MOCA-WGC
1 USA Concept Anal Agcy, Bethesda, ATTN: MOCA-MR
1 USA Concept Anal Agcy, Bethesda, ATTN: MOCA-JF
1 USA Artic Test Ctr, APO Seattle, ATTN: STEAC-MO-ASL
1 USA Artic Test Ctr, APO Seattle, ATTN: AMSTE-PL-TS
1 USA Armament Cmd, Redstone Arsenal, ATTN: ATSK-TEM
1 USA Armament Cmd, Rock Island, ATTN: AMSAR-TDC
1 FAA-NAFEC, Atlantic City, ATTN: Library
1 FAA-NAFEC, Atlantic City, ATTN: Hum Engr Br
1 FAA Aeronautical Ctr, Oklahoma City, ATTN: AAC-44D
2 USA Fld Arty Sch, Ft Sill, ATTN: Library
1 USA Armor Sch, Ft Knox, ATTN: Library
1 USA Armor Sch, Ft Knox, ATTN: ATSB-DI-E
1 USA Armor Sch, Ft Knox, ATTN: ATSB-DT-TP
1 USA Armor Sch, Ft Knox, ATTN: ATSB-CD-AD
2 HQUSACDEC, Ft Ord, ATTN: Library
1 HQUSACDEC, Ft Ord, ATTN: ATEC-EX-E-Hum Factors
2 USAEEC, Ft Benjamin Harrison, ATTN: Library
1 USAPACDC, Ft Benjamin Harrison, ATTN: ATCP-HR
1 USA Comm-Elect Sch, Ft Monmouth, ATTN: ATSN-EA
1 USAEC, Ft Monmouth, ATTN: AMSEL-CT-HDP
1 USAEC, Ft Monmouth, ATTN: AMSEL-PA-P
1 USAEC, Ft Monmouth, ATTN: AMSEL-SI-CB
1 USAEC, Ft Monmouth, ATTN: C, Facl Dev Br
1 USA Materials Sys Anal Agcy, Aberdeen, ATTN: AMXSY-P
1 Edgewood Arsenal, Aberdeen, ATTN: SAREA-BL-H
1 USA Ord Ctr & Sch, Aberdeen, ATTN: ATSL-TEM-C
2 USA Hum Engr Lab, Aberdeen, ATTN: Library/Dir
1 USA Combat Arms Tng Bd, Ft Benning, ATTN: Ad Supervisor
1 USA Infantry Hum Rsch Unit, Ft Benning, ATTN: Chief
1 USA Infantry Bd, Ft Benning, ATTN: STEBC-TE-T
1 USASMA, Ft Bliss, ATTN: ATSS-LRC
1 USA Air Def Sch, Ft Bliss, ATTN: ATSA-CTD-ME
1 USA Air Def Sch, Ft Bliss, ATTN: Tech Lib
1 USA Air Def Bd, Ft Bliss, ATTN: FILES
1 USA Air Def Bd, Ft Bliss, ATTN: STEBD-PO
1 USA Cmd & General Stf College, Ft Leavenworth, ATTN: Lib
1 USA Cmd & General Stf College, Ft Leavenworth, ATTN: ATSW-SE-L
1 USA Cmd & General Stf College, Ft Leavenworth, ATTN: Ed Advisor
1 USA Combined Arms Cmbt Dev Act, Ft Leavenworth, ATTN: DepCdr
1 USA Combined Arms Cmbt Dev Act, Ft Leavenworth, ATTN: CCS
1 USA Combined Arms Cmbt Dev Act, Ft Leavenworth, ATTN: ATCASA
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1 USA Combined Arms Cmbt Dev Act, Ft Leavenworth, ATTN: ATCACC-CI
1 USAECOM, Night Vision Lab, Ft Belvoir, ATTN: AMSEL-NV-SD
3 USA Computer Sys Cmd, Ft Belvoir, ATTN: Tech Library
1 USAMERDC, Ft Belvoir, ATTN: STSFB-DQ
1 USA Eng Sch, Ft Belvoir, ATTN: Library
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