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ABSTRACT

Military and civil service personnel having similar job types and from comparable accounting and finance career ladders were compared on several attributes. The data reveal certain distinct differences between the two populations with the magnitude of the differences being highly variable as functions of specific job types considered. Generally, civilians perform a larger number of tasks, the tasks and overall jobs they perform are more difficult, they find their jobs more interesting, and feel that their jobs make greater use of their talents and training. In view of these differences in attributes and the potentially higher cost of military personnel, conversion of certain military positions to civilian positions to meet operational needs appears feasible. Unique attributes of civilian and military personnel also point out the necessity for further research into their causes and consequent effects in such areas as promotion, skill upgrading, career progression, worker attitudes, and retention. The need for investigation appears more critical for the airmen population because of their expressed job dissatisfaction, particularly those performing disbursement accounting functions where simple highly repetitive tasks tend to predominate. (Author)

AFHRL-TR-74-45

COMPARATIVE JOB ATTRIBUTES OF AIRMEN AND CIVIL SERVICE PERSONNEL HAVING SIMILAR JOB TYPES

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Military and civil service personnel having similar job types and from comparable accounting and finance career ladders were compared on several attributes. The data reveal certain distinct differences between the two populations with the magnitude of the differences being highly variable as functions of specific job types considered. Overall, civilians perform a larger number of tasks, the tasks and overall jobs they perform are more difficult, they find their jobs more interesting, and feel that their jobs make greater use of their talents and training. In view of these differences in attributes and the potentially higher cost of military personnel, conversion of certain military positions to civilian positions to meet operational needs appears feasible. Unique attributes of civilian and military personnel point out the necessity for further research into their causes and consequent effects in such areas as

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TABLE OF CONTENTS

LIST OF TABLES

COMPARATIVE JOB ATTRIBUTES OF AIRMEN AND CIVIL SERVICE PERSONNEL HAVING SIMILAR JOB TYPES

I. INTRODUCTION

Job content comparisons between military and civil service personnel working in the same career fields have several potentially fruitful outcomes. A corollary of determining the relative equivalency of military and civilian jobs in terms of the number and complexity of tasks performed would provide valuable information for determining manning interchangeability of civilian and military personnel, standardizing position descriptions and training requirements, improving career development, and job restructuring. Of these potential uses, and in view of actual and anticipated problems in recruitment within an all-volunteer force atmosphere, a problem of most immediate interest is the conversion of military jobs to civilian jobs throughout the Department of Defense. Another promising area lies in comparing military and civilian personnel performing the same jobs on such attributes as pay grade, job tenure, and attitudes. These analyses would provide information to evaluate skill upgrading, promotion, and manning policies with regard to cost effectiveness, career progression, and personnel motivation. Investigation of the relative merits of divergent military versus civil service classification and assignment policies would have the salutary effect of obtaining the more favorable aspects of each for mutual benefit and consolidation of effort.

II. APPROACH AND FINDINGS

The data were extracted from the occupational and background information collected during an Air Force-wide administration of a job inventory to civil service personnel within seven Accounting and Finance series. A total of 5,485 cases were obtained, representing 85% of the population within these General Schedule series: GS-501, GS-520, GS-525, GS-530, GS-540, GS-544, and GS-545. The data were analyzed according to current job analysis methodology which has been described in various publications including Morsh and Christal (1966), and Morsh and Archer (1967). Results of this analysis are reported by Garza (1972) and the effectiveness of occupational survey data in predicting GS grade is reported by Carpenter and Christal (1972). The data on military Accounting and Finance personnel were obtained from a job inventory survey involving 3,246 airmen representing 60% of the total population within the General Accounting, AFSC 671X1, and Disbursement Accounting, AFSC 671X3, career ladders including AFSCs 67170 and 67290.

The 1,996 cases used in this study were random samples obtained from the two surveys described above. Samples of 998 cases each were selected from the total military (3,246) and total civilian (5,485) accounting and finance populations. These two subsamples were merged and computer job-type analyses performed. The computed hierarchal job-type grouping program yielded a career field structure very similar to those found when the military and civilian populations were analyzed individually.

For the military and civilian comparisons treated, job type groups which form 10 clusters and which have a reasonable amount of overlap in terms of the percentage of time members spend performing the same tasks were selected. Also, groups were selected which had a sufficiently representative number of military and civilian members to make the comparisons somewhat meaningful. Although an equal membership in military-civilian categories was sought, some bias will be noted since the job-type groupings formed unequally in most of the clusters. A chi-square test of the group Ns revealed 6 out of the 10 pairs had significant differences beyond the 5% level of confidence. These are identified in Table 1 with an "a" or "b" indicating statistical significance at the $\alpha = .01$ and $\alpha = .05$ levels, respectively. Since the subsample used in this analysis was drawn randomly from large samples of airmen and civilians representing a major proportion of the total Accounting and Finance population in the career ladders surveyed, it may be assumed that the Ns compared here are generally representative of actual field conditions. Thus, a hypothesis that airmen and civilian accounting and finance personnel tend to be assigned to somewhat different specialized jobs is partially supported. This is borne out by observing that the more significant differences occur in such subject matter areas as civilian pay, travel accounting, and military pay.

The civilian and military members within each selected job type group were compared on seven variables considered important in personnel

selection, assignment, and upgrading. Although these people were performing basically similar jobs in terms of overall content and were therefore grouped into mutual job clusters, there is a sufficient contrast in the number of tasks performed, percentage of members performing these tasks, and the amount of time they spend on them to allow certain comparisons. As shown in Table 1, there is also considerable difference between the two categories in the various background characteristics of the members. Table 1 also includes a total group composite on the variables of interest.

Similar information on the specific job type subclusters comprising a further breakdown of certain groups, reported in Table 1, is provided in Appendix A (Table A1).

Comparisons on Number of Tasks Performed

In most of the groups compared, civil service personnel performed a considerably larger number of tasks than did military personnel. In 9 of the 10 group pairs, civilian members performed numerically more tasks. A t-test of the difference between the means indicated statistically significant differences in the number of tasks performed for six pairs beyond the 5% level of confidence. These groups are identified in Table 1 with an "a" or "b" indicating the level of significance. In this table, the group identifier "Civ" or "Mil" designates whether the group subdivision is composed of civilian or military personnel. The t-ratios are listed opposite the last group of each pair. The overall differences in number of tasks performed by civilian and military in the total sample is highly significant with means of 54.85 and 38.80, respectively. Of particular interest is the fact that significant differences in number of tasks performed occur among those paired groups which are also unique with regard to the other variables shown in Table 1.

The number of tasks performed in a job can have a substantial effect on the job description for that job. This can be well illustrated by comparing job descriptions generated by a computer program for producing group difference descriptions. Appendix B (Table B1) contains sample descriptions which contrast the military and civilian group pairs, and are significantly different with regard to the number of tasks performed. Group difference descriptions show the difference between two groups in terms of percentages of members performing each task or the percentages of work time spent on each task. Differences are ordered from the greatest positive difference through zero to the greatest negative difference. In this manner, differences between groups in terms of individual tasks can be readily noted. Appendix B contains group difference descriptions for six pairs of military and civilian groups in terms of the percentage of members performing tasks. Only 10 tasks from each end of the group difference descriptions are offered for illustrative purposes. Of particular note is the large differences in percentage of members performing tasks; maximum differences between the paired groups shown range from 31% to 79%.

Comparisons on Average Task Difficulty per Unit of Time Spent

The average task difficulty per unit of time spent (ATDPUTS) was derived from task difficulty ratings provided by Accounting and Finance supervisors in the field. The relative difficulty of each task in the Accounting and Finance Job Inventory was rated independently by 75 military and 100 civilian supervisors using a 7-point relative scale ranging from 1 for the very simple tasks to 7 for the extremely difficult tasks. ATDPUTS values were derived by multiplying the mean task difficulty rating by the incumbent's percentage of time spent on the task, summing the products, and dividing by 100. Resulting ATDPUTS values thus represent average task difficulty indices with a maximum range of 1 through 7 (Mead & Christal, 1970).

The ATDPUTS comparisons between military and civil service cases shown in Table 1 indicate a pattern similar to that of the Job Difficulty Index which will be discussed later. In 3 out of the 10 job pairs civilian personnel have a significantly higher average task difficulty level than the military members. In two job pairs the military incumbents perform more difficult tasks. The larger differences between the military and civil service personnel exist essentially in the same pairs in both the ATDPUTS and a closely related criterion, the Job Difficulty Index. Also, the significant overall mean difference suggests that civilians tend to perform tasks of greater difficulty.

Job Difficulty Index Comparisons

The Job Difficulty Index (JDI) was derived using the constant standard weight regression

Table 1. **Comparisons of Military and Civilian Personnel on Seven Variables**

Civ-Mil GRP ID	N	Major Cluster Title	Number of Tasks Performed			Avg Task Difficulty Per Unit of Time			Job Difficulty Index			Job Tenure			Job Interest			Job Use of Talents and Training			Grade			
			Mean	SD	t-ratio	Mean	SD	t-ratio	Mean	SD	t-ratio	Mean	SD	t-ratio	Mean	SD	t-ratio	Mean	SD	t-ratio	Unconv Mean	Conv Mean	SD	t-ratio
Civ	115[a]	Accounts Control	69.21	44.94		4.587	0.128		17.91	4.03		46.32	39.41		5.36	0.93		4.67	1.30		6.322	6.013	1.158	
Mil	71	Accounts Control	62.84	42.33	0.964	4.532	0.177	2.233[b]	16.61	4.34	1.953	13.02	9.42	6.990[a]	4.89	1.53	4.838[a]	4.17	1.64	2.299[b]	5.240	5.526	1.384	2.583[a]
Civ	87[a]	Accounting & Finance Sups	75.31	40.10		4.444	0.118		18.57	3.85		49.47	30.61		5.88	0.82		4.90	1.17		6.563	6.227	1.337	
Mil	52	Accounting & Finance Sups	61.77	29.66	2.120[b]	4.424	0.143	0.892	17.52	3.34	1.660	15.54	18.27	5.630[a]	5.80	0.93	0.562	4.90	1.37	0.014	6.980	7.266	1.164	4.643[a]
Civ	186	Commercial Svcs & Materiel	51.94	26.06		4.104	0.150		14.04	4.56		39.81	49.61		5.56	0.96		4.34	1.17		4.828	4.519	0.821	
Mil	145	Commercial Svcs & Materiel	41.01	24.46	3.889[a]	4.045	0.165	3.395[a]	11.90	4.50	4.267[a]	12.91	11.02	6.380[a]	4.55	1.46	7.505[a]	3.34	1.31	7.238[a]	4.097	4.383	0.860	1.465
Civ	15	Budget	40.47	9.90		4.726	0.131		16.85	1.62		47.74	46.79		5.93	0.77		4.53	1.09		6.430	6.091	1.405	
Mil	6	Budget	23.50	13.07	3.245[a]	4.886	0.102	2.633[b]	14.78	2.90	2.483[b]	17.13	12.01	1.549	5.67	0.75	0.704	4.33	1.60	0.333	6.500	6.786	1.979	0.913
Civ	4[a]	Financial Systems Analyst	18.25	9.70		4.284	0.188		9.56	1.32		81.50	62.55		5.75	0.43		5.00	1.00		5.000	4.691	1.414	
Mil	22	Financial Systems Analyst	14.95	5.35	0.999	4.271	0.273	3.194[a]	12.38	2.36	2.266[b]	13.59	9.35	5.258[a]	5.59	1.30	0.240	5.09	1.53	0.112	6.546	6.832	1.305	2.986[a]
Civ	87[b]	Paying and Collecting	51.80	31.08		3.947	0.177		12.62	5.47		56.14	47.15		5.66	0.86		4.54	1.37		5.552	5.243	1.302	
Mil	59	Paying and Collecting	42.12	29.62	1.726	3.892	0.147	1.939[b]	10.81	4.28	2.138[b]	10.46	10.48	7.313[a]	4.71	1.47	5.901[a]	3.56	1.59	3.908[a]	4.288	4.574	1.263	3.083[a]
Civ	132	Civilian Pay	56.76	32.80		4.252	0.101		15.25	4.20		48.64	57.78		5.65	0.90		4.28	1.28		4.583	4.274	0.862	
Mil	12	Civilian Pay	35.00	11.98	2.278[b]	4.189	0.083	2.118[b]	12.16	2.60	2.501[a]	11.00	6.72	2.238[b]	3.92	1.85	5.697[a]	2.83	1.52	3.696[a]	4.333	4.619	0.943	1.317
Civ	75[a]	Travel Accounting	38.84	22.36		4.167	0.122		11.67	3.61		33.26	38.29		5.54	0.99		4.17	1.48		4.374	4.065	0.703	
Mil	150	Travel Accounting	36.53	26.74	0.471	4.153	0.157	0.677	11.65	4.05	0.031	15.16	24.62	4.240[a]	4.58	1.52	5.141[a]	3.55	1.58	2.796[a]	4.500	4.786	1.292	4.507[a]
Civ	4	Acct Clerical & Admin	12.25	4.26		4.249	0.193		8.13	0.69		21.75	8.26		5.50	0.57		4.25	1.64		3.500	3.191	0.500	
Mil	6	Acct Clerical & Admin	3.33	2.13	4.443[a]	4.423	0.391	0.814	7.45	2.40	0.546	7.50	3.82	3.747[a]	4.60	1.62	0.993	3.17	1.86	0.930	3.833	4.119	0.687	2.306[b]
Civ	59[a]	Military Pay	41.58	25.83		4.028	0.238		11.78	4.73		37.53	38.19		5.37	1.18		4.19	1.26		4.390	4.083	0.703	
Mil	303	Military Pay	31.52	25.58	2.759[a]	4.079	0.274	1.335	10.43	4.45	2.109[b]	11.63	12.58	10.110[a]	4.26	1.69	4.734[a]	3.35	1.63	3.584[a]	4.354	4.640	1.189	3.492[a]
Civ	764	Total All Groups	54.85	34.77		4.237	0.259		14.67	4.98		44.79	46.74		5.67	0.94		4.45	1.29		5.232	4.928	1.300	
Mil	826	Total All Groups	38.89	29.25	9.986[a]	4.163	0.292	9.329[a]	11.96	4.74	10.968[a]	12.82	15.18	18.498[a]	4.58	1.59	16.360[a]	3.61	1.61	11.267[a]	4.642	4.928	1.408	

Note: - N is the original number of cases, thus varies among variables.

[a]Significant beyond the one percent level of confidence.

[b]Significant beyond the five percent level of confidence

equation developed by Mead and Christal (1970). This index includes as predictor variables the number of tasks performed, number of tasks performed squared, and the average task difficulty per unit of time spent (ATDPUTS).

Job difficulty comparisons between military and civil service personnel in the same job type groups, shown in Table 1, indicated a considerably larger number of civilian groups with a higher JDI than military groups. Out of the 10 paired groups shown, 9 civilian groups have a higher difficulty index with the difference between means being statistically significant for 5 pairs beyond the 5% level of confidence. Only in the Financial Systems Analyst job type do military show a higher job difficulty index, and this job cluster must be evaluated with care since the civilian/military split is very uneven and the military have a much higher relative grade when compared to their civilian counterparts. The overall comparison strongly reflects that civilians tend to perform the more difficult jobs within the job type.

The differences in number of tasks performed, discussed previously, affects the criterion employed in this analysis since the number of tasks and the number of tasks squared comprise two of the three variables in the JDI equation.

Position Tenure Comparisons

On the basis of comparative amount of time spent in their current position, the civil service personnel far exceed the military personnel. A tendency in this direction is to be expected since civilian employees are less subject to frequent transfers than airmen. However, the degree of difference is considerable. With only one exception, all of the paired groups show civilian employees having more than twice as much time in their current position. The difference between means is significant beyond the 5% level of confidence for 9 out of the 10 pairs as well as for the overall group.

Comparisons on the Degree of Interest Found in Jobs

The degree to which the surveyed incumbents found their jobs interesting was obtained with a job inventory background information item rated on a 7-point scale. The scale ranged from 1 for "extremely dull" to 7 for "extremely interesting." In all job type groups compared, civil service personnel found their jobs more interesting than did their military counterparts. Differences between the means of 6 pairs were found significant beyond the 1% level of confidence as was the overall difference for the total group.

Comparisons on Jobs' Use of Talents and Training

The job inventory background information item asking for the extent to which jobs use the incumbents' talents and training consisted of a 7-point scale which ranged from "not at all" at the lower end to "perfectly" at the upper end. Like the job interest item, this item elicited a greater degree of favorable response from the civilian members than from military members. Out of the 10 pairs of military and civil service personnel compared, 8 showed that the latter group found their jobs a greater challenge to their talents and training than did their military counterparts with 6 groups reflecting statistical significance beyond the .01 level.

Of note is that the significant t-ratios and lower means for military in their jobs's use of their talents and training tend to occur primarily in such disbursement accounting areas as paying and collecting, civilian pay, travel accounting, and military pay where highly repetitive, simple tasks tend to predominate. This observation is supported in findings reported by Gould (1972) where a ranking of 97 airmen career ladders placed the Disbursement Accounting AFSC 671X3 near the lower end of the continuum in job satisfaction. In the same study it was also found that nearly half of the 3- and 5-skill level airmen in the Disbursement Accounting ladder felt that their talents and training were either not used at all or used very little. Thus, in view of the significantly lower overall mean use of talents and training expressed by the airman population, there appears to be a definite need to investigate further the reasons for the expressed discontent to determine remedial job restructuring possibilities. Comparative military and civilian personnel survey data gathered thus far provide encouragement that fruitful hypotheses can be accrued for improved job restructuring. Among other studies underway, a multiple prediction study is in progress which will consider the relative contribution of a broad selection of variables in predicitng certain critical attributes such as job interest and the use of talents and training on the job.

Relative Grade Comparisons

No attempt is made here to establish a precise relationship between the grade levels of military and civil service personnel regarding salary scales and total cost to the government per job incumbent. More pertinent data on relative salaries and benefits would be necessary to accomplish an exact comparison and methodologies for establishing and evaluating actual costs are currently

under investigation. These comparisons are made at the numerical grade level merely to demonstrate the relative differences between civilian and military grades within the job pairings under consideration.

The overall grade means for civilian and military cases in the entire sample are GS-5.24 and E-4.64, respectively. These means were used to determine a composite weighted mean grade for all military and civilian job incumbents. Then the mean for each military and civilian segment of each job group was corrected according to its deviations from this overall weighted composite mean. The corrected means, therefore, serve to equate the job-group means so that a t-test between means reflects the relative grading of either the civilian or military segment of the job cluster in terms of the mean grade of the other segment. Differences between seven pairs are sufficiently large to be significant beyond the 5% level of confidence. In five of these, military groups have a higher relative average grade whereas civilians have a relatively higher average grade in two job clusters. Thus, grade differences are seen to be specifically related to job type, and the grade difference between airmen and civilians is not always in the same direction. For example, civilians have a significantly higher relative grade level in the Accounts Control and Paying and Collecting clusters, while the airmen in the Accounting and Finance Supervisor, Financial Systems Analyst, and Travel Accounting and Military pay clusters have a relatively higher grade. The relative incumbent grade thus either emphasizes or minimizes the seriousness of the obtained differences in the other variables of interest.

Specific Job-Type Considerations

When the varied clusters are individually compared on the variables of interest some unique characteristics dependent upon the job cluster are evidenced. Little difference in the specific job characteristics of civilian as opposed to military personnel are noticed in the Accounts Control cluster even though the relative grade of the civilian personnel is noticeably higher when compared to their military counterparts. However, civilians do show significantly greater job interest and view their job as making better use of their talents and training. The four specific job types comprising this cluster, as shown in Appendix A, further reflects the existing relationships between the specific job type and the distribution of variables.

The Accounting and Finance Supervisor cluster generally evidences the same conditions as does the Accounts Control cluster although the relative grade of the military within this cluster is significantly higher than that of their civilian counterparts. However, when the two job types comprising the cluster are independently analyzed it may be easily observed that one type, containing relatively higher graded civilian personnel, also reflects consistently significantly higher values on all variables within this study. Conversely, in the other job type where the military is markedly higher graded, the military tend to perform more tasks with greater difficulty and in fact tend toward having greater interest in the job and greater perceived use of their talents and training, even though, as is commonly noted, their job tenure is much less than their civilian counterparts.

In reviewing the Commercial Services and Materiel cluster a general equivalency in relative grade between the military and civilian job incumbents is observed. However, within this cluster the civilians perform significantly more tasks of greater difficulty, have been on the job longer, and show greater interest and use of talents and training. The same general findings may be observed in each of the six specific job types comprising this cluster although the greater disparities on the variables is most evidenced within the specific job type identified as C20/M21 (Appendix A).

Generally similar findings are obtained in all other clusters reported. The Civilian Pay cluster is particularly unique in terms of the consistently higher number of tasks performed, task difficulty, and job difficulty of the civilian incumbents, even though the civilians within this cluster are relatively under-graded in relation to their military counterparts. The extremely low military job interest and use of talents and training should be noted. In both of the latter two clusters reported: Accounting Clerical and Administrative, and Military Pay, civilians tend to report performing the more difficult jobs with significantly greater use of talents and training although in both cases the civilian is under-graded in relation to his military counterpart. The data for the seven job types comprising the Military Pay cluster is shown in Appendix A, allowing similar evaluations of the unique characteristics of the incumbents at the specific job types to be evaluated.

Correlations Among Selected Variables

The first two variables shown in Table 2, number of tasks performed and Average Task Difficulty per Unit Time Spent (ATDPUTS), show a relatively high relationship with the Job Difficulty Index (JDI) variable. This relationship is to be expected since the number of tasks and ATDPUTS enter into the equation used to compute the JDI. There is also a moderate relationship between these three variables and grade level of both the military and civilian cases. The lowest correlations tend to be associated with the job tenure variable. Further, there is a low but positive relationship between the two attitudinal variables and the number of tasks performed, ATDPUTS, JDI, and grade level. This relationship is higher for the airmen than it is for civilians. Understandably, there is a strong relationship between expressed job interest, and the use of talents and training on the job.

Table 2. **Intercorrelations of Selected Variables**

Variables	Group	1	2	3	4	5	6
1. Number of Tasks	Civ						
	Mil						
2. Task Difficulty	Civ	.2344					
	Mil	.1698					
3. Job Difficulty	Civ	.9140	.5353				
	Mil	8033	.5971				
4. Uncorrected Pay Grade	Civ	.4145	.4469	.5262			
	Mil	.3660	.4483	.5118			
5. Job Tenure	Civ	.1527	.0567	.1585	.2510		
	Mil	.0878	.1314	.1540	.1247		
6. Job Interest	Civ	.2483	.0988	.2568	.1790	.0578	
	Mil	.2525	.2616	.3307	.3571	.0705	
7. Use of Talents and Training	Civ	.2155	.1452	.2468	.2543	.1221	.6380
	Mil	.3166	.3066	.4004	.4449	.0974	.7269

III. SUMMARY AND CONCLUSIONS

When considering the total group data for all personnel evaluated in this study, the number of tasks performed, average task difficulty, and job difficulty for civil service employees show a noticeably higher quantitative level than they do for their military counterparts. The t-ratios indicating significant differences between mean performance on these factors are all highly significant beyond the .01 level of confidence. These same findings hold true with regard to job tenure, job interest, and job use of talents and training, where the civilians demonstrate markedly longer job tenure as well as greater interest in the job and greater satisfaction in terms of fulfilling their expectations with regards to the use of their capabilities. These variables are likewise all significant beyond the .01 level of confidence.

It is particularly interesting to note that the work areas in which the airmen expressed the greater job dissatisfaction were the disbursement accounting areas such as paying and collecting, travel, and civilian and military pay. This finding agrees with other reported findings previously cited.

Correlations among the variables discussed above indicate similar relationships for military and civil service personnel despite the magnitude of the differences noted earlier. For example, correlations between the pay grade variable and the number of tasks, ATDPUTS, and JDI variables were generally equivalent for military and civilians. Thus, it appears that grade level is positively related to the number of tasks performed, difficulty of the tasks performed, and the overall difficulty of the job. There is also evidence that grade level, number of tasks performed, and task and job difficulty are associated with the interest found in the job and the feeling that the job makes adequate use of the incumbents' talents and training. This relationship is somewhat higher for military personnel.

Length of time in the current position was only slightly related to the other variables treated here.

The only noticeable exception was its correlation of .25 with civilian grade; a low relationship, but indicative of the markedly longer job tenure of civilian personnel.

In summary, the data reveal some distinct differences between military and civil service personnel performing the same jobs. Civilians tend to perform a larger number of tasks, the tasks they perform are more difficult, the jobs are more difficult, they find their jobs more interesting, and feel that their jobs make greater use of their talents and training. In view of these differences in attributes and the potentially higher cost of military personnel, meeting operational needs by conversion of military positions to civilian positions in selected job types appears feasible.

These unique attributes of civilian and military personnel also point out the necessity for further research into their causes and effects. For example, there is a need to determine why the airmen perform less tasks of lesser difficulty and why the jobs they perform are less complex. Further, a determination should be made of the effects of these airmen job characteristics on promotion, skill upgrading, and career progression and retention. It would also be of value to determine the effects of these job attributes on motivation and attitudes in order to determine methods for job enrichment. The data indicate the potential value of additional research in this direction in that grade and job complexity show a positive relationship with expressed job interest and job use of talents and training.

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APPENDIX A. JOB TYPE LEVEL STATISTICAL COMPARISONS OF MILITARY AND CIVILIAN PERSONNEL

[illegible] 17. Comparison of Military and Civilian Personnel on Seven Variables at the Job Type Level

Civ Mil GPP ID	N	Major Cluster Title	Number of Tasks Performed Mean	SD	F ratio	Avg Task Difficulty Per Unit of Time Mean	SD	F ratio	Job Difficulty Index Mean	SD	F ratio	Job Tenure Mean	SD	F ratio	Job Interest Mean	SD	F ratio	Job Use of Talents and Training Mean	SD	F ratio	Grade Union Mean	Civ Mean	SD	F ratio
[illegible]	14[a]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]		21.42	[illegible]		[illegible]	42.45		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	
M[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1.144	[illegible]	[illegible]	4.802[a]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		41.51	[illegible]		[illegible]	[illegible]		4.44	[illegible]		[illegible]	[illegible]	[illegible]	
M[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	4.444	[illegible]	[illegible]	14.[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	3.821[a]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	35	[illegible]		[illegible]		[illegible]	[illegible]		14.84	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	
M[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	4.444	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	4.22	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	4.444	[illegible]	[illegible]	[illegible]
[illegible]	11	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	1.46		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	
M[illegible]	[illegible]	[illegible]	[illegible]	21.88	[illegible]	4.711	[illegible]	[illegible]	[illegible]	[illegible]	0.448	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1.171	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	Accounting & Finance Svcs	[illegible]	[illegible]		4.438	[illegible]		[illegible]	[illegible]		[illegible]	44.22		[illegible]	[illegible]		[illegible]	1.19		[illegible]	[illegible]	[illegible]	
M[illegible]	[illegible]	Accounting & Finance Svcs	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	14.50	21.85	3.749[a]	[illegible]	[illegible]	2.061[b]	[illegible]	1.26	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	Accounting & Finance Svcs	[illegible]	15.48		4.461	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	
M[illegible]	[illegible]	Accounting & Finance Svcs	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1.42	[illegible]	[illegible]	[illegible]	1.024	[illegible]
[illegible]	11	Commercial Svcs & Material	[illegible]	4.41		[illegible]	[illegible]		[illegible]	1.49		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	1.41		[illegible]	[illegible]	[illegible]	
M[illegible]	[illegible]	Commercial Svcs & Material	15.01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1.45	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	42	Commercial Svcs & Material	64.24	28.16		4.041	0.106		14.98	4.40		[illegible]	68.80		5.40	1.14		[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	
M21	34	Commercial Svcs & Material	47.04	22.[illegible]	[illegible]	[illegible]	0.141	[illegible]	12.64	4.2[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1.42	[illegible]	[illegible]	[illegible]	[illegible]	4.147	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	Commercial Svcs & Material	[illegible]	21.[illegible]		4.15[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		4.45	[illegible]		[illegible]	4.744	[illegible]	
M23	48	Commercial Svcs & Material	[illegible]	23.40	[illegible]	4.140	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	4.61	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	4.161	[illegible]	[illegible]
[illegible]24	18	Commercial Svcs & Material	45.22	19.1[illegible]		4.1[illegible]	[illegible]		13.14	4.12		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		4.044	[illegible]	[illegible]	
M25	[illegible]	Commercial Svcs & Material	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1.40	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	4.161
[illegible]	[illegible]	Commercial Svcs & Material	[illegible]	[illegible]		4.104	[illegible]		[illegible]	[illegible]		[illegible]	14.46		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	4.024	[illegible]	
M27	26	Commercial Svcs & Material	24.[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	4.54	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	4.246	[illegible]	[illegible]
[illegible]	14	Commercial Svcs & Material	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	
M29	6	Commercial Svcs & Material	[illegible]	4.11	[illegible]	[illegible]	0.143	[illegible]	[illegible]	[illegible]	0.062	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	4.119	[illegible]	[illegible]
[illegible]	[illegible]	Travel Accounting	[illegible]	[illegible]		[illegible]	0.122		[illegible]	1.46		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]	0.460	
M47	64	Travel Accounting	[illegible]	[illegible]	[illegible]	4.140	[illegible]	[illegible]	[illegible]	[illegible]	1.478	12.24	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1.44	2.036[b]	[illegible]	4.192	[illegible]	[illegible]
[illegible]	42[a]	Travel Accounting	46.74	[illegible]		4.161	0.124		11.67	[illegible]		[illegible]	40.44		[illegible]	[illegible]		[illegible]	1.28		4.429	4.120	[illegible]	
M49	66	Travel Accounting	[illegible]	[illegible]	[illegible]	4.162	0.151	[illegible]	13.44	[illegible]	[illegible]	[illegible]	[illegible]	2.715[a]	4.85	1.44	[illegible]	[illegible]	[illegible]	[illegible]	4.042	[illegible]	1.367	4.814[a]
[illegible]54	12[a]	Military Pay	[illegible]	[illegible]		4.148	0.154		16.71	4.22		[illegible]	42.66		[illegible]	[illegible]		[illegible]	1.51		[illegible]	4.274	1.115	
M55	33	Military Pay	[illegible]	24.25	[illegible]	[illegible]	0.171	[illegible]	[illegible]	[illegible]	[illegible]	14.42	[illegible]	[illegible]	[illegible]	[illegible]	2.202[b]	[illegible]	1.51	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]56	16[a]	Military Pay	[illegible]	6.42		[illegible]	0.173		[illegible]	[illegible]		[illegible]	42.33		[illegible]	[illegible]		[illegible]	[illegible]		4.250	3.941	[illegible]	
M57	[illegible]	Military Pay	[illegible]	11.42	[illegible]	4.041	[illegible]	[illegible]	10.22	[illegible]	[illegible]	13.62	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	4.165	4.451	[illegible]	[illegible]
[illegible]58	4[a]	Military Pay	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	14.05		[illegible]	1.22		[illegible]	1.12		[illegible]	[illegible]	[illegible]	
M59	22	Military Pay	[illegible]	[illegible]	[illegible]	[illegible]	0.262	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1.43	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]60	[illegible]	Military Pay	[illegible]	[illegible]		[illegible]	0.241		11.01	4.48		27.43	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		4.429	4.120	[illegible]	
M61	[illegible]	Military Pay	[illegible]	[illegible]	2.254[b]	4.004	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1.64	[illegible]	[illegible]	1.74	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]62	[illegible]	Military Pay	[illegible]	[illegible]		[illegible]	0.402		6.46	[illegible]		22.40	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		4.400	[illegible]	[illegible]	
M63	[illegible]	Military Pay	11.24	4.82	[illegible]	[illegible]	0.284	0.151	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	4.134	1.132	[illegible]
[illegible]66	4	Military Pay	[illegible]	[illegible]		4.174	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	4.191	[illegible]	
M67	[illegible]	Military Pay	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1.512	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	4.40	[illegible]	[illegible]	[illegible]	1.14	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	4[a]	Military Pay	[illegible]	13.04		4.414	[illegible]		[illegible]	[illegible]		[illegible]	10.44		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	
M70	61	Military Pay	[illegible]	24.1[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1.411	[illegible]	[illegible]	[illegible]	[illegible]

Note – [illegible]

[a]Significant beyond the [illegible] percent level of confidence.

[b]Significant beyond the five percent level of confidence.

APPENDIX B. TASK LEVEL DIFFERENCE DESCRIPTIONS OF PAIRED MILITARY AND CIVILIAN GROUPS

Table B1. Group Difference Descriptions of Paired Groups

Task	Task Title	Percent Members Performing		Percent Difference
		C10	M11	
	Group C10 Versus Group M11			
C17	Prepare Civilian Employee performance ratings	91.38	36.36	55.02
B7	Supervise Civilian Employees	89.66	45.45	44.20
I17	Coordinate with other activities to reconcile commercial services descrepancies	75.86	36.36	39.50
I6	Certify fund availability or cite funds for commercial services transactions	79.31	40.91	38.40
I14	Coordinate with funds manager or procurement for funds for specific purposes	79.31	40.91	38.40
B9	Supervise commercial services section	70.69	36.36	34.33
I22	Initiate corrective action for commercial services imbalances	60.34	27.27	33.07
I48	Perform financial analyses	60.34	27.27	33.07
C5	Determine propriety of claims	53.45	22.73	30.72
D14	Plan on-the-job training program	39.66	0.09	30.56
I38	Maintain materiel document files	18.97	31.82	−12.85
I112	Take corrective action on management notices, out-of-balances, or improper transactions	55.17	68.18	−13.01
B13	Supervise materiel section	63.79	77.27	−13.48
A34	Plan space, equipment or supply requirements	67.24	81.82	−14.58
I35	Maintain machine listing files	34.48	50.00	−15.52
A23	Maintain library of manuals, directives, or publications	56.90	72.73	−15.83
A29	Plan and schedule computer usage	6.90	22.73	−15.83
I26	Keypunch or verify cards for materiel	29.31	45.45	−16.14
I74	Prepare posting data transfers (PDT's or TRT's) for materiel transactions	24.14	40.91	−16.77
C16	Prepare airman performance reports (APR's)	82.76	100.00	−17.24
		C12	M13	
	Group C12 Versus Group M13			
A10	Coordinate with supply activity on procedures or problems	65.52	10.00	55.52
N8	Analyze cost reports	55.17	0.00	55.17
C6	Evaluate accuracy of account codes	65.52	16.67	48.85
N4	Account for materiel costs	48.28	0.00	48.28
N5	Account for labor costs	48.28	0.00	48.28
N15	Prepare cost statements or reports	48.28	0.00	48.28
D4	Conduct on-the-job training	93.10	46.67	46.44
N14	Monitor reimbursement transactions	44.83	3.33	41.49
N3	Account for material and labor variances	41.38	0.00	41.38
N7	Account for work units of activity costs	41.38	0.00	41.38
C10	Evaluate results of quality examinations	13.79	53.33	−39.54
C5	Determine propriety of claims	10.34	56.67	−46.32

Table B1 (*Continued*)

Task	Task Title	Percent Members Performing		Percent Difference
		C12	M13	
E34	Monitor applications submitted for cancellation or remission of indebtedness	3.45	50.00	−46.55
E21	Coordinate processing of military pay documents with other accounting and finance areas	6.90	60.00	−53.10
B14	Supervise military pay section	6.90	63.33	−56.44
E14	Certify and verify payment documents	6.90	63.33	−56.44
B10	Supervise Disbursement Accounting Specialists (67153)	0.00	56.67	−56.67
E2	Answer inquiries concerning military pay or allowances	6.90	73.33	−66.44
E68	Write correspondence about military pay matters	6.90	76.67	−69.77
B1	Supervise Accounting and Finance Supervisors (67170)	10.34	90.00	−79.66
		C20	M21	
	Group C20 Versus Group M21			
I86	Process DSA, GSA, or other billings	73.81	32.35	41.46
I95	Reconcile commercial services files with allotment ledgers or listings	73.81	38.24	35.57
C6	Evaluate accuracy of account codes	42.86	11.76	31.09
G73	Prepare or process journal vouchers for accounts control section	30.95	0.00	30.95
I4	Audit vouchers or subvouchers	95.24	64.71	30.53
I6	Certify fund availability or cite funds for commercial services transactions	71.43	41.18	30.25
G96	Review daily audit listings	28.57	0.00	28.57
G99	Review obligations for accuracy of coding	28.57	0.00	28.57
I32	Maintain contract indebtedness files	45.24	17.65	27.59
I14	Coordinate with funds manager or procurement for funds for specific purposes	73.81	47.06	26.75
I75	Prepare PDT's or TRT's for commercial services transactions	71.43	82.35	−10.92
A6	Coordinate with base data systems for preparation of machine listings	11.90	23.53	−11.62
A7	Coordinate with civil engineering for procedures or problems	38.10	50.00	−11.90
A12	Coordinate systems requirements with data automation	4.76	17.65	−12.89
I37	Maintain medical and dental stock fund documents and trial balances	4.76	17.65	−12.89
I61	Prepare journal vouchers for medical and dental stock fund supply transactions	0.00	14.71	−14.71
I111	Take corrective action on computer rejects	66.67	82.35	−15.69
I52	Prepare commercial services input to computer system	64.29	82.35	−18.07
I11	Compute charges on telephone work orders	14.29	32.35	−18.07
I102	Record orders outstanding	57.14	76.47	−19.33

Table B1 (*Continued*)

Task	Task Title	Percent Members Performing C60	Percent Members Performing M61	Percent Difference
	Group C60 Versus Group M61			
F31	Maintain military pay manuals	85.71	41.03	44.69
A8	Coordinate with base tenants on procedures or problems	57.14	12.82	44.32
E30	Maintain military pay document control logs	100.00	61.54	38.46
E25	Gather military pay documents or papers for audit	57.14	23.08	34.07
A23	Maintain library of manuals, directives or publications	64.29	33.33	30.95
F21	Coordinate processing of military pay documents with other accounting and finaance areas	78.57	48.72	29.85
F17	Collect military pay data for the report of accounting and finance activities	50.00	23.08	26.92
H40	Prepare money list for cash payments	28.57	2.56	26.01
E34	Monitor applications submitted for cancellation or remission of indebtedness	64.29	38.46	25.82
E40	Prepare duplicate or corrected W-2 forms	71.43	46.15	25.27
D4	Conduct on-the-job training	28.57	43.59	- 15.02
E39	Prepare casual pay receipts	71.43	87.18	- 15.75
D7	Counsel individuals on training progress	14.29	30.77	- 16.48
A38	Schedule leaves or passes	28.57	46.15	- 17.58
A6	Coordinate with base data systems for preparation of machine listings	7.14	25.64	- 18.50
D13	Monitor individuals taking CDC courses	0.00	20.51	- 20.51
B4	Supervise Apprentice Disbursement Accounting Specialists (67133)	7.14	30.77	- 23.63
B10	Supervise Disbursement Accounting Specialists (67153)	14.29	43.59	- 29.30
C16	Prepare Airman Performance Reports (APR's)	28.57	58.97	- 30.40
D12	Maintain OJT records	7.14	43.59	- 36.45
		C62	M63	
	Group C62 Versus Group M63			
E30	Maintain military pay document control logs	60.00	13.56	46.44
E50	Process transfer-in MPR's	60.00	15.25	44.75
E28	Maintain files of military pay documents or locator cards	60.00	18.64	41.36
E51	Process transfer-out MPR's	60.00	18.64	41.36
E34	Monitor applications submitted for cancellation or remission of indebtedness	40.00	3.39	36.61
E42	Prepare payrolls or payroll money listings	60.00	23.73	36.27
E63	Use document control logs to monitor workflow of military pay section	40.00	5.08	34.92
E3	Arrange allotment documents in transmittal sequence	40.00	6.78	33.22
F17	Collect military pay data for the report of accounting and finance activities	40.00	6.78	33.22
E57	Review or edit MPO's or MPR's	40.00	8.47	31.53

Table B1 (*Continued*)

Task	Task Title	Percent Members Performing		Percent Difference
		C62	M63	
E31	Maintain military pay manuals	0.00	10.17	-10.17
E43	Prepare posting media for military pay section	0.00	10.17	10.17
E48	Process submission of MPR's to AFAFC	0.00	10.17	-10.17
E4	Assemble MPR's into batches	20.00	30.51	-10.51
E53	Punch paper tape from input data forms	0.00	11.86	-11.86
E52	Provide counter service for military pay section	60.00	72.88	-12.88
E12	Audit pay vouchers	0.00	13.56	-13.56
F1	Align military pay records for pay computation	40.00	54.24	-14.24
E2	Answer inquiries concerning military pay or allowances	80.00	96.61	-16.61
F23	Operate military pay computer	0.00	22.03	-22.03
		C69	M70	
	Group C69 Versus Group M70			
F13	Input military pay vouchers into MAFR system	100.00	21.31	78.69
F20	Maintain military pay subsidiary ledgers	100.00	26.23	73.77
F35	Reconcile military payments and deductions with console control register and summary of vouchers	100.00	26.23	73.77
F5	Collect military pay accounting data for accounts control	100.00	27.87	72.13
F14	Maintain accrual control of military pay ledgers	100.00	29.51	70.49
F27	Prepare EOM voucher or report data for military pay	100.00	29.51	70.49
E12	Audit pay vouchers	75.00	8.20	66.80
E35	Monitor reconciliation of payments of military pay area	75.00	8.20	66.80
E42	Prepare payrolls or payroll money listings	75.00	8.20	66.80
F2	Balance daily or EOM cumulative payments and collections for military pay section	100.00	36.07	63.93
D11	Indoctrinate newly assigned personnel	0.00	22.95	-22.95
E47	Process separation or discharge actions	0.00	24.59	-24.59
D12	Maintain OJT records	0.00	26.23	-26.23
F53	Punch paper tape from input data forms	25.00	52.46	-27.46
F10	Edit change tape input for errors	50.00	78.69	-28.69
A20	Interpret accounting and finance procedures to subordinates	0.00	31.15	-31.15
C16	Prepare airman performance reports	0.00	31.15	-31.15
C11	Encode magnetic strips on MPR's	50.00	81.97	-31.97
F4	Close or open MPR's by computer	50.00	90.16	-40.16
F31	Process allotment PCAM cards to MPR's and prepare submission for AUTODIN system	0.00	44.26	-44.26