



## An Aid to the Analysis of Vocational Interests

J. B. Miner

To cite this article: J. B. Miner (1922) An Aid to the Analysis of Vocational Interests, The Journal of Educational Research, 5:4, 311-323, DOI: [10.1080/00220671.1922.10879258](https://doi.org/10.1080/00220671.1922.10879258)

To link to this article: <http://dx.doi.org/10.1080/00220671.1922.10879258>



Published online: 15 Dec 2014.



Submit your article to this journal [↗](#)



Article views: 2



View related articles [↗](#)



Citing articles: 2 View citing articles [↗](#)

# AN AID TO THE ANALYSIS OF VOCATIONAL INTERESTS

By J. B. MINER  
*Carnegie Institute of Technology*

Three year's trial has demonstrated the service of a blank for training pupils to analyze their work interests. Pupils are often left to flounder under the injunction: "Think what vocation you desire to enter." The blank to be described was developed to meet this situation. It was first tried out with 8,500 pupils in all the Pittsburgh high schools, where it was given as a group exercise in all the forenoon classes. The vitality of the method is attested by the fact that four of the larger schools continued to use it with all new pupils. The method was informally mentioned at the meeting of the National Vocational Guidance Association in 1920. Numerous inquiries followed and several school systems, notably those of Erie, Pennsylvania, and Seattle, Washington, have used the plan. The Y. M. C. A. and other organizations offering vocational guidance in New York and Chicago have also utilized portions or all of the blank. A summary of the 1918 results in Pittsburgh with an exposition of its main feature is here presented to encourage further trial of the method.

The plan differs from other self-analysis blanks in being devoted entirely to the problem of relating the vocational choice to fundamental personal interests. Moreover, the purpose was to show a young person of high-school ability *how* to observe his aptitudes, *how* to discover his special vocational tendencies, and *how* to think about his work interests. It is a blank for training in observation of personal interests so that from a mass of vague impulses the special vocational direction may become better defined. The objection that such analysis is too difficult for high-school pupils was definitely settled by the Pittsburgh experiment. The blanks were filled out by all classes in each school during the forenoon recitation periods, without consulta-

tion or discussion and without leaving the room. This plan of filling out the blank is not advocated as generally wise, but it was used this first time to determine whether the blank could be answered by all classes in high school. It was found that four out of five answered the complete blank so adequately that the data could be compiled. For none was it too difficult to attempt. Instead of giving the blank as a group exercise, several schools now ask the pupil to take it home and talk it over with his parents. In this way the parents also become interested. In either case the blank becomes the basis for individual interviews with vocational counselors.

The blank consists of ten parts printed as a folded sheet of four letter-size pages. Samples may be obtained from the writer upon request. For the purposes of the present paper certain features will be described in detail. The subdivisions consist of: (1) record of occupation of the father and of other relatives or friends whose work has interested the pupil; (2) the occupations in which the pupil has worked, with the features liked and disliked; (3) a list of subjects studied to be checked for those preferred; (4) a list of paired contrasting work conditions to be checked for those which appeal; (5) a list of desirable personal traits to be marked by the pupil for those strong and weak in himself; (6) a request for information about things done *outside of school* which might disclose work interests; (7) a new classification of kinds of occupational activities among which the pupil indicates his first three preferences; (8) a record of how the pupil expects to start when he begins work; (9) an opportunity at the close for the pupil to summarize his ideas about his vocational choice and to assemble the reasons for believing that the vocation best meets his own interests; (10) a record to indicate what people helped by advice to direct the pupil's choice and the kind of advice received.

#### CLASSIFICATION OF OCCUPATIONAL ACTIVITIES

Two new features of the method may be emphasized, namely, the classification of kinds of work activities and the paired con-

trasts of work conditions. Any attempt at occupational classification is most difficult when one considers that some 17,000 occupational designations are listed in the federal index of occupations. The census classification, which is most frequently used, is hardly serviceable in training the pupil to approach the problem by observation of his own experiences. It starts with the following broad groups: agriculture, forestry, and animal husbandry; extraction of minerals; manufacturing and mechanical industries; transportation; trade; public service; professional service; domestic and personal service; clerical occupations. These are suggestive but fail to reach various distinctions in types of vocational interests found among high-school pupils. Neither do the usual classifications of vocational ambitions of high-school pupils reach what seems to the writer to be more fundamental work habits and interests which allow opportunity for special aptitudes and give promise of the most permanent satisfactions in a life work. It may be added that when the Personal Branch of the General Staff of the United States Army attempted to work out a classification index of trades needed in the army it was found useful in practice to bring together those occupations using similar habits and working with similar tools.

The classification which we tried was a venturesome attempt to get away from the industrial framework to the kind of skill required. Furthermore it was the satisfaction of the pupil's special interests which he was urged to seek. He was asked for example, whether he liked to operate machines, to do work requiring delicate muscular movements, to influence people by direct or by indirect appeals, to make and systematize records, to do scientific work, etc. Each field of interest was followed by illustrations. An occupation might require several kinds of activities but the pupil was led to indicate the three major interests, which he wished to consider further.

The full statement of this part of the work appears below with the proportion, in a thousand choices of the Pittsburgh pupils, choosing each group. The results show the distribution of first, second, and third choices combined, instead of the first

choices alone. This better represents the weight of the less common interests. The most favored groups of activities were substantially the same whether the first choices alone were considered or the combined first, second, and third choices. For example, all the six most frequent first choices among the boys and five of the six most frequent among the girls were also among the most frequent six when the first, second, and third choices were combined. The data were compiled not from the complete set of 8,500 papers but from a random sample of 1,666 papers, 582 of which were boys. Each fifth paper in each of the eleven schools including the junior and business high schools, was selected as sufficiently representative for the summary. Among these papers 347 were rejected because three occupational preferences were not indicated. Only one pupil among the 1,666 attempted to be facetious. From the nature of the replies it may be confidently claimed that the blank was answered seriously.

### CLASSIFICATION OF INTERESTS

Under this heading the pupils were directed as follows:

Select the three KINDS OF ACTIVITIES listed below at which you think you would do best and at which you think you would be contented to work permanently. Place the figure "1" before that group which you would place first for yourself. Place "2" before your second choice, and "3" before your third choice.

Remember the unpleasant features of the work and the conditions under which it would be carried on. Consider also whether you have the necessary health and strength, whether you can get the necessary training, and whether this occupation will give you the opportunity to utilize your good traits and follow your interests.

Any occupation will involve a number of these activities, but number only those three groups which appeal most to you. Sometimes it is well to begin by excluding those you dislike. It may help you if you will also compare yourself with others of your own age.

Results were obtained as shown in Table I, the figures indicating the proportions per thousand of combined first, second, and third choices:

TABLE I.—WORK INTERESTS AMONG THE HIGH-SCHOOL PUPILS OF PITTSBURGH

| GROUPS OF ACTIVITIES   | COMBINED FIRST, SECOND, AND THIRD CHOICES PER THOUSAND |       |
|--|--|-------|
|  | Boys   | Girls |
| <b>GROWING PLANTS</b> , as in farming, gardening, greenhouse, etc.   | 65   | 85    |
| <b>CARE OF ANIMALS</b> , as in stock raising, care of horses, etc.   | 46   | 21    |
| <b>OPERATING ENGINES</b> , as locomotives, automobiles, steam plants, etc.                                     | 127  | 11    |
| <b>OPERATING MACHINES</b> , as in manufacturing, using linotype, etc.  | 33   | 2     |
| <b>INSTALLING EQUIPMENT</b> , as electrician, plumber, gas fitter, etc.  | 38   | 0     |
| <b>CONSTRUCTION WORK</b> , as in building, concrete work, railroad and highway construction, engineering, etc. | 113  | 1     |
| <b>DELICATE MUSCULAR MOVEMENTS</b> , as dentist, instrument maker, woodworker, etc.                            | 16   | 2     |
| <b>DISCOVERING AND REPAIRING DEFECTS</b> , as jeweler, automobile repairman, telegraph repairman, etc.         | 51   | 2     |
| <b>TRANSPORTING ACTIVITIES</b> , as railroad operation, express, mail, etc.                                    | 30   | 3     |
| <b>MEETING AND DIRECTING PEOPLE</b> , as secretary, floor manager, conductor, etc.                             | 22   | 53    |
| <b>TEACHING</b> , as in school, shop, etc.   | 13   | 162   |
| <b>WELFARE WORK</b> , as in social settlements, industrial plants, Christian Associations, churches, etc.      | 11   | 102   |
| <b>ADVISORY SERVICE</b> , as physician, lawyer, consultant, banker, etc.                                       | 73   | 29    |
| <b>ORGANIZING PEOPLE</b> , as in societies, in work gangs, in industrial and business concerns, etc.           | 11   | 14    |

TABLE I.—(Continued)

| GROUPS OF ACTIVITIES   | COMBINED FIRST, SECOND, AND THIRD CHOICES PER THOUSAND |       |
|--|--|-------|
|  | Boys   | Girls |
| <b>INFLUENCING PEOPLE DIRECTLY</b> , as in selling, preaching, campaigning, etc.                                 | 22   | 15    |
| <b>INFLUENCING PEOPLE INDIRECTLY</b> , as in advertising, writing, newspaper work, etc.                          | 18   | 33    |
| <b>ORGANIZED PLANNING</b> , as in business, in managing institutions, in developing engineering projects, etc.   | 57   | 3     |
| <b>SCIENTIFIC WORK</b> , as in laboratories, in museums, in research, etc.                                       | 114  | 34    |
| <b>RECORDING AND SYSTEMATIZING RECORDS</b> , as in office work, stenography, bookkeeping, library work, etc.     | 58   | 174   |
| <b>ENTERTAINING PEOPLE</b> , as musician, actor, speaker, etc.   | 33   | 110   |
| <b>ARTISTIC SKILL</b> , as in decorating, window dressing, millinery, costuming, handicraft, printing arts, etc. | 17   | 81    |
| <b>ARTISTIC CREATION</b> , as in writing, designing, composing music, etc.                                       | 16   | 52    |
| Field of activity not on this list and described as follows: ( <i>here the pupil made his own entry</i> )        | 15   | 11    |

As to the adequacy of the classification, it may be said that for the ambitions of high-school pupils the grouping proved to be surprisingly satisfactory. Difficulties occurred with certain specific occupations with sufficient frequency to indicate the advisability of a revision or at least of the addition of those particular occupations to the illustrations of the general fields. For example, *nursing* might be added to "welfare work," and *architecture* to either "artistic creation" or "construction work." *Drafting* might follow the illustration of *engineering* under "construction work." The teaching illustrations should include *music* and *expression*; and *purchasing agent* might follow *business*

under "organized planning." Ambitions such as those for the army or civil service apparently need further analysis to discover the main interests. In the army, for example, is it an interest in commanding, in organizing, or in engineering? It is not to be expected that any classification will escape ambiguity; but if the pupils are led to consider the habits of thought and action to be emphasized, an important step in the proper adjustment to a vocation will have been taken.

The writer has no quarrel with those who contend that tables of the opinions of pupils about their vocational aptitudes have little ultimate worth since the pupils are too immature to settle such questions. It is during the high-school ages, however, that such choices are planned even if they do shift in three months. *The purpose of the blank is not to gather statistical data.* In bold face type at the top of the first page of the blank under the title "Analysis of Work Interests," is the statement: *The purpose of this blank is to help to discover special interests and abilities by suggesting how to observe one's own likes and dislikes.* Nevertheless a tabulation of the results does give a cross-section of the minds of these high-school students at the time of filling out the blank.

### PAIRED CONTRASTS IN WORKING CONDITIONS

The second innovation to which attention may be directed was the presentation of *pairs of contrasts* between some or all of which the pupils would find distinct differences in their own interests. This portion of the blank is represented in Table II. It was suggested by the contrasts which Dean Herman Schneider<sup>1</sup> of the Engineering College at the University of Cincinnati, had found useful in practice. The ratio of selections for boys and for girls is shown for each pair. The attempt was made so to state each number of contrasting pairs that either one of the pair would indicate a commendable characteristic of the individual depending upon the kind of work. The direction to the pupil was: "So far as you can notice a difference in your own interests

<sup>1</sup>"Selecting Young Men for Particular Jobs." See Bloomfield Meyer, *Readings in vocational guidance*. New York: Ginn & Company, 1915.

TABLE II.—INTEREST CONTRASTS

| CONTRASTED WORKING CONDITIONS         | RATIO |       | NUMBER OF CASES |       |
|---------------------------------------|-------|-------|-----------------|-------|
|                                       | Boys  | Girls | Boys            | Girls |
| Slow movements                        | 1     | 1     |                 |       |
| Rapid movements                       | 6.7   | 7.3   | 710             | 815   |
| Less responsibility                   | 1     | 1     |                 |       |
| More responsibility                   | 6.1   | 3.9   | 706             | 796   |
| Doing the same thing                  | 1     | 1     |                 |       |
| Wide variety in work                  | 5.1   | 5.8   | 722             | 834   |
| Methodical work                       | 1     | 1     |                 |       |
| Meeting new conditions                | 6.5   | 5.0   | 676             | 775   |
| Regular time for work                 | 7.7   | 9.4   |                 |       |
| Irregular time for work               | 1     | 1     | 725             | 865   |
| Larger future success                 | 15.6  | 7.7   |                 |       |
| Smaller immediate success             | 1     | 1     | 715             | 830   |
| Work requiring calmness               | 1     | 1     |                 |       |
| Work requiring enthusiasm             | 1.7   | 2.9   | 710             | 827   |
| Changing from place to place          | 1.2   | 1     |                 |       |
| Always working in the same locality   | 1     | 1.1   | 696             | 817   |
| Greater pay with risk or discomfort   | 1     | 1     |                 |       |
| Less pay with more safety and comfort | 2.3   | 5.2   | 694             | 832   |
| Indoor                                | 1     | 1     |                 |       |
| Outdoor                               | 3.3   | 1.6   | 699             | 813   |
| Original                              | 9.6   | 7.8   |                 |       |
| Imitative                             | 1     | 1     | 648             | 778   |
| Planning                              | 2.0   | 1.1   |                 |       |
| Carrying out plans                    | 1     | 1     | 657             | 775   |
| Skilled hand work                     | 3.4   | 8.8   |                 |       |
| Skilled heavy work                    | 1     | 1     | 619             | 718   |
| Broad planning                        | 1     | 1     |                 |       |
| Attention to details                  | 1.6   | 2.0   | 624             | 724   |
| Directing                             | 3.3   | 1.4   |                 |       |
| Following directions                  | 1     | 1     | 664             | 782   |
| Working by yourself                   | 1     | 1     |                 |       |
| Working with others                   | 1.5   | 1.5   | 704             | 802   |
| Working with things                   | 1     | 1     |                 |       |
| Working with people                   | 1.0   | 3.7   | 666             | 799   |
| Thoughtful hand work                  | 1     | 1     |                 |       |
| Thoughtful head work                  | 5.2   | 3.4   | 687             | 804   |

Table reads: Rapid movements were preferred to slow movements 6.7 times as often among the boys and 7.3 times as often among the girls, these

between each of the following contrasts, check those *working conditions* which appeal to you."

The individual peculiarities of the pupils are brought out clearly by these paired contrasts. When a pupil's record is compared with the general trend of the high-school pupils, it is possible to show him at once in what interests he is strikingly different from the rest of his group. For example, eight out of nine boys and nine out of ten girls checked "regular time for work" as contrasted with "irregular." For those who prefer regular time for work this is not important but for the one boy in nine who checks "irregular time for work" the vocational counselor has at once a promising point of inquiry as to the special interest of the boy. It is these special and individual characteristics which are most difficult to discover and which should prove most illuminating within the general level of mental ability of high-school pupils. A pupil who is quite unusual in a number of these choices has thus a cue to his individuality—a cut which offers a new approach to his vocational adjustment if he hopes to utilize his personal incentives. Such knowledge on his part may suggest the type of work, within any one of a number of broader fields, in which he seems likely to find most happiness.

A number of sex differences became evident. For example, 20 percent of the girls compared with 14 percent of the boys chose "less responsibility"; 26 percent of the girls and 37 percent of the boys chose work requiring calmness rather than enthusiasm; 16 percent of the girls and 30 percent of the boys preferred "greater pay with risk or discomfort"; 38 percent of the girls and 23 percent of the boys preferred indoor to outdoor work; 48 percent of the girls and 33 percent of the boys preferred planning to carrying out plans; 58 percent of the girls and 77 percent of the boys preferred directing; 79 percent of the girls and 50 percent of the boys preferred working with people rather than with things. These differences seem to be quite in line with what might be anticipated as to the sexes and therefore support the validity of the method.

This section of the blank has proved so suggestive that the method of "paired interest contrasts" has been further developed

by the writer and utilized in connection with the record of personal history filled out by each freshman entering the Carnegie Institute of Technology. Thirty-five contrasting pairs were included in the blank for entering freshmen. From this larger number of contrasts it seems possible to distinguish differences among groups of students entering different courses in the same college, for example, between those specializing in secretarial work and in household economics.

#### OTHER SECTIONS OF THE BLANK

That part of the blank which lists a series of desirable personal traits, among which the pupils are to check the strong and weak traits in themselves, shows some results which suggest the difficulties of utilizing such information in connection with vocations. However useful it may be for a pupil to evaluate these traits in himself, nobody has yet demonstrated that any of them are more important for one vocation than for another. Further to understand the results of the present study, the actual procedure followed on the blank should be noted. This section was headed as follows:

Among the following DESIRABLE TRAITS underline the *seven* in which you are strongest and in which you could trust yourself most to meet the competition of others. Among the seven, underline with two lines the *two* strongest in you. Among all the traits given below, place crosses before the *two* in which you are the weakest.

This was followed by the list of traits, beginning with those of the more intellectual type. These were: accuracy, common sense, concentration, foresight, imagination, information, initiative, judgment, memory, originality, planning, quickness, reasoning, thoroughness.

Another group of traits followed emphasizing volition and emotion: ambition, cheerfulness, convincingness, courage, courtesy, energy, enthusiasm, health, helpfulness, honesty, industry, leadership, loyalty, neatness, obedience, patience, perseverance, reliability, self-control, tact, self-reliance, resourcefulness, temperance, uprightness.

A random sampling consisting of the responses from about 250 boys and 250 girls was tabulated. This indicated which traits were more likely to be checked. Honesty, for example, was most frequently marked, i. e., by 17 percent of the boys and by 24 percent of the girls. The traits most often regarded by the boys as one of their two strongest characteristics (with their frequencies per thousand) were: honesty, 172; ambition, 91; common sense, 68; health, 58; imagination, 48; loyalty, 48; obedience, 44; cheerfulness, 41. Traits similarly regarded by the girls were: honesty, 243; common sense, 67; health, 67; imagination, 61; obedience, 61; memory, 47; cheerfulness, 45; self-control, 40.

The traits most frequently marked as weakest by the boys (with their frequencies per thousand) were: patience, 120; accuracy, 88; concentration, 83; leadership, 73; imagination, 73; memory, 73; quickness, 54; convincingness, 46. Traits similarly marked by the girls were: patience, 112; leadership, 95; accuracy, 82; concentration, 67; imagination, 63; foresight, 58; quickness, 54; memory, 46; planning, 46.

To a considerable extent these strong and weak traits represent the qualities for which pupils in school are most commonly praised or blamed. They reflect the comments of teachers and relatives. It may be added, however, that the opinions of the closest acquaintances of these pupils in general agree with the responses of the pupils themselves.

An attempt was made to discover whether there was a correspondence between traits regarded as strong and preferred vocations. This was done by examining first the traits underscored by the boys who chose the following four kinds of work activities: "construction work," "advisory service," "scientific work," and "recording and systematizing records." Examination was then made of the traits underscored by girls who preferred "recording and systematizing records" and "teaching." Four of the seven traits most frequently regarded as strong by the boys in each of these four fields were also among the six strongest among all the boys. Four of the seven strongest traits among the girls choos-

ing teaching and record keeping were also among the seven strongest among all the girls. As pronounced a similarity appeared for the traits marked weak. The prospect of finding broad traits like those listed which differentiate occupational interests is, therefore, not promising. When any series of traits is used, it would be better to ask the pupils to consider the traits not generally but in relation to the vocation they are contemplating.

### INTERESTS IN SCHOOL SUBJECTS

The vocational significance of preferences for certain groups of subjects like commercial subjects, art, music, industrial subjects, and mathematics, seems fairly clear in many individual cases. The general distribution of the preferences among 582 boys and 736 girls selected at random is given in Table III. In filling out this part of the blank, pupils were directed to indicate the *two* groups of school subjects that had most interested them. Under each group was printed a list of specific subjects, and in each of these lists the pupils were asked to underline their preferences. They were also requested to put a "T" before the preferred groups of subjects for which their interest was due mainly to the teacher and an "S" where the interest was due mainly to the subject itself. First and second choices and preferences due to subjects and teachers are combined in Table III.

Activities carried on outside of school for recreation or otherwise, were sounded out by a section of the blank headed: "What

TABLE III.—INTERESTS IN SCHOOL SUBJECTS

| GROUPS OF<br>SUBJECTS | FIRST AND<br>SECOND CHOICES<br>PER THOUSAND |       | GROUPS OF<br>SUBJECTS | FIRST AND<br>SECOND CHOICES<br>PER THOUSAND |       |
|-----------------------|---|-------|-----------------------|---|-------|
|                       | Boys  | Girls |                       | Boys  | Girls |
| Art . . . . .         | 41  | 81    | Household             |   |       |
| Commercial            |   |       | Economics . . .       | 0   | 118   |
| Subjects . . . .      | 124   | 225   | Industrial            |   |       |
| English . . . . .     | 110   | 228   | Subjects . . . . .    | 180   | 4     |
| Foreign               |   |       | Mathematics . . .     | 134   | 66    |
| Language . . . .      | 70  | 88    | Music . . . . .       | 32  | 84    |
| History and           |   |       | Science . . . . .     | 234   | 58    |
| Civics . . . . .      | 74  | 48    |                       |   |       |

do you do OUTSIDE OF SCHOOL, for recreation or otherwise, that you think will help you in your future occupation? For example: kind of reading, your hobbies, exhibitions or places you visit, your work in church, clubs, etc., etc." The answers of 117 boys were examined; 38 were found to be vocationally suggestive and 7 slightly so. For 73 girls, 22 were suggestive and 10 slightly so. Naturally the majority are not differentiated by those avocations.

### SUMMARY

The idea of helping high-school students to observe their own vocational tendencies was tried out with considerable success. The method was to fill out a blank which analyzed and summarized those interests which bore more or less directly upon vocational satisfactions. Employment experiences, school subjects, contrasting work conditions, avocations, etc., were brought under consideration. In asking for a choice, the occupational fields were classified according to the types of activities emphasized. The table of common tendencies in marking pairs of contrasted interests affords a basis for noting individual peculiarities. This and the preliminary occupational classification are new features which seem promising. Even as a group exercise the method proves stimulating. Parents become interested when the pupils take the blanks home for discussion, and vocational counselors find them an excellent introduction to their interviews.

### SUGGESTIVE BLANKS

- Atlanta, Georgia, Vocation Bureau, George D. Halsey. *The "averaged-opinion" plan of vocational guidance.*
- Bureau of Personal Research, Carnegie Institute of Technology, Pittsburgh, Pennsylvania. *Interest analysis blank.*
- Business Training Corporation, New York, New York. *Self-analysis. In its course in modern production methods.*
- Erie, Pennsylvania, School District. *Self-analysis for counseling purposes.*
- National Institute for Moral Instruction, Chevy Chase, Washington, D. C. *The perfect human being.*
- Puffer, J. Adams, Hudson, Massachusetts. *Vocational guidance Chart for men.*
- Rugg, H. O. "Self-improvement through self-rating: a rating scale for judging high school or college students," and "Self-improvement of teachers through self-rating." *Elementary School Journal*, 20: 670-684. 1920.
- Yerkes, Robert M., and La Rue, Daniel W., *Outline of a Study of the Self*, Harvard University Press, Cambridge, Massachusetts.
- Young Men's Christian Associations, International Committee. *Boy's Work Committee. Self-analysis blank.*
- Young Men's Christian Association of Chicago, High School Department. *Individual analysis blank.*