

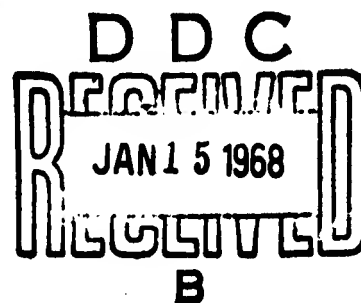
AD 663837

U. S. ARMY

Technical Note 4-67

**OPINION SURVEY ON VOLUME 1 OF THE
U. S. ARMY HUMAN FACTORS ENGINEERING BIBLIOGRAPHIC SERIES**

Starr Roxanne Hiltz



April 1967

HUMAN ENGINEERING LABORATORIES



**ABERDEEN PROVING GROUND,
MARYLAND**

This document has been approved for public
release and sale; its distribution is unlimited.

Reproduced by the
CLEARINGHOUSE
for Federal Scientific & Technical
Information Springfield Va 22151

97


Technical Note 4-67

OPINION SURVEY ON VOLUME 1 OF THE
U. S. ARMY HUMAN FACTORS ENGINEERING BIBLIOGRAPHIC SERIES

Starr Roxanne Hiltz

April 1967

APPROVED:


JOHN D. WEISZ
Technical Director
Human Engineering Laboratories

U. S. ARMY HUMAN ENGINEERING LABORATORIES
Aberdeen Proving Ground, Maryland

This document has been approved for public
release and sale; its distribution is unlimited.

ABSTRACT

This report is on the responses of the recipients of Volume 1 of the U. S. Army Human Factors Engineering Bibliographic Series to an opinion survey on the volume. It describes the recipients' educational and professional characteristics, and how these characteristics are related to the amount of use they have made of the bibliography and to their opinions about various aspects of the volume.

CONTENTS

ABSTRACT	iii
INTRODUCTION	1
METHOD	
The Instruments	1
Subjects.	2
Procedure	2
RESULTS	
Characteristics of the Population	6
Amount of Use of the Bibliography	10
Users' Opinions of the Bibliography	23
SUMMARY AND CONCLUSIONS	42
APPENDIXES	
A. Questionnaire	45
B. Cover Letters	55
C. The Non-Respondents	60
D. Suggestions Made by Users of the U. S. Army Human Factors Engineering Bibliographic Series for Improvement of the Index System	64
E. Users' Suggestions for Increased Subject Area Coverage of the U. S. Army Human Factors Engineering Bibliographic Series	71
F. Positive Evaluations of the U. S. Army Human Factors Engineering Bibliographic Series	77
G. Negative Evaluations and Miscellaneous Suggestions for Improvements of the U. S. Army Human Factors Engineering Bibliographic Series	84

TABLES

1. Response to the Opinion Survey	3
2. Education	7
3. Profession	7
4. Type of Organization	9
5. Organization Size	9
6. Consultations	10
7. Education vs. Consultations (Percentage Distribution)	12
8. Profession vs. Consultations (Percentage Distribution)	13
9. Reasons for Not Using Bibliography	14
10. Desire for Volume 2	16
11. Abstracts Read	17
12. Education vs. Number of Abstracts Read (Percentage Distribution)	18
13. Documents Read	19
14. Profession vs. Number of Documents Read (Percentage Distribution)	20
15. Value of the Bibliography	21
16. Abstracts Read vs. Value of the Bibliography (Percentage Distribution)	22
17. Type of Organization vs. Value of Bibliography (Percentage Distribution)	24
18. Opinion of Two Indexes	25
19. Acceptability of Index, Part II, Format	27
20. Profession vs. Discovery of Omitted Areas (Percentage Distribution)	29
21. Preference for Arranging Abstracts	30
22. Adequacy of Abstracts	31

23. Accuracy of Citation	33
24. Accuracy of Abstracts	34
25. Estimates of Percent of Inaccurate Abstracts (Corrected)	35
26. Arrangement of Abstracts	37
27. Size and Boldness of Print	37
28. Need for Binding	38
29. Better Bibliographic Source Available	40

BLANK PAGE

**OPINION SURVEY ON VOLUME 1 OF THE
U. S. ARMY HUMAN FACTORS ENGINEERING BIBLIOGRAPHIC SERIES**

INTRODUCTION

The U. S. Army Human Engineering Laboratories conducted an opinion survey on Volume 1 of the U. S. Army Human Factors Engineering Bibliographic Series. A questionnaire was prepared and sent to all the recipients of the volume.

This report describes the participants' educational and professional characteristics, and how these characteristics are related to the amount of use they have made of the bibliography and to their opinions about various aspects of the volume.

METHOD

The Instruments

Questionnaire

A questionnaire was designed to elicit four types of information from persons who had received Volume 1 of the U. S. Army Human Factors Engineering Bibliographic Series:

- a. "Who" are the recipients of the bibliography, in terms of profession, educational attainments, and size and type of employing organization?
- b. How much have they used the bibliography?
- c. Do they wish to receive future volumes of the series?
- d. What are the users' opinions and suggestions for improving various aspects of the bibliography (i.e., the indexing system, content of the abstracts, subject area coverage, etc.)?

A copy of the questionnaire's final form is included as Appendix A.

Cover Letters

Included with all copies and forms of the questionnaire sent were cover letters which identified the sponsor of the opinion survey and assured the respondents that their answers would be confidential. Copies of the cover letters are included as Appendix B.

Though there is no apparent way in which disclosing a respondent's answers to the questionnaire could prove detrimental to his interests, anonymity has been carefully preserved. Thus, no names identify the responses quoted in this report.

Subjects

The population that received the opinion survey consisted of all individuals to whom copies of the bibliography had been mailed: 700 individuals, most of whom are members of the Human Factors Society. Approximately 800 copies of the bibliography had been mailed to the psychology departments and libraries of the universities in the United States, and to U. S. military organizations. Since it was impossible to know who actually made use of these institutional copies, there was no way of including the institutional users in the opinion survey on the bibliography.

Lacking proof to the contrary, the libraries, psychology departments, and military organizations that received copies of the bibliography should be assumed to be a different population of users of the bibliography than the individual recipients. Thus, the data received from the population of individual recipients and reported in the following pages may not be safely interpreted as describing all possible users of the bibliographic series.

Procedure

Distribution of and Response to the Questionnaire

A sample of 50 of the individual recipients of the bibliography was sent the preliminary version of the questionnaire to determine if it was a valid instrument for obtaining the desired data. The 50 individuals selected were asked not only to answer the questions but also to carefully evaluate the directions for answering the questionnaire and the questions themselves, to note any difficulties, and to suggest changes in the questionnaire. The 24 pre-tests returned indicated that the directions for and wording of the questionnaire did not present any difficulties to the respondents, but a few minor changes in wording were made and three additional questions were included as a result of suggestions received from the pre-test.

Ideally, the amended questionnaire should have been pre-tested again to make sure the changes and additions were indeed improvements, but, because time was limited, the questionnaire was mailed as it was to the entire population.

The 700 questionnaires were sent out in February 1967, and 349 responses (49.9%) came back within three weeks. A second wave of questionnaires sent in March 1967 to the 351 members of the population who had not responded previously brought in 142 more replies before the responses were sent for computer processing. Forty-one respondents replied that they had not received Volume 1, but 25 of them filled out a questionnaire anyway, either before or after Volume 1 was sent to them, and their responses are included with the other data in this report. Five questionnaires were returned unanswered by respondents who did not feel qualified to answer the questions, 17 questionnaires were returned too late for processing. Forty-two of the questionnaires were returned unanswered because the addressee had changed his place of employment or residence and did not receive the questionnaire. Of the remaining 129 members of the population nothing is known. Table 1 breaks down the responses to the opinion survey.

TABLE 1

Response to the Opinion Survey

	Number	Percent
Population Size	700	100
Wave I questionnaires returned	349	49.9
Wave II questionnaires returned	142	20.3
Total questionnaires received and processed	491	70.1
Did not receive Volume 1; no questionnaire returned	16	2.3
Questionnaire returned to sender unanswered	47	6.7
Questionnaire returned too late	17	2.4
Total nonproductive responses	65	9.3
No response of any kind	129	18.4

The rate of response is unusually high for a mailed questionnaire, especially a questionnaire nine pages in length. Mailing such a lengthy questionnaire to the general public, for instance, would ordinarily produce returns in the range of only 10 to 20 percent. The high rate of response may be partially attributed to the interest of the population in improving the bibliographic series and to their high educational level, conscientiousness, and cooperativeness. Probably more important than these factors, however, was that the population was given a material incentive to respond to the questionnaire: they would receive subsequent volumes of the bibliography if

they responded to the opinion survey on Volume 1. (For a discussion concerning the non-respondents to this questionnaire, see Appendix C.)

Analytical and Statistical Procedures

a. Coding

For each question, a set of categories was devised to classify the answers which were received. The categories were designed so that each possible response received for a question would fit into one and only one category. The responses were to be computer processed, and since there are 10 punch positions in each column of an IBM card, up to 10 categories could be used to classify the responses to each question. Each questionnaire was coded by the rules devised for assigning category numbers to the possible responses to each question, and the coded answers were transferred to IBM cards.

Deciding how many categories should be used for coding the answers to each question was a matter of compromising between two guidelines:

(1) Any response which occurs frequently should be coded as a separate category (combining unlike answers in a single category makes statistical analysis of the conglomerated results meaningless).

(2) The number of categories used should be held to a minimum (otherwise, statistical tables become unmanageably large and full of nearly empty cells).

An example will demonstrate how the questionnaire was coded. Question 1 is shown below, with the category code number assigned to each response.

Question 1. What is the highest academic degree you have received?

- | | |
|---------------|--------------------------------|
| <u>1</u> | High School diploma |
| <u>1</u> | A.A. from a junior college |
| <u>2</u> | B.A. or B.S. |
| <u>3</u> | M.A. or M.S. |
| <u>4</u> | Ph.D. |
| <u>5</u> | Dr. Science |
| <u>1 or 5</u> | Other (Please Specify) _____) |

A quick review of the returned questionnaires showed that very few of the respondents had checked either "high school diploma" or "A.A. from a junior college." Therefore these two responses were combined to form one coding category, Number 1, called "no degree." Also coded as Category 1 were respondents who had checked "Other" and explained that they had certificates of study or other educational attainments which were not equal to a college degree.

The remaining responses under "Other" proved to be such higher educational degrees as M.D., LL.B., Ed. D., M.B.A., etc. No one of these responses occurred very frequently, so they were all coded as one category, Number 5, called "Other Degree."

Likewise, the number of respondents who checked "Dr. Science" was also too small to justify a separate category for this response. Therefore, the response, "Dr. Science," was coded as Category 5, "Other Degree."

The other checklist answers occurred frequently enough to be coded as a separate category.

b. Statistical Analysis

Two kinds of operations were carried out on the coded answers. For each question, the answers falling in each category were counted to obtain a simple numerical and percentage distribution of answers. Secondly, a number of cross-tabulations was made to see how the answers to one selected question related to the answer to a second selected question. In the cross-tabulations in this report, the question (variable) hypothesized as independent is printed across the top of the tables. Percentage distributions are made on each category of the independent variable.

In sample surveys the usual statistical procedure is to compute a X^2 (chi square) for cross-tabulations to determine if the observed degree of association between the variables is statistically significant. The X^2 test in such a situation reveals the probability that the results could have been obtained by chance and would not exist if there were data for the entire population. As a test of the statistical significance of findings, X^2 is not applicable in the present study, since we are not dealing with a random sample of a much larger population. Therefore, no chi-square figures are included in this report.

RESULTS AND DISCUSSION

Characteristics of the Population

Educational Level

Table 2 shows the educational attainments of the respondents. The categories into which the answers were coded have been explained previously.

A glance at the distribution of responses shows that those individuals to whom bibliographies were sent have attained an average educational level far above that of the general population: 46.2 percent of the respondents have earned a Ph.D. degree, another 33.9 percent hold an M.A. or M.S., and 3.7 percent hold some other advanced degree. Thus, over 80 percent of the respondents have prepared for their work in human factors engineering by earning a graduate degree. It is clear from this figure alone that these are persons who can be expected to be holding important research and supervisory positions in the human factors field.

Professional Field

Table 3 shows the academic discipline in which the respondents received their training. The respondents were asked to indicate in which field or discipline they received their highest degree: engineering, psychology, or any other field (such as education, history, chemistry, law, medicine, sociology, etc.). Those who had earned their highest degree in psychology were also asked to indicate the subfield in which they do most of their work. If they checked more than one subfield within psychology, they were classified with those respondents who indicated that they are "general" psychologists. The classification, "combination of disciplines" was used for those respondents who checked more than one discipline: for instance, both engineering and psychology, or psychology and some other discipline such as education.

Almost three-quarters of the respondents earned their highest degree in psychology and nearly half of the total number of respondents classify themselves as engineering psychologists or experimental psychologists, while 9.3 percent identify themselves primarily as industrial psychologists.

Among the quarter of the respondents who are not psychologists, the only other discipline with a large representation is engineering, with 10.3 percent of the respondents.

TABLE 2

Education

	Number	Percent
No Degree	7	1.4
B.A. or B.S.	71	14.4
M.A. or M.S.	167	33.9
Ph.D.	228	46.2
Other Degree	18	3.7
No answer	2	0.4
TOTAL	493	100.0

TABLE 3

Profession

	Number	Percent
Engineering	51	10.3
Psychology		
Engineering Psychology	105	21.3
Experimental Psychology	123	24.9
Industrial Psychology	46	9.3
Psychological, Educational, or Social Psych.	16	3.2
General Psychology	56	11.4
Other Psychology	20	4.1
Psychology Sub-Total	366	74.2
Other Discipline	59	12.0
Combination of Disciplines	11	2.2
No answer	6	1.2
TOTAL	493	100.0

Type and Size of Employing Organization

The respondents were asked to indicate by what kind of organization they pursue their work in human factors engineering. The following alternatives were offered:

- _____ I am self-employed.
- _____ A U. S. government organization which is part of the Department of Defense.
- _____ A U. S. government organization which is not part of the Department of Defense.
- _____ A college or university.
- _____ A non-profit organization or institution other than a university or the government.
- _____ A profit-making organization or firm engaged solely in research.
- _____ A business corporation or firm engaged in the production and/or distribution of material products.
- _____ Other (Please specify: _____)

Table 4 shows the distribution of responses. Very few respondents are self-employed, so they are included in the catch-all "Other" classification.

The largest group of respondents, 41.8 percent, is employed by business firms which are concerned with material products. The next largest group, 17.4 percent, work for colleges or universities. Another sizable proportion, 12 percent, are employees of the Department of Defense, either in a military or civilian capacity. Besides those people who work directly for the Department of Defense, of course, many of the respondents work on DoD projects which are subcontracted to the private organizations employing them.

Table 5 shows the size of the organizations for which the respondents work. More than half (52.8%) work for large organizations with more than 3000 employees.

TABLE 4

Type of Organization

	Number	Percent
Department of Defense	59	12.0
Other Government	14	2.8
University	86	17.4
Other Non-profit	36	7.3
Profit-making Research	46	9.3
Business Corporation	206	41.8
Other	40	8.1
No answer	6	1.2
TOTAL	493	100.0

TABLE 5

Organization Size

	Number	Percent
25 or Less	39	7.9
26-100	30	6.1
101-500	65	13.2
501-3000	93	18.9
Over 3000	261	52.8
No answer	5	1.0
TOTAL	493	100.0

Amount of Use of the Bibliography

Number of Consultations

Table 6 shows the number of times the respondents report having consulted Volume 1 of the U. S. Army Human Factors Engineering Bibliographic Series.

TABLE 6
Consultations

	Number	Percent
None	157	31.8
1 or 2	134	27.2
3 to 10	152	30.8
Over 10	48	9.7
No answer	2	0.4
TOTAL	493	100.0

At the time they answered the questionnaire, 31.8 percent of the respondents had not previously consulted the bibliography at all, and another 27.2 percent had consulted it only once or twice. In assessing the significance of these and other figures shown in Table 9, it must be remembered that the respondents had received the bibliography only a few months before they were asked to answer the questionnaire. Bibliographic searches are generally conducted only at the beginning of a research project. Thus, the fact that the bibliography had not been used much by a respondent before he answered the questionnaire does not preclude heavy use sometime in the future. For instance, a Ph.D. in industrial psychology who had consulted the bibliography once or twice, noted, "I anticipate using it on a regular basis although I haven't used it too often up to now." Another respondent who had consulted the volume once or twice explained, "I haven't been working on a broad spectrum problem since receiving the bibliography -- hence low usage."

Another factor which must be considered is that Volume 1 includes literature only through 1959. For many problems, the progress made in human factors literature since then has been so great that pre-1960 literature is of historical interest only. The volumes covering more current literature should receive much heavier usage.

Still another factor which should be taken into account in assessing the figures in Table 6 is that the respondent was asked to indicate how many times he, personally, had consulted the bibliography -- not how many times the bibliography had been used within his organization. Many of the bibliographies have been consulted by people other than the individual to which they were sent. For instance, a professor to whom the volume was sent noted that he answered the questions on consultations "for myself personally. In addition I have had my class of 25 students making literature searches in Human Factors." As a group, they had consulted the bibliography more than 10 times. As another example, a Ph.D. in experimental psychology who works for the Department of Defense wrote that he is "too busy with administrative work" to use the bibliography himself, "but others in my organization do use it."

It might seem logical that the amount of use made of the bibliography might relate to the educational level of the respondent. However, no such relationship appeared, as may be seen in Table 7, which cross-tabulates education by number of consultations. About the same proportion of holders of bachelor's degrees and Ph.D's. report no consultations. Likewise, there is not much difference in the proportion of these groups reporting more than 10 consultations.

Professional discipline does not seem to be related to number of consultations, either. Table 8 is a cross-tabulation of profession by number of consultations. There is no professional group which has made notably heavy or light use of the bibliography.

Reasons for Non-use

The 157 respondents who had not used the bibliography were asked the following question:

Question 6B: Place a check beside any and all reasons which explain why you have not found the bibliography useful, until you have indicated all reasons which apply to you. If there are any reasons for non-use which are not listed, please explain them briefly.

- My work is not related to human factors engineering.
- Lack of permanent binding makes it too difficult to use.
- The instructions for use are too complicated and confusing.
- The index is too difficult to use.
- The abstracts themselves seem too vague or incomplete to be helpful.
- I find the printing and/or page format difficult to read.

TABLE 7

Education vs. Consultations
(Percentage Distribution)

Consultations	No Degree	B.A. or B.S.	M.A. or M.S.	Ph.D.	Other Degree	No Answer	Total
None	0.0	31.0	29.9	34.2	33.3	50.0	31.8
1 or 2	57.1	29.6	23.4	28.9	16.7	50.0	27.2
3 to 10	42.9	32.4	33.5	27.6	38.9	0.0	30.8
Over 10	0.0	7.0	13.2	8.3	11.1	0.0	9.7
No answer	0.0	0.0	0.0	0.9	0.0	0.0	0.4
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0
N	7	71	167	228	18	2	493

TABLE 8

Profession^a vs. Consultations

(Percentage Distribution)

Consultations	Eng	EngP	Exp	IndP	PESP	GenP	OthP	Other	NoAns	Comb	Total
None	31.4	32.4	31.7	21.7	18.8	32.1	40.0	40.7	33.3	27.3	31.8
1 or 2	31.4	30.5	26.8	32.6	31.3	30.4	10.0	15.3	50.0	18.2	27.2
3 to 10	29.4	30.5	29.3	34.8	50.0	21.4	40.0	32.2	16.7	45.5	30.8
Over 10	7.8	5.7	12.2	10.9	0.0	14.3	10.0	11.9	0.0	9.1	9.7
No answer	0.0	1.0	0.0	0.0	0.0	1.8	0.0	0.0	0.0	0.0	0.4
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
N	51	105	123	46	16	56	20	59	6	11	493

^a Eng	Engineering	GenP	General Psych
EngP	Engineering Psych	OthP	Other Psych
Exp	Experimental Psych	Other	Other Discipline
IndP	Industrial Psych	NoAns	No answer
PESP	Physiological, Educational, or Social Psych	Comb	Combination

- _____ It is difficult for me to obtain the documents which are abstracts.
- _____ I have found a better bibliographic source for literature related to human factors engineering. (Please state source:)
- _____ Other reasons.

TABLE 9

Reasons for Not Using Bibliography

	Number of Responses	Percent of Respondents ^a
Not Related to Work	25	15.9
Too Unwieldy	26	16.6
Instructions Too Complicated	7	4.5
Index Too Difficult	9	5.7
Abstracts Vague or Incomplete	5	3.2
Printing/Format Difficult to Read	8	5.1
Documents Difficult to Obtain	2	1.3
Better Source Available	4	2.5
No Recent Need	58	36.9
Other	61	38.8
TOTALS	205	

^a N = 157 (Table 6)

It is obvious from the distribution of responses that it is not the quality of the bibliography itself which accounts for most of the non-users.

The reason given most frequently given by respondents to explain why they had not consulted the bibliography was simply that they had not had any occasion to use a human factors bibliography in the short time since they had received it; 58 (or 36.9 percent of the non-users) listed this reason. Since this was a free response not offered in the checklist, there were 58 different wordings for this category. The following are examples of responses which were classified in this category:

"My work, since receipt of Volume 1, has not required resort to reference materials of the kind included in the bibliography."

"My current work has not called for a literature search."

"My duties have not necessitated that I make use of an H.F. bibliography within the last two months."

The largest number of responses (61) shown in the above list of reasons falls in the "Other Reason" category. One frequently encountered response classified as "Other Reason" was a protest from the respondent that he had never received his copy of Volume 1, so he obviously could not have used something he did not have.

Some of the bibliographies apparently reached the office of the respondent to whom they had been addressed, but had never actually been seen by the respondent until the questionnaire informed him of the bibliography's existence, and he looked for it. Responses describing circumstances such as these are also included in the "Other Reason" category. Examples of such responses are the following:

"This is the first time I knew of its existence."

"Have never seen it until today."

A wide variety of other reasons was also included in this "Other Reason" category. Examples are listed below:

"For our work there is no need for more bibliographic efforts, since we keep a running bibliography and card index of data related to our activities."

"I am engaged primarily in manned space activities and most of the information I seek is not available in the 1940-59 literature."

"Primary reason for not using Vol. 1 is date of material contained. Usually one wants the most recent information, and, if necessary, works back from there."

"The condition the sheets were in on arrival, due to poor packing, tended to reduce its usefulness. It was a mess." (Note: Volume 2 will have much sturdier packaging as a result of reports such as this.)

Another 25 (or 15.9%) of the respondents marked the response, "My work is not related to human factors engineering."

Only one characteristic of the bibliography was checked as a reason for non-use by a sizable portion of the respondents: 26 (or 16.6%) indicated that "Lack of permanent binding makes it too unwieldy to use." None of the other factors listed (poor

instructions, index, abstracts, printing, or document availability) dissuaded very many respondents from consulting the bibliography. Only one of the respondents who had not used the bibliography expressed a strong opinion about any of these aspects of the bibliography. He did not like the instructions for use of Volume 1.:

"The instructions, especially paragraphs 2 and 3, are replete with bibliographic jargon, hence unclear on first reading. Many sentences are badly punctuated; The instructions are not easily comprehended on first reading; they have to be studied for their meaning. This is distinctly bad."

Only four respondents had not used the bibliography because they think some other source is better; none of these four are either engineers or psychologists.

Cross-tabulations were run between profession and each of the reasons for non-use. Except in the case of preference for another bibliography noted above, there was no discernable pattern of association between professional discipline and reason for not consulting the bibliography.

Desire for Volume 2

Those respondents who had never consulted Volume 1 of the bibliography were asked if they wished to receive Volume 2. A few respondents who have used Volume 1 but decided they do not need Volume 2 also answered the question. The distribution of responses received is shown in Table 10.

TABLE 10

Desire for Volume 2

	Number	Percent
Yes	147	90.7
No	15	9.3
TOTAL	162	100.0

The reader will note that the total number on which percentages are based in Table 10 is 162, not the total number of respondents to the questionnaire, which was

492. The question was not answered by the remainder of the respondents, because it was not applicable to them, since it was assumed that anyone who had made use of Volume 1 wanted a copy of Volume 2. On the other hand, the users of the bibliography were asked some questions about frequency of use and opinions about the bibliography which were not applicable to and not answered by the non-users. The tables reporting these answers will also show the distribution of responses for only those responses to whom the questions are applicable.

Table 10 shows that most of the respondents who had not used Volume 1 wish to receive Volume 2, and presumably intend to make use of it. This finding is in keeping with the above analysis of reasons for not using the bibliography.

Measures of Use and Value of the Bibliography

Those respondents who reported consulting the bibliography were asked to supply further information about how much they had used it and how valuable it was to them.

Table 11 shows the users' estimates of the total number of abstracts they had read. The most frequently range reported is between six and 25 abstracts, with more than 40 percent of the users falling in this category.

TABLE 11
Abstracts Read

	Number	Percent
1-5	49	14.6
6-25	139	41.4
26-50	74	22.0
50+	72	21.4
No answer	2	0.6
TOTAL	336	100.0

A cross-tabulation was made to determine if there is any relationship between educational level and number of abstracts read. In making this cross-tabulation, which is shown in Table 12, those respondents who had read 25 or fewer abstracts are classified as having read a comparatively "low" number; those who report having read more than 25 are classified as having read a comparatively "high" number. If the very small group of those with "no degree" are excluded from consideration, it is the M.A.s who stand out as the educational group which has the highest proportion of heavy users of the bibliography.

TABLE 12

Education vs. Number of Abstracts Read
(Percentage Distribution)

Number Read	No Degree	B.A. or B.S.	M.A. or M.S.	Ph.D.	Other Degree	No Answer	Total
Low	42.9	55.1	48.7	62.0	75.0	100.0	56.6
High	57.1	44.9	51.3	38.0	25.0	0.0	43.4
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0
N	7	48	117	149	12	2	336

A different measure of the use made of the bibliography is provided by the number of documents (articles, books, reports and pamphlets, etc.) obtained by the users because the abstracts led them to believe the documents would be useful. The figures on number of documents read were obtained from the answers to the following question:

"Approximately how many of the documents cited did you actually obtain and read after reading the abstracts for them? _____ documents."

Table 13 shows the distribution of answers to this question. Less than a third of the users had obtained five or more documents. Many of the respondents explained that the reason for the low number of documents obtained and read was that they had found it difficult to locate and obtain the actual documents, especially since they were published a decade or so ago. A sampling of these comments is included in Appendix G.

TABLE 13

Documents Read

	Number	Percent
None	132	41.0
1-4	81	25.2
5-9	47	14.6
10-20	42	13.0
20+	20	6.0
TOTAL	322	100.0

Other respondents indicated that they have ordered or intend to order documents abstracted in the bibliography, but had not actually obtained them yet. For instance, one respondent who reported that he had not read any documents noted, "We are in the process of obtaining more than 100 on one project alone."

There is a slight relationship between profession and number of documents obtained and read, as shown in Table 14. In this table, all those respondents who have read five or more documents have been combined in one category. Less than 30 percent of the engineers, and of those who belong to some other discipline than engineering or psychology, have read five or more documents; at least 30 percent of all the various types of psychologists have read five or more documents.

An attempt was also made to obtain a measure of usefulness and value of the bibliography to its users in terms of a "dollar value." This attempt was not entirely successful; there were several refusals to answer, and more hedged answers (two or more responses checked, or comments modifying or explaining the response made for this question than for any other on the questionnaire. Put in other terms, there were so many respondents who were unable or unwilling to answer the question about the monetary value of the bibliography that the validity of the question as a measure of the value of the bibliography to its users is questionable.

The question read:

"Since money is the usual measure of usefulness and value, try to place a monetary value on the usefulness of the Human Factors Engineering Bibliographic Series to you. Assuming that it were not available free, what would you consider a reasonable amount to pay for a copy of Volume 2 of the bibliography, which is about the same size as Volume 1?"

TABLE 14

Profession^a vs. Number of Documents Read

(Percentage Distribution)

Consultations	Eng	EngP	Exp	IndP	PESP	GenP	OthP	Other	NoAns	Comb	Total
None	43.8	41.4	35.4	44.4	25.0	47.2	27.3	43.8	75.0	57.1	41.0
1 - 4	28.1	28.6	23.2	19.4	41.7	16.7	36.4	31.3	25.0	0.0	25.2
5 or more	28.1	30.0	41.5	36.1	33.3	36.2	36.4	25.0	0.0	42.9	33.8
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
N	32	70	82	36	12	36	11	32	4	7	322

^aEng Engineering GenP General Psych
 EngP Engineering Psych OthP Other Psych
 Exp Experimental Psych Other Other Discipline
 IndP Industrial Psych NoAns No answer
 PESP Physiological, Educational, or Social Psych Comb Combination

The distribution of responses received is shown in Table 15. Most of the respondents think the bibliography is worth at least \$10 a volume to them; almost a third think it is worth \$25 (or more).

The comments of the respondents noted in relation to this question are useful in trying to evaluate the answers received and the factors associated with the kind of response made to the question. A respondent who checked "10" noted that "This is based on the size of the document and the fact that it is a government publication. We publish through the Government Printing Office and the prices for our publications are very low for what the customer gets."

TABLE 15
Value of the Bibliography

	Number	Percent
Zero	4	1.2
Up to \$5	33	10.2
\$10	106	32.9
\$15	80	24.8
\$25	99	30.7
TOTAL	322	100.0

A Ph.D. candidate in psychology who checked "\$10" said, "But this is only in view of my personal budget; I believe the 'market value' should be higher, perhaps \$30-\$40."

One of the respondents who did not check any answer noted, "I think at times it cannot be replaced." Presumably he means that the volumes are invaluable to him. But this is only a guess, so this response and others like it were recorded as "no answer," and are not shown above.

The monetary value placed on the bibliography is directly related to the amount of use made of it, as measured by the number of abstracts read. Table 16 is a cross-tabulation between these two variables. It can be seen, for instance, that none of the users who had read 50 or more abstracts from Volume 1 say that the bibliography is worth "nothing" to them, and that a larger percentage of this group than of

TABLE 16

Abstracts Read vs. Value of Bibliography

(Percentage Distribution)

Value	1-5	6-25	26-50	50+	Total
Zero	4.3	0.8	1.4	0.0	1.3
Up to 5	25.5	8.4	6.9	7.4	10.4
10	31.9	32.8	36.1	29.4	32.7
15	23.4	28.2	19.4	25.0	24.8
25	14.9	29.8	36.1	38.2	30.8
TOTAL	100.0	100.0	100.0	100.0	100.0
N	47	131	72	68	318

the groups who had read fewer abstracts say it is worth \$25 (or more). On the other hand, the only category of respondents in which more than 10 percent say that the bibliography is worth only \$5 or less is the group which has read five or fewer abstracts.

Table 17 is a cross-tabulation between the type of organization for which the respondents work and the monetary value they place on the bibliography. The relationship between these variables is not very clear or strong, but there are some differences among the employees of the different types of organizations. Perhaps the most interesting thing shown in this table is that a larger percentage of Department of Defense employees than of any other category say that the bibliography is worth \$25 or more to them.

Cross-tabulations were also run between educational level and value placed on the bibliography and between professional discipline and value. There was no discernible relationship in either case.

Users' Opinions of the Bibliography

The Index System

The users of the bibliography were asked about three aspects of the index system used in Volume 1: (a) the existence of two indexes (called "Index" and "Facsimile of Subject Matter File") in order to find the accession numbers of a topic; (b) the acceptability of the list of descriptors included in Part II of the index (the "Facsimile of Subject Matter File."); and (c) the page layout in Part II (printing, indentation, etc.)

In regard to the two-step index system used for Volume 1, the following question was asked:

Question 8. The index to the bibliography is divided into two parts: a list of topics which includes cross-references for those terms to which documents have not been coded, and a separate index which gives the accession numbers for those categories to which documents have been coded. Would you prefer to have the two indexes combined?

- I prefer the present arrangement of two separate indexes.
- It doesn't matter to me whether there are two indexes or a combined index.
- I would prefer to have a single, combined index.

Table 18 reports the distribution of answers to the above question. Almost half of the respondents prefer the present arrangement; only 26.3 percent would prefer to have the "Index" and "Facsimile of Subject Matter File" combined.

TABLE 17

Type of Organization^a vs. Value of Bibliography
(Percentage Distribution)

Value	DoD	OthG	Univ	OthNP	Res	Bus	Other	NoAns	Total
Zero	2.6	0.0	1.7	0.0	4.0	0.7	0.0	0.0	1.2
Up to 5	7.9	14.3	11.9	5.3	16.0	9.0	14.8	0.0	10.2
10	21.1	28.6	32.2	36.8	24.0	36.1	37.0	66.7	32.9
15	21.1	14.3	32.2	26.3	20.0	23.6	25.9	33.3	24.8
25	47.4	42.9	22.0	31.6	36.0	30.6	22.2	0.0	30.7
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
N	38	7	59	19	25	144	27	3	322

^aDoD Department of Defense
OthG Government Agencies other than the Department of Defense
Univ Colleges and Universities
OthNP A non-profit organization other than the Government or a college or university
Res A profit making research organization
Bus A profit making organization concerned with a material product
Other An organization which did not fit into any of the above categories
NoAns No answer

TABLE 18

Opinion of Two Indexes

	Number	Percent
Prefer present system	162	48.4
No preference	75	22.4
Would prefer combined index	88	26.3
No answer	10	3.0
TOTAL	335	100.0

There is some relationship between profession and preference for a single, combined index; this preference was expressed by about a third of the engineers, general psychologists, and members of "other" disciplines (neither psychology nor engineering) as compared with about a quarter or less of the psychologists in specialized fields. ^a

There is a small relationship between a preference for a single, combined index and the amount of use which has been made of the bibliography. Among those respondents who had read 25 or fewer abstracts, 22.7 percent would prefer a combined index, as compared to 30.3 percent of those respondents who had read more than 25 abstracts.

^aThe exact figures on number and percentage preferring a single, combined index are:

- Engineers, 12 out of 35 (34.3%)
- General psychologists, 12 out of 37 (32.4%)
- "Other discipline," 12 out of 36 (33.3%)
- Engineering psychologists, 14 out of 71 (19.7%)
- Experimental psychologists, 22 out of 83 (26.5%)
- Industrial psychologists, 9 out of 36 (25%)
- Physiological, educational and social psychologists, 3 out of 13 (23.1%)
- Other psychologists, 2 out of 12 (16.7%)

In regard to the completeness and acceptability of the descriptors to which documents are coded in Volume 1, the following question was asked:

Question 9: The inclusion or exclusion of terms or subject-headings to which documents will be coded is always somewhat arbitrary. Have you found the system of descriptive terms and subheadings used in Part II of the index generally satisfactory?

_____ Yes
_____ No

Are there any additions or changes in terms to which documents are coded which would have made it easier for you to find the abstracts in which you were interested? (Please specify: _____)

"Yes" was checked by 296, or 88.4 percent, of the respondents; 25, or 7.5 percent, marked "No", and 14 respondents did not answer the question. There were no marked differences among the various professional disciplines in the percentage answering "Yes" and "No."

Fifty, or 14.9 percent, of the respondents, took the trouble to list one or more subject areas or descriptors which they would like to have added to the future volumes of the bibliography. A complete list of the suggested additions to the descriptors appears in Appendix D.

Let it be noted here that many of the respondents feel very strongly that the lists of accession numbers for many descriptors are much too long, and that an increase in the number of descriptors would be highly desirable. According to the opinions of the users, in other words, combining descriptors (which was done for Volume 2 of the bibliography) is a step in the wrong direction.

In Part II of the Index (the "Facsimile of Subject Matter File"), there are many different levels of descriptors. Underneath each major heading (or category) is a group of sub-categories; these may each be followed by a number of "tertiary" headings. The accessions are coded only to the lowest level (lowest sub-category). The same size print is used for all levels of headings, there is little indentation and no spaces skipped to enable the user to distinguish among various levels of headings, and the lists of accession numbers extend out to the left of the headings. The following question was designed to probe the acceptability of this arrangement to the users:

Question 10: In Part II of the Index, major headings have been broken down into sub-headings, subheadings into secondary categories, etc. Are you able to adequately discriminate between major and subheadings?

_____ The indentations in Part II enable me to adequately discriminate between major headings and subheadings.

_____ I would find Part II easier to use if greater differentiation in type face and/or indentation were utilized for the various levels of headings.

_____ No answer.

Table 19 shows that 52 percent of the users "would find Part II easier to use if greater differentiation in type face and/or indentation were utilized for the various levels of headings." Changes in spacing and other aspects of the layout would be very simple to make. Since they would make the bibliography easier to use in the opinion of the majority of the respondents, this seems to be a type of change well worth making in the future volumes.

TABLE 19

Acceptability of Index, Part II, Format

	Number	Percent
Indentations Permit Discrimination	134	41.0
Different Type Faces and/or More Indentation Needed	170	52.0
No answer	23	7.0
TOTAL	327	100.0

Accuracy, Adequacy, and Completeness of Coverage of the Bibliography

a. Completeness of Coverage

The respondents were asked the following question:

Question 11: Have you discovered any subject areas or types of unclassified documents related to human factors engineering which seem to be omitted from coverage in the bibliography? If so, please list them.

Forty six (13.8%) of the respondents listed a subject area or type of document which they felt should have been included but seemed to be omitted. A complete listing of these answers is included as Appendix E.

Table 20 is a cross-tabulation of the professional discipline of the respondents vs. whether or not they reported an area or type of document omitted from coverage in the bibliography. It shows that the respondents belonging to disciplines other than engineering or psychology are least satisfied with the coverage of the bibliography; almost a third of them listed omissions they had discovered. A larger percentage of the engineers than of any of the specific types of psychologists listed omissions. These figures suggest that the bibliography does not cover human factors literature related to disciplines other than psychology as adequately as it covers psychological literature.

b. Order of the Abstracts

Below is the question which was asked on the order in which the abstracts appear in the bibliography, and the distribution of replies received:

Question 12: The citations and abstracts are not presented in any particular order. Have you found the random arrangement satisfactory, or is there some kind of order in which you would prefer to have the abstracts arranged?

- _____ I find the arrangement of abstracts satisfactory.
- _____ I would prefer to have the abstracts arranged by subject.
- _____ I would prefer to have the abstracts arranged according to author.
- _____ Arrangement by date of publication would be preferable.
- _____ Other (Please specify: _____)

TABLE 20

Profession^a vs. Discovery of Omitted Areas

(Percentage Distribution)

Omissions	Eng	EngP	Exp	IndP	PESP	GenP	OthP	Other	NoAns	Comb	Total
Yes	17.1	11.4	8.4	8.3	7.7	8.1	33.3	30.6	50.0	12.5	13.8
No answer	82.9	88.6	91.6	91.7	92.3	91.9	66.7	69.4	50.0	87.5	86.2
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
N	35	70	83	36	13	37	12	36	4	8	334

^a Eng Engineering
 EngP Engineering Psych
 Exp Experimental Psych
 IndP Industrial Psych
 PESP Physiological, Educational, or Social Psych
 GenP General Psych
 OthP Other Psych
 Other Other Discipline
 NoAns No answer
 Comb Combination

TABLE 21

Preference for Arranging Abstracts

	Number	Percent
Present Arrangement Satisfactory	101	30.0
Prefer Arrangement by Subject	166	49.4
Prefer Arrangement by Author	19	5.7
Prefer Arrangement by Date	21	6.3
Other	20	5.9
No Answer	9	2.7
TOTAL	336	100.0

Included in the classification "Other" are those respondents who listed two or more preferences.

According to the responses reported above, the most preferable arrangement of the abstracts in the bibliography would be by subject area. Many of the respondents noted that they realized that this would involve a great deal of effort and some duplication in listings, but they thought that the advantages of arrangement by subject area would outweigh the effort and disadvantages involved. One respondent pointed out, "a random arrangement within broad areas helps browsing and would make it possible to loan to others part of the material and retain the rest in useful form." A comment noted, "Even if only a few major subject headings were used, such as might form a table of contents for a Human Factors text, it might simplify the use of the bibliography."

One respondent requested that the abstracts in future volumes be arranged by subject and author and date of publication. He explained, "Some order is preferable to no order. At present one has to search out and identify each reference--a very time-consuming task. If the abstracts were listed as suggested here, person could glance down the subject headings and see immediately what is new. . . ., like the standard bibliographic listings in journals."

c. Adequacy of the Abstracts

Below is the question which was asked concerning the adequacy of the abstracts in Volume 1, and the distribution of answers received.

Question 13: Abstracts are necessarily short, but they should be complete enough to enable you to know if the document described contains information on the subject in which you are interested, and to locate the document. Have you found the abstracts in the bibliography adequate in terms of information included, or is there a type of information missing which would increase their usefulness to you?

- _____ I find the abstracts overly long and detailed.
- _____ The amount of information in the abstracts is satisfactory.
- _____ I find the abstracts inadequate. They would be more helpful if they included:
- _____ Results of the research described
- _____ D.D.C. Documentation Number
- _____ List anything else you would like to have added:

TABLE 22

Adequacy of Abstracts

	Number	Percent
Overly Long and Detailed	1	0.3
Amount of Information Satisfactory	154	45.8
Results Needed	55	16.4
D.D.C. Number Needed	57	17.0
Both Results & D.D.C. Number Needed	54	16.1
Other Information Needed	7	2.1
No Answer	8	2.4
TOTAL	336	100.0

Since 54 (16.1%) of the respondents indicated that they would like to have both D.D.C. (Defense Documentation Center) numbers and the research results added to abstracts in future volumes, the total number of requests for results is actually 109 (32.4%) and 111 (33.0%) for D.D.C. numbers.

A majority of the respondents is not entirely satisfied with the amount of information included in the abstracts in Volume 1. The most popular addition would be to include the D.D.C. number of any document which has been catalogued by D.D.C. Several of the respondents requested that other numbers which have been assigned

to a document, such as NASA STAR number or AALA number, also be listed in the abstracts. Such numbers would greatly facilitate acquisition of the documents.

One respondent stated that he would like to have added to the abstracts an "indication of availability, cost, and attainability of military documents and reports. Many are not in clearing house stock and are difficult to get hold of."

Some of the other suggestions relating to information which respondents would like to have included in the abstracts in future volumes are listed below:

- (1) "Purpose, method, results, estimated importance."
- (2) "A single word in bold face type, e.g., SIGNIFICANT, NEGATIVE, INCONCLUSIVE, etc." (describing the nature of the results)
- (3) "Where no or questionable results occur it would save time if such could be said. I am aware that this could bring many objections from some authors but if editors won't kill a useless article someone else might take on the bitter task."
- (4) "Whether or not there is human performance data" in the documents abstracted."
- (5) An indication of the 'applied' or 'basic' nature of the material."
- (6) "Significance of the results, i.e., was there a true difference."
- (7) "On experimental studies I would like to see abstracts like:
 - a. Title... and other reference information
 - b. Task
 - c. Dependent variables (as analyzed)
 - d. Independent variables
 - e. Analysis techniques
 - f. Primary results with graph if available
 - g. Principle application"
- (8) "Unless a statement of results also contains objective data on the size of the sample, the adequacy of statistical design, and the nature of controls employed, any statement of results is as unreliable and biased as the researcher."

d. Accuracy of the Citations

The users of the bibliography were asked to report on the observed accuracy of the citations and of the abstracts themselves. In regard to the accuracy of the citations, they were asked:

"Have you found any of the abstracts fail to give correct information about the name, author, publisher, or date of publication of a document cited?"

TABLE 23

Accuracy of Citation

	Number	Percent
Accurate	314	93.7
Inaccurate	11	3.3
No Answer	10	3.0
TOTAL	335	100.0

The 11 respondents who reported observing inaccuracies in the citations were asked:

"What is the approximate percentage of abstracts which you have found to have such incorrect information?"

Nine of the 11 reported that between one and five percent of the citations were incorrect; the other two reported that they had observed between six and 10 percent of the citations to be incorrect.

The small number of respondents reporting any errors at all indicates that the citations in Volume 1 are for the most part correct and complete.

The following question was asked in regard to the accuracy of the abstracts:

Question 15: After obtaining and reading a document or source which is abstracted in the bibliography, have you found any of the abstracts themselves to be misleading or incorrect concerning the contents of the document described?

- _____ No.
- _____ I found one or two inaccuracies.
- _____ More than two abstracts but less than 10% of the abstracts
- _____ I read turned out to be misleading or incorrect.

- _____ More than 10% of the abstracts were misleading or incorrect.
 _____ I haven't read any of the documents abstracted.
 _____ Comments or specific errors found:
 _____ No answer

TABLE 24

Accuracy of Abstracts

	Number	Percent
Abstracts Not Inaccurate	198	75.9
One or two inaccuracies	36	13.8
More than two but less than 10 percent	6	2.3
More than 10 percent of abstracts inaccurate	0	0.0
No answer	21	8.0
TOTAL	261	100.0

In the distribution of answers received, those respondents to whom the question was not applicable because they had not used the bibliography at all or because they checked, "I haven't read any of the documents," are not included. There was a total of 232 respondents whose responses are not shown above for one of the above reasons.

The results which are reported above are biased by the answers of respondents who had not read any abstracts and then obtained one or more of the documents abstracted, but checked "No" anyway because it was the first answer on the list, or gave some other estimate of the accuracy of the abstracts, rather than reading through the list and checking "I haven't read any of the documents abstracted." Only 190 respondents reported having read any documents, as shown in Table 12. Yet 261 respondents gave an estimate of the accuracy of the abstracts or gave no response at all. Therefore, we have 71 respondents who logically should have checked "I haven't read any of the documents abstracted," but are reported above as giving some other response. It is possible, of course, that some of these 71 respondents had prior familiarity with documents abstracted in the bibliography.

An adjustment must be made for the responses of these 71 people if we are to obtain a more nearly correct set of figures on observed accuracy of the abstracts.

Most of the 21 respondents who gave no answer probably are among those who should have marked "I haven't read any of the documents abstracted," so they will be excluded from the "corrected for bias" responses. The most drastic (but probably also the most nearly accurate) correction for the remaining 50 "extra" responses is to subtract them from the "No" category (respondents who reported finding no inaccuracies in the abstracts.)

Table 25 shows the distribution of responses which results when the above corrections for bias are made.

TABLE 25

Estimates of Percent of Inaccurate Abstracts (Corrected)

	Number	Percent
None	148	77.9
1 or 2 inaccuracies	36	18.9
More than 2 but less than 10%	6	3.2
TOTAL	190	100.0

The responses, when adjusted for bias in the most pessimistic direction, show that almost a quarter of the respondents found that the abstracts are not completely accurate in all cases about the contents of the documents described. A cross-tabulation between the number of documents read and number of inaccuracies reported shows that the more documents a respondent had read, the more likely he was to find and report inaccuracies in the abstracts: 36.8 percent of those who had read 20 or more documents reported finding inaccuracies in the abstracts, as compared to 12.5 percent of those who had read four or fewer documents (and therefore had only four or fewer abstracts in which to find inaccuracies).^a

^a The actual cross-tabulation table for these variables is not included in this report, since it shows the responses actually received rather than the responses adjusted for the inconsistencies of the respondents. The figures reported above would not be changed by corrections for bias but most of the other figures in the cross-tabulation table would be.

One of the respondents who checked "No," he did not find any inaccuracies in the abstracts, explained, "Not for a bibliography of this type where the entry is primarily serving as a clue to the contents."

There were several specific errors reported by the respondents, and also a few general complaints. "Too many articles have very general titles and abstracts and turn out to be very limited or narrow in scope," one respondent wrote. Another felt that the subfield groupings (index descriptors under which abstracts are listed) are often misleading -- they "sometimes have abstracts listed that should not be so classified."

On the whole, the answers of the respondents indicate that the citations in the bibliography are fairly accurate, but that the abstracts themselves often leave something to be desired in terms of an accurate description of the contents of the document abstracted.

e. Format of the Bibliography: Layout, Print, Lack of Binding

This section reports the opinions of the users of the bibliography about several of its physical aspects; that is, those aspects of the reference having to do with the form in which the information is presented rather than with the nature of the information.

Volume 1 of the bibliography had some abstracts printed horizontally on the page, and some printed vertically. In Volume 2 most of the abstracts are printed in the same direction, and, judging from the opinions of the users of Volume 1, this will be a very welcome change. Below is the question which was asked concerning layout, and the distribution of answers received.

Question 16: Some citations and abstracts were placed sideways in order to conserve space. Did you find this inconvenient or annoying?

- No, not inconvenient at all.
- Slightly inconvenient but not inconvenient enough to curtail my use of the bibliography.
- Very inconvenient and annoying, reduces my use of the bibliography.
- No answer.

TABLE 26

Arrangement of Abstracts

	Number	Percent
Not inconvenient	93	27.7
Slightly inconvenient	218	64.9
Very inconvenient	20	5.9
No answer	5	1.5
TOTAL	336	100.0

As pointed out by one respondent, the layout of abstracts in Volume 1 "is particularly inconvenient because of the volume's bulkiness and weight."

The following is the question asked about the quality of the print used in Volume 1, and the distribution of responses received.

Question 19: Did you find the size and boldness of the print satisfactory?

- _____ Yes, satisfactory.
- _____ The print is slightly difficult to read, but does not limit my use of the bibliography.
- _____ The print is so difficult to read that it limits my use of the bibliography.
- _____ No answer.

TABLE 27

Size and Boldness of Print

	Number	Percent
Satisfactory	178	53.0
Slightly Difficult to Read	139	41.4
Very Difficult to Read	13	3.9
No answer	6	1.8
TOTAL	336	100.0

The small size and lightness of the print used in the bibliography apparently does not actually dissuade many people from using the reference, but is annoying or difficult to read for a large proportion of the users. It seems that it would be worthwhile to investigate the possibility of finding and employing in future volumes of the series a type and quality of print that would be easier to read.

Not as many of the bibliography's users reported being inconvenienced or annoyed by the lack of binding as by the quality of print, but more of them expressed very strong feelings about this aspect.

Below is the question asked about the unbound, looseleaf format of the bibliography, and the answers received.

Question 17: The abstracts were sent to you in looseleaf form without any binders. Did this make the reference difficult for you to use?

- _____ It was no problem for me to find suitable binders.
- _____ The lack of a binding has resulted in some inconvenience of use.
- _____ The lack of a binding has severely curtailed my use of the bibliography.
- _____ No answer

TABLE 28

Need for Binding

	Number	Percent
No Problem	191	58.2
Lack of Binding Somewhat Inconvenient	117	35.7
Lack of Binding Severely Curtailed Use	14	4.3
No Answer	6	1.8
TOTAL	328	100.0

Among the complaints and criticisms received about the lack of binding were the following:

"Will not fit standard binders available in industry -- In a Human Engineering document, Tsk, Tsk'."

Due to the lack of binding, one respondent complained, "The first time I picked it up I spilled pages all over the floor."

"The sheer bulk of the volume is intimidating," writes another respondent. "You might save a number of complaints by supplying at least, a set of binder parts long enough for the volume."

Another unhappy user reported that in the copy he had received "One hole (on all pages) was punched at odds with the traditional three-ring binders and had to be repunched."

Several of the respondents reported on the various solutions they had devised for holding the bibliography together.

"I bought a big binder of the kind used for computer print-outs and it works fine," says one.

An engineering psychologist reports, "We used quarter-inch bolts and washers for binding - no problem to find. But the printing is a little too close to the binding to permit easy reading of abstracts."

"Infrequent users can bind as one volume in ACCO binder," suggests another respondent. "We found it more convenient to break into several more manageable units."

There were also several requests that some sort of binder be supplied or made available for future volumes of the bibliography. Some of these are quoted below:

- (1) "It would be more convenient if it could be bound in smaller volumes."
- (2) "I feel that the books would be more useful if bound. Of course, I am assuming that if bound, each book would contain fewer pages than the present book."
- (3) "May I suggest that you recommend or provide (at cost) a proper size binder for the material. Perhaps the work should be bound or unbound depending on choice and cost to the receiver."
- (4) "Would suggest offering bound volumes with price sufficient to cover cost of binding."

(5) "Provide a binder, like USAF Series 80-3. This might preclude it being 'just another bunch of mimeographed papers'."

Evaluations of the Bibliography

a. Comparative Evaluation

In order to obtain an estimate of the value of the Bibliographic Series as compared to other bibliographic sources which are available to human factors personnel, the following question was asked:

Question 18. Have you found a better bibliographic source for literature related to human factors engineering?

_____ No.
_____ Yes. (Please state source: _____)
_____ No answer

TABLE 29

Better Bibliographic Source Available

	Number	Percent
No	298	90.9
Yes	10	3.0
No answer	20	6.1
TOTAL	328	100.0

It is clear from the answers reported above that there just is not any other suitable bibliographic source in the human factors field. The handful of "other sources" which were listed are not general bibliographies available to human factors research personnel. Some of the bibliographic sources which were listed as preferable are the following:

(1) "My own library collection over the past eleven years."

(2) "A Bibliographic Survey and Critical Review of the Role of Anthropometry in the Sizing of the Clothing and Personal Equipment, by M. L. Staples."

(3) "No (better source) for general HFE: Yes, for specific areas covered by the following sources: Bio-Medical Research Studies in Acceleration, Impact, Weightlessness, Vibration, etc."

(4) Conover.

(5) "If you query Tufts with a circumscribed problem you get a selective answer and don't have to read it all yourself; but this is the best book of its kind out."

Twenty not answering is a fairly large number as compared to the response to the other questions. One of the respondents who did not answer the question explains, "It is difficult for me to tell since I have been more concerned with more recent material." It is likely that many of the other 19 people who did not answer also did not do so because they felt unqualified to judge the comparative value and quality of the Bibliographic Series for one reason or another.

b. Praise of the Bibliography

On the last page of the questionnaire, the respondents were instructed to list any criticisms or comments you have which were not covered by the preceding questions." Ninety-three respondents wrote comments in praise of the bibliography and/or to convey their thanks for making this reference available to them. For instance, a Ph.D. in engineering psychology writes, "I feel that a bibliography of this kind fills a vital need and I am grateful to receive it. I feel it will serve a highly beneficial purpose and is and has long been a required item."

A Ph.D. candidate in psychology states that there is "Nothing like it in the field -- I feel the bibliography is a positive contribution to the spread of information. It has decreased bibliographic search time enormously. I look forward to Volume 2 eagerly."

A physiological psychologist who works for a business corporation feels that the bibliography is "Generally a fine job that fulfilled, in large measure, a great need. Thanks."

"Overall, the series is a useful document and a needed one," says an industrial psychologist who works in research and development.

A complete list of the respondent's positive evaluations of the bibliography is included as Appendix F.

c. Negative Evaluations and Miscellaneous Suggestions for Improvement

Seventy-two respondents used the last page of the questionnaire as an opportunity to relay negative appraisals of the bibliography as well as complaints and suggestions which had not been asked for in any previous questions. A comprehensive summary of these opinions is included as Appendix G.

SUMMARY AND CONCLUSIONS

A questionnaire was sent to the 700 individual recipients of Volume 1 of the U. S. Army Human Factors Engineering Bibliographic Series to obtain their opinions about the volume and their suggestions for improving future volumes. The 491 questionnaires returned yielded the following information about the recipients of the bibliography and their opinions:

1. Over 80 percent of the recipients hold a graduate degree.
2. Almost three-quarters of the respondents earned their highest degree in psychology. About 10 percent are engineers.
3. Most of the respondents are employed by corporations, colleges and universities, or the Department of Defense.
4. More than half of the respondents work for organizations employing over 3000 people.
5. At the time they answered the questionnaire, over two thirds of the respondents had previously consulted the bibliography to make a literature search.
6. Most of the third of the respondents who had not consulted the bibliography gave reasons for non-use which were not related to the quality of the bibliography itself. The chief reasons accounting for non-use are the following:
 - a. A literature search simply had not been needed since receipt of the bibliography.
 - b. The respondent had not actually received the bibliography.
 - c. The respondent's work is not related to human factors engineering, so he has no need for a human factors bibliography.
 - d. Lack of binding for the bibliography makes it difficult to use.

7. More than 90 percent of those respondents who had not used Volume 1 wish to receive Volume 2 anyway.
8. More than 40 percent of the respondents who had used the bibliography reported having read at least 26 abstracts.
9. Just over a third of the users had obtained five or more documents abstracted in Volume 1. Forty-one percent of the users had obtained and read no documents.
10. Most of the respondents think that the bibliography is worth at least \$10 a volume to them; almost a third think it is worth \$25 or more. The monetary value placed on the bibliography is directly related to the amount of use made of it, as measured by number of abstracts read.
11. Combining the "Index" and the "Facsimile of Subject Matter File" into a single index is preferred by 26.3 percent of the respondents.
12. Most of the respondents found the system of descriptors used in Volume 1 to be "generally satisfactory," but 50 respondents listed one or more descriptors which they would like to have added. Many respondents requested that the number of descriptors be generally increased.
13. The majority of the users of the bibliography would find Part II easier to use "if greater differentiation in type face and/or indentation were utilized for the various levels of headings."
14. Forty-six of the users listed a subject area or type of document which they feel should be added to the material covered in the bibliographic series. Respondents belonging to disciplines other than psychology or engineering are least satisfied with the coverage of the bibliography.
15. In the opinion of the respondents, the most preferable arrangement of the abstracts in the bibliography would be by subject area.
16. A majority of the respondents is not entirely satisfied with the amount of information included in the abstracts in Volume 1. The most popular addition would be to include the D.D.C. (Defense Documentation Center) number of any document which has been catalogued by the D.D.C. to facilitate the acquisition of such documents.
17. The response to the questions concerning the accuracy of the citations and abstracts indicate that the citations in the bibliography are generally accurate and complete, but that the abstracts themselves often leave something to be desired in terms of an accurate description of the contents of the document described.
18. Almost three-quarters of the users of the bibliography reported that they

found the sideways placement of some of the abstracts in Volume 1 inconvenient or annoying.

19. The small size and lightness of the print used in the bibliography apparently does not dissuade people from using the bibliography, but it is difficult to read for almost half of the users of the bibliography.

20. The lack of binding for the bibliography resulted in some inconvenience of use or actually curtailed use for 40 percent of the users.

21. Only three percent of the respondents reported another reference which they consider to be a better bibliographic source for literature related to human factors engineering.

APPENDIX A

QUESTIONNAIRE

OPINION SURVEY ON VOLUME I OF THE U. S. ARMY
HUMAN FACTORS ENGINEERING BIBLIOGRAPHIC SERIES

Prepared by the Human Engineering Laboratories
Aberdeen Proving Ground, Maryland

Directions for Answering the Questions

In order to facilitate the processing and analysis of your opinions, most of the questions are presented in a check-list form. Unless the instructions for a question specifically ask you to do otherwise, please answer the questions which follow by first examining all of the choices which are presented to you for each question, and then placing a check mark or X next to the answer which most closely describes your own opinion or status. If you feel that it is necessary to expand or modify the answer you choose, or if there is any additional information or comment which you wish to give us, please do so in the spaces provided, continuing on the back of the page if necessary.

First, we would like some information about you and the organization for which you work. Let us again assure you that your answers will be considered confidential and will not be made available to anyone outside of the Human Engineering Laboratories.

Question 1. What is the highest academic degree which you have received?

- High school diploma
- A.A. from a junior college
- B.A. or B.S.
- M.A. or M.S.
- Ph.D.
- Dr.Sci.
- Other (Please specify: _____)

Question 2. In what field or discipline did you receive your highest degree?

_____ Engineering

_____ Psychology: Please indicate the subfield within which you do most of your work:

_____ engineering psychology

_____ experimental psychology

_____ physiological psychology

_____ industrial psychology

_____ educational psychology

_____ social psychology

_____ general psychology

_____ a field within psychology not included in the above list

(Please describe: _____)

_____ Other (Please specify: _____)

Question 3. By what type of organization are you employed in your work in human factors engineering?

_____ I am self-employed.

_____ A U. S. government organization which is part of the Department of Defense.

_____ A U. S. government organization which is not part of the Department of Defense.

_____ A college or university.

_____ A non-profit organization or institution other than a university or the government.

_____ A profit-oriented organization or firm engaged solely in research.

_____ A business corporation or firm engaged in the production and/or distribution of material products.

_____ Other (Please specify) _____)

Question 4. Approximately how many people are employed by the entire organization for which you work?

- Less than five
- 5 - 25
- 26 - 100
- 101 - 500
- 501 - 3000
- Over 3000

The remainder of the questions ask for your opinion about various aspects of Volume I of the U. S. Army Human Factors Engineering Bibliographic Series. In order to be certain that you recall whether or not you have used this specific volume and your reactions to it as a reference, please locate the volume at this time and refer to it in order to answer the questions which follow:

Question 5. Approximately how many times have you consulted Volume I of the Human Factors Engineering Bibliographic Series to conduct an information search?

- None (skip to question 6B if you check this answer)
- One or two times
- Three to ten times
- More than ten

Question 6A. Answer only if you have used Volume I of the Human Factors Engineering Bibliographic Series.

Approximately how many abstracts have you read altogether?

- 1 - 5
- 6 - 25
- 26 - 50
- More than 50

Approximately how many of the documents cited did you actually obtain and read after reading the abstracts for them? _____ documents.

Please skip to question number: 7 on page 5.

Question 6B. Answer only if you have not used Volume I of the Human Factors Engineering Bibliographic Series.

Place a check beside any and all reasons which explain why you have not found the bibliography useful, until you have indicated all reasons which apply to you. If there are any reasons for non-use which are not listed, please explain them briefly.

- My work is not related to human factors engineering.
- Lack of permanent binding makes it too unwieldy to use.
- The instructions for use are too complicated and confusing.
- The index is difficult to use.
- The abstracts themselves seem too vague or incomplete to be helpful.
- I find the printing and/or page format difficult to read.
- It is difficult for me to obtain the documents which are abstracted.
- I have found a better bibliographic source for literature related to human factors engineering. (Please state source: _____)

Other reasons or comments:

Do you wish to receive volume two of the bibliography even though you have not used volume one?

- Yes, send Volume II.
- No, don't bother to send Volume II.

Thank you for taking the time to answer this questionnaire. Do not complete the remainder of the questions; they can be answered only by users of the bibliography. Please place this questionnaire in the return envelope provided for you and mail to us.

Question 7. Since money is the usual measure of usefulness and value, try to place a monetary value on the usefulness of the Human Factors Engineering Bibliographic Series to you. Assuming that it were not available free, what would you consider a reasonable amount to pay for a copy of Volume II of the bibliography, which is about the same size as Volume I?

- Nothing
- No more than \$5
- \$10
- \$15
- \$25

Question 8. The index to the bibliography is divided into two parts: a list of topics which includes cross-references for those terms to which documents have not been coded, and a separate index which gives the accession numbers for those categories to which documents have been coded. Would you prefer to have the two indexes combined?

- I prefer the present arrangement of two separate indexes.
- It doesn't matter to me whether there are two indexes or a combined index.
- I would prefer to have a single, combined index.

Question 9. The inclusion or exclusion of terms or subject-headings to which documents will be coded is always somewhat arbitrary. Have you found the system of descriptive terms and subheadings used in part II of the index generally satisfactory?

- Yes
- No

Are there any additions or changes in terms to which documents are coded which would have made it easier for you to find the abstracts in which you were interested? (Please specify: _____)

_____)

Question 10. In Part II of the Index, major headings have been broken down into sub-headings, subheadings into secondary categories, etc. Are you able to adequately discriminate between major and subheadings?

_____ The indentations in Part II enable me to adequately discriminate between major headings and subheadings.

_____ I would find Part II easier to use if greater differentiation in type face and/or indentation were utilized for the various levels of headings.

Question 11. Have you discovered any subject areas or types of unclassified documents related to human factors engineering which seem to be omitted from coverage in the bibliography? If so, please list them.

Question 12. The citations and abstracts are not presented in any particular order. Have you found the random arrangement satisfactory, or is there some kind of order in which you would prefer to have the abstracts arranged?

_____ I find the arrangement of abstracts satisfactory.

_____ I would prefer to have the abstracts arranged by subject.

_____ I would prefer to have the abstracts arranged according to author.

_____ Arrangement by date of publication would be preferable.

_____ Other (Please specify: _____)

Question 13. Abstracts are necessarily short, but they should be complete enough to enable you to know if the document described contains information on the subject in which you are interested, and to locate the document. Have you found the abstracts in the bibliography adequate in terms of information included, or is there a type of information missing which would increase their usefulness to you?

- I find the abstracts overly long and detailed.
- The amount of information in the abstracts is satisfactory.
- I find the abstracts inadequate. They would be more helpful if they included:
 - Results of the research described
 - D.D.C. Documentation Number
 - List anything else you would like to have added:

Question 14. Have you found that any of the abstracts fail to give correct information about the name, author, publisher, or date of publication of a document cited?

- No
- Yes

If yes, what is the approximate percentage of abstracts which you have found to have such incorrect information?

- 1-5%
- 6-10%
- 11-25%
- Over 25%

Question 15. After obtaining and reading a document or source which is abstracted in the bibliography, have you found any of the abstracts themselves to be misleading or incorrect concerning the contents of the document described?

- No.
- I found one or two inaccuracies.
- More than two abstracts but less than 10% of the abstracts I read turned out to be misleading or incorrect.
- More than 10% of the abstracts were misleading or incorrect
- I haven't read any of the documents abstracted.

Comments or specific errors found:

Question 16. Some citations and abstracts were placed sideways in order to conserve space. Did you find this inconvenient or annoying?

- No, not inconvenient at all.
- Slightly inconvenient but not inconvenient enough to curtail my use of the bibliography.
- Very inconvenient and annoying; reduces my use of the bibliography.

Question 17. The abstracts were sent to you in looseleaf form without binders. Did this make the reference difficult for you to use?

- It was no problem for me to find suitable binders.
- The lack of a binding has resulted in some inconvenience of use.
- The lack of a binding has severely curtailed my use of the bibliography.

Question 18. Have you found a better bibliographic source for literature related to human factors engineering?

- No.
- Yes (Please state source: _____)

Question 19. Did you find the size and boldness of the print satisfactory?

- Yes, satisfactory.
- The print is slightly difficult to read, but does not limit my use of the bibliography.
- The print is so difficult to read that it limits my use of the bibliography.

Question 20. Please list any criticisms or comments you have which were not covered by the preceding questions.

Thank you very much for taking the time to help us improve the Human Factors Bibliographic Series. Please look back over the questionnaire to make sure that you haven't skipped any pages. Then place the questionnaire in the envelope provided and return it to us.

APPENDIX B

COVER LETTERS



**DEPARTMENT OF THE ARMY
U. S. ARMY HUMAN ENGINEERING LABORATORIES
ABERDEEN PROVING GROUND, MARYLAND 21005**

Dear Sir:

During the past few months you should have received from us Volume I of the U. S. Army Human Factors Engineering Bibliographic Series. In order to improve the quality and usefulness of future volumes in this series, we would like you to answer the enclosed questionnaire concerning your opinions on various characteristics of the first volume of the bibliography. Even if you have not actually used this reference, we would appreciate it very much if you would take a few minutes of your time to complete the questionnaire and return it to us promptly. Your answers will be treated as confidential and will not be made available to anyone outside of the Human Engineering Laboratories.

Volume II of the bibliography will be ready shortly. Your return of the questionnaire will indicate your interest in receiving Volume II and subsequent material of this nature.

Thank you for your cooperation.

Very truly yours,

ROBERT F. CHAILLET
Chief, Technical Specifications Office
Systems Research Laboratory
U. S. Army Human Engineering Laboratories



**DEPARTMENT OF THE ARMY
U. S. ARMY HUMAN ENGINEERING LABORATORIES
ABERDEEN PROVING GROUND, MARYLAND 21005**

AMXHE -SYS

3 March 1967

Dear Sir:

Several weeks ago, we sent you a questionnaire concerning your opinions about the first volume of the U. S. Army Human Factors Engineering Bibliographic Series. Perhaps it did not reach you, or perhaps you have misplaced or forgotten about the questionnaire.

If you have not returned the questionnaire, we would appreciate it if you would take a few minutes today to answer the enclosed copy and send it back to us. Your answers will be considered confidential and will be used only for the purpose of helping us to improve future volumes of the bibliography.

Thank you very much.

Yours truly,

A handwritten signature in cursive script that reads "Robert F. Chaillet".

**ROBERT F. CHAILLET
Chief, Technical Specifications Office
Systems Research Laboratory
U. S. Army Human Engineering Laboratories**



**DEPARTMENT OF THE ARMY
U. S. ARMY HUMAN ENGINEERING LABORATORIES
ABERDEEN PROVING GROUND, MARYLAND 21005**

Dear Sir:

Recently we mailed to you a copy of Volume I of the U. S. Army Human Factors Engineering Bibliographic Series. We would like your help to make future volumes of this bibliography more complete and more useful to you.

In a few weeks, a questionnaire will be sent to all those who have received Volume I of the human factors bibliography in order to determine exactly what they like about it and what they would like to have improved in the future. Enclosed is the preliminary version of this questionnaire. If you would take a few minutes to complete it and return it to us during the next few days, we would certainly appreciate it. What we would like you to do is to carefully evaluate the questions themselves as you answer them. Are the directions and the questions clear to you? Does one of the choices of answers from which you are asked to select, fit your own opinion closely? If none of the responses presented applies to you, please write in the answer you would like to give, or suggest a more appropriate series of responses.

Your answers to the questionnaire will be treated as confidential and will not be disclosed to anyone outside of the Human Engineering Laboratories.

You will receive the final version of the questionnaire. You were selected to receive the trial version in addition because your nearby geographic location will facilitate its swift return.

Thank you for your cooperation.

Very truly yours,

ROBERT F. CHAILLET
Chief, Technical Specifications Office
Systems Research Laboratory
U. S. Army Human Engineering Laboratories



DEPARTMENT OF THE ARMY
U. S. ARMY HUMAN ENGINEERING LABORATORIES
ABERDEEN PROVING GROUND, MARYLAND 21005

AMXHE-SYS

Dear Sir:

Thank you very much for returning the preliminary version of our questionnaire. As a result of the replies we received, we have added a few additional questions to the final version of the questionnaire, and changed some questions significantly.

The answers to the questions you have already answered are filled in; we would appreciate it if you would answer the other questions which are marked in red on the enclosed questionnaire, and return the questionnaire to us.

Volume II of the U. S. Army Human Factors Engineering Bibliographic Series will be ready shortly. Your response to our inquiry has indicated to us your interest in receiving Volume II and subsequent materials of this nature, and we have placed your name on our mailing list.

Very truly yours,

ROBERT F. CHAILLET
Chief, Technical Specifications Office
Systems Research Laboratory
U. S. Army Human Engineering Laboratories

1 Incl
Questionnaire

BLANK PAGE

APPENDIX C

THE NON-RESPONDENTS

The purpose of this appendix is to explore how and to what extent the non-respondents to the questionnaire may differ from the members of the population who did respond. To the extent that the non-respondents differ in crucial respects from the respondents, the results of the survey reported here are "biased," and cannot be extrapolated as an accurate description of the entire population.

There were no direct data about the characteristics of the non-respondents to the questionnaire. However, there was some information from which to make a guess about how non-respondents differ from the members of the population who did return the questionnaire. Those respondents who were slow in returning the questionnaire -- who were non-respondents to the first wave and who did not respond until they received a second copy of the questionnaire and a reminder -- can be assumed to be more like the members of the population who never responded than those who returned the questionnaire promptly. The procedure, then, was to see if there were any important differences between Wave I and Wave II respondents which, if extrapolated to the non-respondents, would indicate that their answers to the questionnaire would have changed the results of the survey.

One explanation which accounts for failure to respond is that human factors personnel are a geographically mobile group, with many members of the profession spending a great deal of time travelling and doing field studies. Undoubtedly many of the non-respondents were away from their offices when the questionnaires arrived, and did not return in time to answer. Many of the late returnees of Wave II sent apologetic notes which described just such circumstances.

The undetermined number of members of the population who did not respond because they were away probably do not differ from the respondents in any significant way. Their answers probably would not have changed significantly the percentage distribution of answers received. In other words, it can be assumed that their failure to respond did not bias the findings reported here.

Other reasons for non-response could result in some bias in the results:

- a. Lack of familiarity with the bibliography due to little or no use of Volume 1.
- b. Lack of interest in the bibliographic series as measured by lack of desire to receive future volumes in the series.

c. Lower educational level, with associated lower level of identification with and interest in the human factors field.

Table 1C is a comparison between Wave I and Wave II on the number of times the respondents reported consulting Volume I of the bibliography. The important difference in this table is between the proportions of the two groups of respondents reporting that they have never consulted the bibliography: 28.5 percent of Wave I respondents had not consulted the bibliography at all, whereas 40.3 percent of Wave II respondents had not consulted the bibliography. We can assume, then that even more than 40 percent of the non-respondents have not consulted the bibliography at all. The likeliest conclusion is that the responses reported here would probably be modified somewhat to less use of and less familiarity with the bibliographic series if we had the answers of the 20 percent of the population who did not respond, or responded too late to have their questionnaires processed.

Those respondents who had not used Volume I of the bibliography were asked if they wished to receive Volume II. A total of 108 Wave I respondents and 52 Wave II respondents were asked this question. Table 2C compares their answers. There is a small indication of a trend shown: 13.5 percent of the Wave II respondents to the question do not desire to receive Volume II, whereas only 6.5 percent of Wave I do not want Volume II. However, the numbers here are very small, so that this difference should not be interpreted as having much significance. The 14 respondents who do not want Volume II are absolutely evenly divided between Wave I and Wave II respondents. Another way of assessing the significance of the difference in Table 2C is by the phi coefficient of correlation,* which is only +.116 for Table 2C. The conclusion are (a) that there is probably a slightly larger proportion who do not have much interest in the bibliographic series and who do not want Volume II among the 20 percent of the population which did not respond than among the 80 percent who did respond, and (b) that the reported results for questions related to this variable would be slightly different if we had responses for the entire population.

A comparison of the educational levels reported by Wave I and Wave II respondents is shown in Table 3C. There is a slightly larger proportion of respondents who have earned only a B.A. or B.S. among Wave II than among Wave I respondents (20.3% vs. 12.6%). On the whole, the respondents to Wave I and Wave II do not differ significantly in educational level. The reported results for any questions affected by educational level of the respondent would not apparently be much different if 100 percent of the population had returned their questionnaires.

*Phi can range from -1.00 to +1.00. A discussion of the phi coefficient may be found in McNemar, Quinn, Psychological Statistics, (New York and London: John Wiley and Sons, Inc., 1962) pp. 197-198.

TABLE 1C

Use of Bibliography vs. Wave Returned

Number of Consultations (times)	Wave I	Wave II	Total
None	105 28.5%	50 40.3%	155
One or Two	99 26.9%	36 29.0%	135
Three to Ten	123 33.4%	30 24.2%	153
More than Ten	41 11.1%	8 6.5%	49
Total*	368 100%	124 100%	N = 492

*This table and the following two tables are cross-tabulation counts done by hand-examination of the returned questionnaires rather than by computer. They include a few returns which arrived after the other responses had been sent for computer processing and exclude the "no answers." Respondents who returned the first copy of their questionnaire shortly after Wave II had been mailed out are classified as Wave I in these three tables.

TABLE 2C

Desire for Volume II vs. Wave Returned

Desire for Volume II	Wave I	Wave II	Total
Wants Volume II	101 93.5%	45 86.5%	146
Does not want Volume II	7 6.5%	7 13.5%	14
Total	108 100%	52 100%	N = 160

TABLE 3C

Educational Level vs. Wave Returned

Education	Wave I	Wave II	Total
No Degree	6 1.6%	1 0.8%	7
B.A. or B.S.	47 12.6%	25 20.3%	72
M.A. or M.S.	130 34.9%	40 32.5%	170
Ph.D.	174 46.6%	55 44.7%	229
Other Degree	16 4.3%	2 1.6%	18
Total	373 100%	123 100%	496

APPENDIX D

LETTER REPORT

**SUGGESTIONS MADE BY USERS
OF
THE U. S. ARMY HUMAN FACTORS ENGINEERING BIBLIOGRAPHIC SERIES
FOR IMPROVEMENT OF THE INDEX SYSTEM**

**Starr Roxanne Hiltz
Technical Specifications Office
Systems Research Laboratory
U. S. Army Human Engineering Laboratories**

March, 1967

INTRODUCTION

The second part of Question 9 of the opinion survey on Volume I of the U. S. Army Human Factors Engineering Bibliographic Series reads:

Are there any additions or changes in terms to which documents are coded which would have made it easier for you to find the abstracts in which you were interested? Please specify: _____

Several lines were then left for suggestions or comments by the respondent. This is a report on the answers to Question 9, or, in other words, a report on the suggestions offered by users of Volume I of the Bibliographic Series for improving the index to the series.

The responses reported here have been divided into three groups: (a) those responses related to a general desire for more index descriptors; (b) those offering specific suggestions for additions or changes in index terms; and (c) responses which are general or miscellaneous suggestions for improving the index system.

The original questionnaires have been filed in the Technical Specifications Office according to an identification number assigned to each recipient of the questionnaire. The ID number of a respondent is listed in parenthesis after each suggestion reported, should the reader wish to find out more about the opinions and characteristics of a respondent who made a particular suggestion.

In evaluating the responses reported below, the reader should remember that they were of the "free" type - that is, the respondent followed no checklists or suggested answers. Therefore, if several respondents freely arrived at the same sort of suggestion or comment, it is likely that many more users of the bibliography would agree with them if they had specifically been asked for their opinion.

DESIRE FOR MORE INDEX DESCRIPTORS

An increase in the number of descriptors to which documents are coded in Part II of the index to the bibliographic series would have the general effect of decreasing the number of abstracts which must be searched by a user of the bibliography to separate out those abstracts which deal with the specific topic in which he is interested. More than a dozen of the respondents expressed a desire for such an overall finer breakdown of the subject headings (or descriptors) used in the index.

"Hierarchical order should be carefully designed to limit the references one finds," notes one user (296).

An industrial psychologist writes, "Although I realize it would be a difficult task, I would like to see a finer breakout of topics. For example, the 84 accession numbers called out for 'Dial and Scale Design' could probably be subdivided by Range, Meter Type, etc." (540).

A Ph.D. candidate in Psychology who works for a consulting firm relates a tale of woe in a similar vein:

The volume is so large and unwieldy that searching twenty or thirty items under one heading is quite laborious - I would just as soon not do it. Under photographs, photography and photo interpretation there are 68 references. I was interested only in photo interpretation, but had to look at all those that dealt with how to shoot movies, process film, etc., etc. (177).

Several of the respondents suggest that a guideline, based on the number of accession numbers listed after a descriptor, be established to help decide which subject areas need a finer breakdown of descriptors in the index. A psychologist who works for an aerospace corporation feels that the subject headings should be broken down into smaller categories wherever there are 20 or more listings under a heading (359). This breakdown would mean a major overhaul of the index.

An engineer who works for a large corporation, on the other hand, suggests a much less extensive increase in the number of index terms: "Whenever the number of references under one heading approaches 100, it is time for further breakdown" (459).

SPECIFIC SUGGESTIONS FOR ADDITIONS OR CHANGES IN THE TERMS TO WHICH DOCUMENTS ARE CODED

The following is a list of specific changes in index terms suggested by respondents. No attempt has been made to evaluate the merit or feasibility of these suggestions; they are simply listed below with the ID number of the respondent:

1. Separate "groups" from "teams" (165).
2. How about pulling out "Pressure Suits" and/or "Space Suits" as a separate sub-category under "Space Travel?" (108).
3. I finally found "Evaluation Studies" under "Test and Testing - Proficiency" and "Training - Evaluation of Methods". Because of the importance of this subject, I had expected to find it as a separate major title (286).

4. I found "CRT's" in Index I under "Radar and other CRT Displays". However, I feel that "CRT Displays" are currently used for many more other systems, so that it deserves a separate major title (286).

5. Under Controls I would suggest you combine some of the documents under a heading such as:

Vehicle Altitude or Directional Controls
Automobiles and Other Wheeled Vehicles
Aircraft
Ships
Spacecraft
Submarines
Tanks and other Track Type Vehicles
Trains (654)

6. Under Displays I would use separate categories for such things as Pictorial, Heads-Up or Windshield Type, Quantitative vs. Qualitative Selection, auditory - see Auditory and Lighting - see Instrument Lighting (654).

7. Add "Protective Equipment", i.e., space suits, chemical protection. The present coding system requires search of toxic environments, equipment, escape, etc. There is need for additional coding (641).

8. Add Circadian Rhythm, Vision, Effects of Unusual Environments, Space (465).

9. Including Decision-Making with Human Information Processing rather than with "Thought Processes" would make more sense to me. "Thought Processes" is neither a common nor definitive classification term (242).

10. Add "Load Carrying Equipment" (125).

11. Add: Map and Chart Displays (Horizontal Situation Displays); CRT Displays - other than Radar (611).

12. Add "Mensuration" (Photo Interpretation) (103).

13. Add: Fatigue (CNS - or Mental)
Fatigue (Physiological) (241)

14. New Category: Motion Simulation (as a sub-category under Motion or Simulation) (606).

15. Add: Task Analysis
Personnel Subsystem (302)

16. A more complete breakdown on decision making work. (E.G. sequential vs. single; complex vs. simple choices, etc.) (247).

17. A further breakdown on information processing: by motor vs. perceptual, say (247).

18. Add: Stereoscopic Vision (087).

19. (Under Displays) Add:
Luminance Photometry
Colorimetry
Radiometry
Internal Illumination (323)

20. "Equipment: Design and Evaluation" is a misnomer. It is evaluation alone. Any Design should be under "Product Design" or "Industrial Design" or some such. The abstracts on human engineering in "Product Design" are divided under these two titles and also under "Reliability: Equipment" (106).

21. Very general terms - like "Human" - are useless (296).

22. I am particularly interested in combat effects performance of personnel in combat, and selection for combat resistance. These are hard to find (640).

23. I believe the index should add, after "Personnel: Subsystem Concepts" the item "Subsystem Development." The index and the referenced abstracts confuse "Personnel Subsystems" and "Personnel Systems" which are not the same and should be treated separately. Air Force and Navy and Industry all use "Personnel Subsystem" concepts. I am attaching a copy of AFR 30-8 "Development of Personnel Subsystem for Aerospace Systems" (which is being revised) (162).

GENERAL AND MISCELLANEOUS SUGGESTIONS FOR IMPROVEMENT OF THE INDEX SYSTEM USED FOR THE BIBLIOGRAPHIC SERIES

1. It seems clear, even on cursory examination, that the categorization of anthropological titles is not skillfully done. They are lumped together, probably by people who are not working anthropologists (who could make more adequate distinctions between categories). Some significant reports have been omitted (341).

2. Would an index subject/author/references be useful?

e.g.: Displays-Auditory

Bryan, W. J. 1066, 2043

Carter, J. 567, 1000, 2000 (108)

3. Cross-index without reference to headings, e.g., provide capability to locate "audio-visual aids" without the necessity of turning to "Training Aids and Devices" (472).

4. I would strongly recommend that Part II of the Index not only contain document numbers but in addition, the document title only. Many of the categories have over 100 items listed by number only. If the index is to help the user and save him time, I am sure this suggestion would help (654).

5. Suggest documents also be coded by a major area, e.g., Sonar, Radar, Missiles, Aircraft, Ground Forces, etc. (374).

6. (There is a need for) some method of coding in Part II those listed documents which are in themselves literary surveys or bibliographies (276).

7. Author Index and Source Index definitely needed (610).

8. Show interaction of variables: individual differences vs. training, work methods vs. training, etc. (623).

9. Index by use of more general major headings, i.e., Perception Displays, Physiological; and use boldface type for major headings (526).

10. If time permits, organization by subject and sub-topic as follows would make this document the No. 1 reference guide in industry:

<u>SUB-TOPIC</u>	<u>MAJOR FACTS</u>	<u>SOURCE</u>	
	(3 lines or less)	<u>No.</u>	<u>Title</u>
2.7.2.	1)		
	2)		
	3)		

(360)

11. In general, the abstracts should be cross-referenced more extensively (241).

12. Increase size of type used in major category, i.e.:

AUDITORY

Masking

Reaction Time

etc.

(606)

13. Instead of just the accession numbers, perhaps some key words (like the KWIC index used by HumRRO) would be helpful (177).

14. I approve of APA Abstracts coding.

15. List the page no. of the abstract in Part II alongside Index, Part I.
Example: Anthropometric Measure: II-4
Centers of Gravity: II-4

(553)

BLANK PAGE

APPENDIX E

LETTER REPORT

**USERS' SUGGESTIONS FOR INCREASED SUBJECT AREA COVERAGE
OF
THE U. S. ARMY HUMAN FACTORS ENGINEERING BIBLIOGRAPHIC SERIES**

**Starr Roxanne Hiltz
Technical Specifications Office
Systems Research Laboratory
U. S. Army Human Engineering Laboratories**

March, 1967

INTRODUCTION

Question 11 of the Opinion Survey on Volume I of the U. S. Army Human Factors Engineering Bibliographic Series asked the users of the bibliography:

Have you discovered any subject areas or types of unclassified documents related to human factors engineering which seem to be omitted from coverage in the bibliography? If so, please list them.

A large space was then left for answers. This is a report on the answers received.

Each quoted comment is followed by a number in parentheses which is the Identification (ID) Number assigned to the respondent quoted. These ID numbers are provided in this report in the event that the reader should wish to look up the original questionnaire, which is filed by that number in the Technical Specifications Office.

The number of suggestions received for expanding subject area coverage in the bibliographic series was limited by several factors:

(1) Many of the respondents to the questionnaire had not had Volume I of the bibliographic series long enough or used it enough to have discovered omitted areas of coverage. Thus, there were many responses of the following nature:

"I have not looked at it that closely" (230).

"Have not used it extensively enough to tell" (204)

(2) Since the question was of the free-answer type, the respondent had to remember having discovered an apparently missing subject area sometime in the past when he had actually used the bibliography. There were no check lists or other hints to help him recall such a discovery.

(3) It is much easier for a respondent to leave such a free-answer question blank, or write "none", than to give a carefully considered answer. There is no way of knowing how many respondents had discovered a subject area or specific document omitted from coverage in the bibliography, but lacked the motivation to report their discoveries.

The suggestions received from the respondents have been divided into two groups in this report: (a) those which report that whole subject areas seem to have been omitted from coverage in the bibliographic series or given inadequate coverage; and (b) those which report specific documents or classes of documents which the respondents feel should have been included.

SUBJECT AREAS REPORTED TO BE INADEQUATELY COVERED IN THE BIBLIOGRAPHIC SERIES

1. Use of graphic symbols in public and technical situations. Highway signing, facility identification, instrument and tool identification, maps, charts, diagrams. Perhaps this literature is to be more emphasized in the second part (375).
2. Combat Effects (640).
3. Measurement other than psychophysical scaling (020).
4. There are many papers in the area of diving engineering and physiology that have not been included. Greater coverage in this area would be appreciated (059).
5. Research Apparatus (specific descriptions of same) (108).
6. Simulation methods and techniques:
 - Methods of conducting simulation activities.
 - Methods of simulating equipment and fabricating mockups (276).
7. Computers:
 - Human-interface devices (277).
8. Contact Analog Displays (294).
9. I see nothing in the subject index to show that "quantification of human performance effects in man-machine systems" has been covered (610).
10. Safety could be expanded. Reliability - Human Error, etc., is not adequately covered (527).
11. Visual Enhancement Phenomena (103).
12. Computer Models of Human Thinking: Problem Solving, "cognition," concept learning, etc. (668).
13. Social Psychology (122).
14. Materials Compatibility, i.e., materials in contact with skin (348).
15. Sonar and Sonar Displays
 - Radiation (re hazards to personnel) (135).

16. Vehicle ride - effects of variables other than vibration on subjective judgment of ride (459).

17. River Craft:

Amphibious operations

International coding (controls, displays) (329).

18. Ionization of atmosphere (e.g., negative field) has not been thoroughly covered (637).

19. There are only two references on Vehicle Handling Qualities. It is my opinion that many more than this number exists (658).

20. No (specific omissions discovered), but the depth within a given category is quite uneven. Some areas reflect state-of-the-art as per professional journals; others are quite skimpy even though much has been written in that area; e.g., HumRRO (Army) Studies, although quite appropriate, are not evenly included. An approach of broadening behavior to include impact of human behavior upon sensors and equipment might produce a more evenly useful series (464).

21. Subjective Probability Estimation
Subjective Value or Utility Scaling
Measurement Method and Theory (242).

22. Physiological Capacities
Work Capacity (125).

23. Man-computer communication through CRT consoles (611).

24. AUTOMOBILE

-Operability

-Safety

-Crashworthiness

-Simulators

-Design

-Maintainability

-Passenger Environment

Packaging

Seating

Comfort

etc.

(078)

25. There is a rather extensive literature on human variables in combat. This seems to be inadequately treated. The emphasis on physiological variables in the human factors field seems to be an unnecessary narrowing of the field. The weapons system concept includes social psychological and anthropological variables (137).

26. Magnetic tape recorders (026).

SPECIFIC DOCUMENTS OR TYPES OF DOCUMENTS REPORTED TO BE OMITTED FROM COVERAGE IN THE BIBLIOGRAPHY

Very few specific documents or types of documents were cited as omitted, probably because the bibliography currently lacks author, source, and title indexes. This means that the users of the bibliography have no way of knowing if a document for which they have looked in vain is really missing from the abstracts, or is just indexed under a descriptor they did not think of searching.

1. Yes (I have discovered omissions) - See, for example, Demand Bibliography DDC Search Control No. 048708, issued 3/28/66. I have not located any citations in the bibliography to Mil Spec information - this data would improve usefulness - See, for example, AFSCM 80-3 and 80-9 (120).

2. Have found that some of the documents in psychology branch library at Human Engineering Lab., also at the Space Medical Lab., Wright Field, are not included (322).

3. Most literature surveys in defense industry human engineering seem to be related to quasi-classified areas, (for example, Aircraft range for detection, recognition, etc.). Literature searches of quick reaction nature are somewhat difficult in this light. Can something be done to prepare an unclassified index of information of this type? (540).

4. Research Quarterly (125).

5. I did not notice:

Human Factors Journal

Psychological Abstracts

Journal of Applied Psychology (472)

6. Human Factors (the journal of the Human Factors Society)

USAF 80-3

NASA Blastronautics Data Books and Sheets

Brooks AFB Lectures in Aerospace

Aerospace Medicine (The Aerospace Medical Ass'n Journal) (004)

11. My search for material on large-scale man machine system experiments presumably was fruitless because most of the reports were originally classified. Now many are not. Will downgraded material ever get listed anywhere in an unclassified bibliography?

APPENDIX F

LETTER REPORT

**POSITIVE EVALUATIONS
OF
THE U. S. ARMY HUMAN FACTORS ENGINEERING BIBLIOGRAPHIC SERIES**

**Starr Roxanne Hiltz
Technical Specifications Office
Systems Research Laboratory
U. S. Army Human Engineering Laboratories**

March, 1967

INTRODUCTION

An opinion survey on Volume I of the U. S. Army Human Factors Engineering Bibliographic Series was sent to the approximately 700 individuals to whom copies of this reference had been mailed. The questions included in the opinion survey were directed mainly toward obtaining the opinions of the users of the bibliography concerning the quality and/or need for changes in the index system, abstract content, subject area coverage, print size, etc. There were no questions which specifically asked for an overall opinion of the bibliographic series, much less any question which directly asked for positive evaluations of the quality and usefulness of the bibliography. It is, therefore, quite remarkable how many of the users of the bibliography spontaneously offered words of praise for the bibliography.

This is a report on the unsolicited praise which was received from the respondents to the Opinion Survey on Volume I of the U. S. Army Human Factors Engineering Bibliographic Series. Most of these comments were written by the respondents in the space left after Question 20 of the opinion survey, which read: "Please list any criticisms or comments you have which were not covered by the preceding questions." A few of the comments praising the overall quality of the bibliographic series were jotted in various other locations on the returned questionnaires.

The positive appraisals of the bibliographic series which have been received are listed below in the respondents' own words. Each quoted comment is followed by a number in parentheses, which is the Identification (ID) Number assigned to the respondent quoted. These ID numbers are provided in this report in the event that the reader should wish to look up the original questionnaire. The questionnaires are filed by ID numbers in the Technical Specifications Office.

PRAISE

1. The bibliographic series are a very useful tool. Keep up the good work (238).
2. Excellent job and long needed (398).
3. Believe this is a very valuable general bibliography (103).
4. Best I've seen, so far (104).
5. I find this bibliography to be more useful than any of the others in same line of work (241).

6. It is difficult to imagine a more satisfactory way of reviewing such an immense field short of an expensive, computerized system (606).
7. The volumes have been a great help and I look forward to receiving the next volumes (690).
8. The document seems to me to be very useful (327).
9. In general it is an excellent job which should prove very valuable. I am looking forward to the next volume (021).
10. Congratulations on an excellent job (075).
11. I am delighted with the bibliography and congratulate those responsible for its compilation (173).
12. This is (and has been) a basic source which we use in conjunction with our extensive card file, our collection of bibliographies (on separate subjects) and, of course, Psych Abs. Just keep up the good work, the more bibliographic material the better As noted yours is an indispensable basic resource (057).
13. Congratulations on an excellent piece of work (215).
14. In general, this is an outstanding collection of data (108).
15. I want to express my appreciation for this document..... It is clear that reference to the literature needs to be enhanced in order to facilitate use of the state of the art (258).
16. I feel that a bibliography of this kind fills a vital need and I am grateful to receive it. I feel it will serve a highly beneficial purpose and is and has been a required item (118).
17. Nothing like it in the field --- I feel the bibliography is a positive contribution to the spread of information. It has decreased bibliographic search time enormously. I look forward to Volume II eagerly (262).
18. In the fairly short time I have had this document, I have found it useful and I expect that it will be a valuable research tool in the very much appreciate being placed on your mailing list and would be glad to receive it for service (654).
19. I have found this source more useful than other attempts at a Tufts Handbook, etc. It has been invaluable to me (520).

20. A cursory review of Volume I indicates that it is quite comprehensive and should prove to be a valuable addition to this department's technical references (517).

21. Intend to use it as primary source on next literature survey (138).

22. Please get Volume II out as soon as possible and then follow through with yearly abstracts. I am used to using the old Tufts Volumes and found them extremely useful and time saving in literature searches. After 1962 I really missed them (392).

23. This book is a real boon to those human factors people working in the "boon-docks" without adequate technical and library support facilities (213).

24. This document is very useful for a preliminary search (641).

25. I am looking forward to receiving the next volumes. I feel that this is an extremely worthwhile endeavor. Thanks (277).

26. Generally, I think the bibliography is an excellent work (305).

27. Excellent publication! This is one of the most comprehensive in existence (590).

28. Generally a fine job that fulfilled, in large measure, a great need. Thanks (475).

29. I have found Volume I very useful and am sure Volumes II and III will be even more useful (662).

30. An excellent idea and definitely a contribution to our science!!! (579).

31. Let me say that we were quite pleased to receive Volume I and look forward to Volumes II and III (515).

32. You and your staff are to be congratulated on a good job well done. We have long needed as comprehensive a bibliography as this. I look forward to receiving Volume II (503).

33. I have found the series invaluable and can overcome easily such minor points as no binder and type of print (632).

34. You have done a valuable service for which we are grateful (428).

35. Generally I'm very pleased to have the work. Its existence makes up for any minor errors or inconveniences (389).

36. You are to be commended on what we believe to be a considerable, if not monumental, task. Consider any adverse comments in the nature of suggestions rather than raps. Keep going! (267).
37. All in all, a noble undertaking (244).
38. It is an excellent sourcebook (219).
39. This is by far the best, and certainly the most comprehensive Human Factors Bibliography I've run into. I feel confident that if it can be kept current it will prove to be an irreplaceable asset (166).
40. Basically an excellent job (141).
41. A fine contribution. We are happy to have it. We appreciate how difficult the task is and feel you deserve a great deal of credit (061).
42. I appreciated receiving it very very much (222).
43. I have found it to be generally quite helpful (681).
44. I think the bib is great! (260).
45. Find this an excellent source, am waiting impatiently for Volume II (339).
46. Overall, the series is a useful document and a needed one (540).
47. An excellent job (559).
48. We are anxiously awaiting the next volume -- you have done a good job in a tough area (584).
49. Look forward to Volume II (045).
50. I find the document very useful. The binding, way the material is printed, etc. are not ideal, but it's the content that is important.
I suspect that any serious review of the human factors literature will include reference to your bibliography.
Thanks for a job well done, and I look forward to receiving the next Volume (322).
51. Thank you for making this series available (438).
52. Keep up the good work! (260).
53. I think this new edition is a noble effort (528).

54. The bibliography has already been of great help to us and I expect it to be even more beneficial when volumes containing more current publications are received. Thanks for the service (526).

55. Whatever is done it is considerably better than anything previously available, and I expect it to be tremendously helpful in my work. I hope this will be a continuing effort on your part (194).

56. I think the document is an excellent reference source for any library (217).

57. I feel the compilation and publication of the document deserves a good deal of acclaim (227).

58. Really first rate. My congratulations! I'm looking forward eagerly to the subsequent volumes (247).

59. I think you did a fine job in a field very difficult to cover! (232).

60. It is a fine first effort which I found extremely useful avoiding long searches elsewhere (106).

61. I really appreciate having this Bibliographic Series (407).

62. The bibliography is of great value - very well done (459).

63. I am completely satisfied with this work and I consider this one of the most worthwhile accomplishments in the field. I am looking forward with enthusiasm to receipt of Volume II (298).

64. The document is very comprehensive and worthwhile and should prove a valuable tool not only to Human Factors personnel but also to the personnel in Design Engineering (553).

65. It seems that you have a very comprehensive document here which could prove much more efficient than Psych Abstracts (449).

66. Keep up the good work (016).

67. Extremely valuable bibliography. Am delighted to have it (370).

68. We appreciate having the bibliography (462).

69. On the whole it is a well done and valuable document (357).

70. A fine bibliography for the field (403).

71. Presentation fine (034).
72. Looks good! I'm anxiously awaiting the availability of a bibliography for 1960-1966 literature (078).
73. The bibliography when completed, especially if results are added to abstracts, will be an invaluable reference (307).
74. I consider this to be the best single source in existence (335).
75. I think it is an exceptionally worthwhile effort (176).
76. Good job. Criticisms - none! (356).
77. A brief review indicates that it would be very valuable in support of research (426).
78. I appreciate having the Bibliographic Series Volume I. This bibliographic volume will enable me to see what has been done in areas of my particular interest (423).
79. For better or worse, no HF Research Group can afford to be without this document. I suggest that the demand for it will continue for years and that it should be available as a Government Document through the Gov. Printing Office (561).
80. An excellent piece of work (179).
81. I think the abstracts are very useful to us, and we are looking forward to Volumes II and III (033).
82. The bibliography is the best single source to Human Factors Engineering literature (168).
83. Best I have ever seen -- an excellent and comprehensive Bibliography, and one that should prove extremely useful to those in our profession (084).
84. I think you are to be congratulated (111).

BLANK PAGE

APPENDIX G

LETTER REPORT

**NEGATIVE EVALUATIONS AND MISCELLANEOUS SUGGESTIONS
FOR IMPROVEMENT OF THE
U. S. ARMY HUMAN FACTORS ENGINEERING BIBLIOGRAPHIC SERIES**

**Starr Roxanne Hiltz
Technical Specifications Office
Systems Research Laboratory
U. S. Army Human Engineering Laboratories**

March, 1967

INTRODUCTION

Question 20 of the Opinion Survey on Volume I of the U. S. Army Human Factors Engineering Bibliographic Series reads: "Please list any criticisms or comments you have which were not covered by the preceding questions." This is a report on the negative appraisals of the bibliography and on the miscellaneous suggestions for its improvement which were received in answer to Question 20. The responses have been divided into three groups: (a) complaints about the difficulty of obtaining documents; (b) suggestions related to the bulkiness of the volume and to decreasing search time; and (c) other, miscellaneous criticisms and suggestions.

The number in parentheses, following each quoted response, is the Identification Number of the respondent, on file in the Technical Specifications Office.

COMPLAINTS ABOUT THE DIFFICULTY OF OBTAINING ABSTRACTED DOCUMENTS

Several of the respondents noted that it had been extremely difficult for them to obtain documents which appeared, from the information given in the abstracts, to be pertinent and helpful. A generous sampling of these comments are listed below. They indicate that many users of the bibliography would appreciate the inclusion, in the future volumes, of information about the availability of the documents abstracted, and information (such as D.D.C. numbers) which would aid in obtaining the documents.

1. The big problem remaining is that there should be a source whereby the original documents could be requisitioned (213).
2. The most important practical criticism is that the bibliography is relatively useless because it is so difficult for us to get documents We sent for four documents listed in Volume I for students, but with our usual degree of success we obtained none of them (650).
3. Listing of sources where the articles could be obtained would significantly improve the bibliography's usefulness. Perhaps using a symbol or double underlining or bold type, etc., could indicate that the document is available from the author, the sponsoring command, DDC, etc. (120).
4. I should like to see a method by which the original articles could be obtained (075).
5. If we could just ease the ordering and acquisition process (for documents) your efforts would be complete (403).

6. Some government or private agency papers are difficult to locate. Need address to send for copy if not standard journal issue (058).

SUGGESTIONS AND COMPLAINTS RELATED TO THE BULKINESS OF THE BIBLIOGRAPHY

Several of the respondents noted that the extremely bulkiness of the volume added to the inconvenience and time consumed in making searches. Comments and suggestions for alleviating the problems caused by the size of the bibliography are quoted below:

1. Would have preferred breakdown in years like Psychological Abstracts. Bibliography too bulky by far (138).

2. I placed the bibliography in three, three-ring notebooks of a handy size. However, this creates problems in use in that the index is in notebook one and references may be in any of the three notebooks. An arrangement of the bibliography by subject matter would eliminate this problem. Also, the use of tabs to the major subject areas would help... (305).

3. Volume I is cumbersome due to its size; it would be easier to handle if it had been broken down into separate chapters (by subject) (533).

4. Suggestion on combining to one index and arranging citations according to subject matter. This would reduce the number of pages that must be turned in searching any given area of interest. In the combined index use page numbers to locate subject citations under one heading. List numbers of only those citations which relate to the desired subject but which are located under another heading. Citations not falling under one specific heading could be randomly dispersed under any of the subjects with which they deal or placed in a general section and referenced in the usual manner (474).

5. I think the series would be much easier to use with one Volume for an index and 4-6 abstract volumes arranged by subject matter (e.g. Volume II, As-Da; Volume III, De-G, etc.) (540).

6. Document size is unwieldy. Separate sections would help, particularly if abstracts were arranged by subject (021).

7. The physical size of the volumes should be smaller and maybe bound, say by years (115).

8. Oversize pages or some form of thumb-indexing would be a great aid (403).

9. In addition to page numbers, each page might also contain the accession numbers contained on that page, e.g.

III - 53 (page number)

507 - 516 (Accession No.) (248)

10. It seems that if title, author, etc., and body of abstract itself were placed closer (e.g. one to two lines separating them) and a common number used on both, it would facilitate retrieval as well as conserve space. Possibly a line between columns would be helpful also (681).

11. If we could eliminate the number of steps, e.g., subject heading to coded subject heading to actual abstract, this would improve usefulness (202).

12. The bibliography listing is very useful but the index is very difficult to use.

A Key Word in Context Index (KWIC) is much more helpful. This is a computer prepared index that lists key words alphabetically -- words from the title of the report or other descriptors. The Key Word Index also includes the parts of the title on either side of the Key Word so you see it in context. The index then refers you by # to the Tufts bibliography.

A KWIC index for Tufts bibliographies covering the literature from 1955 to 1962 has been prepared by the Engineering Psychology Dept., Advanced Systems Div., IBM Corp (508).

MISCELLANEOUS CRITICISMS AND SUGGESTIONS FOR IMPROVEMENT OF THE BIBLIOGRAPHIC SERIES

1. The bibliography covers mostly work done by DoD, which is also stored and searched for by DDC. If more attention was paid to the civilian journals for research related to Human Factors Engineering (not necessarily on or about HFE) the bibliography would not be a duplicate of what can be obtained from DDC. A list of journals which are searched should be published, so that articles in other journals can be forwarded for inclusion (125).

2. Although the introduction said that this problem will be rectified in subsequent volumes, I find the lack of results extremely detrimental to (the abstracts') overall utility (681).

3. Could use an alphabetical reference on top of each page in Part II. Two letters or start letters for each page would be sufficient. Could use number references on one corner of pages of Part III to facilitate seeing numbers when flipping through (276).

4. This seems to duplicate some of the yearly editions previously brought out by Tufts, and perhaps the funds could have been better applied to the earlier production of Volume II, which I am desirous of obtaining (485).
5. The first criticism of these bibliographies is that they have been so far from current. The most fundamental criticism is that it is not as "fine grained" or specific as it could be with our increasing techniques. This is not too serious a problem under present circumstances, but it will become more serious (650).
6. It would be nice to know who wrote the abstract -- i.e., the original author or an abstractor. Naturally, it would be better insofar as accuracy if the author wrote the abstract (075).
7. This is an antiquated Information Retrieval System. Have you investigated, for instance, the ABC system? In general, this sort of thing should be automated in the next five years (548).
8. Generally the abstracts were not incorrect, but did not provide enough information, consequently a bibliography would have served the same purpose. It was still necessary to obtain the article to determine its usefulness or applicability to a particular problem (525).
9. Worst job of printing I have ever seen (275).
10. It occurs to me that packaging the introduction and instructions in a small separate pamphlet might help to overcome the initial moment of horror and subsequent putting off of looking at the bibliography until one has time to do it justice, which results from the formidable size of the document. I was delighted at the contents once I opened the cover and wished I had looked at it sooner (307).
11. In my opinion, many abstracts are poorly written, as are many articles (335).
12. Why not microfiche version? (138).
13. Why not include current on-going research tab information from the DDC Forms 613? (460).
14. When I first received it (the bibliography) I was not aware of the source, or the reason for my receiving it. A letter or enclosure would have helped (166).
15. It is suggested that the format of the Psychological Abstracts be used as a guide. Note the following:
 - a. Psychological Abstracts index has a couple of subject words listed with each number rather than a gross sub-topic and then number after number.
 - b. The Psy Abs utilizes key words at the top of each index page as in a dictionary--very helpful.

c. The Psychological Abstracts lists the inclusive numbers at the top of each page. This speeds searching.

d. Finally, the HEL Bibliography index is difficult to search because the numbers extend to the left of the subtopics:

<u>Example form HEL Bib.</u>	<u>Preferred Method</u>
(p. II 42)	
11,810	11,810
Signal Characteristics	Signal Characteristics
465	465
1864	1864
10,345	10,345
12,513	12,513
Simulation	Simulation
1237	1237

16. It would be helpful if the addresses of the document originators, as well as the correct ordering procedure, were provided to assist the reader (364).

17. Please combine, but properly flag, foreign accessions with U.S. bibliography even if bulk becomes a problem. The saving in search time, possible lost document, etc., I think would be more than compensated for. If necessary publish in two parts but distribute as one unit (697).

Unclassified

Security Classification

DOCUMENT CONTROL DATA - R & D

(Security classification of title, body of abstract and indexing annotation must be entered when the overall report is classified)

1. ORIGINATING ACTIVITY (Corporate author) U. S. Army Human Engineering Laboratories Aberdeen Proving Ground, Maryland 21005		2a. REPORT SECURITY CLASSIFICATION Unclassified	
		2b. GROUP	
3. REPORT TITLE OPINION SURVEY ON VOLUME 1 OF THE U. S. ARMY HUMAN FACTORS ENGINEERING BIBLIOGRAPHIC SERIES			
4. DESCRIPTIVE NOTES (Type of report and inclusive dates)			
5. AUTHOR(S) (First name, middle initial, last name) Starr Roxanne Hiltz			
6. REPORT DATE April 1967		7a. TOTAL NO. OF PAGES 96	7b. NO. OF REFS 0
8a. CONTRACT OR GRANT NO.		8b. ORIGINATOR'S REPORT NUMBER(S) Technical Note 4-67	
b. PROJECT NO.		8c. OTHER REPORT NO(S) (Any other numbers that may be assigned this report)	
c.			
d.			
10. DISTRIBUTION STATEMENT This document has been approved for public release and sale; its distribution is unlimited. Released to Department of Commerce for sale to the public.			
11. SUPPLEMENTARY NOTES		12. SPONSORING MILITARY ACTIVITY	
13. ABSTRACT <p>This report is on the responses of the recipients of Volume 1 of the U. S. Army Human Factors Engineering Bibliographic Series to an opinion survey on the volume. It describes the recipients' educational and professional characteristics, and how these characteristics are related to the amount of use they have made of the bibliography and to their opinions about various aspects of the volume.</p>			

DD FORM 1473

1 NOV 66

REPLACES DD FORM 1473, 1 JAN 64, WHICH IS OBSOLETE FOR ARMY USE.

Unclassified
Security Classification

Unclassified
Security Classification

14.

KEY WORDS

LINK A

LINK B

LINK C

ROLE

WT

ROLE

WT

ROLE

WT

Human Factors Engineering Bibliography

Unclassified
Security Classification