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# THE RELATIONSHIP OF CERTAIN FACTORS TO COUNTY AGENT SUCCESS

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# THE RELATIONSHIP OF CERTAIN FACTORS TO COUNTY AGENT SUCCESS\*

IVAN NYE†

## 1. THE RESEARCH PROBLEM

**The Practical Problem:** In the Missouri Agricultural Extension Service in 1951 there was a turnover of 17 per cent among men county agents, associate, and assistant agents. This represented a considerable loss both to the Extension Service and to some of the individuals involved. Besides those who quit, there were others who were not happy with their work or were not doing an effective job, even though they were still in the Extension Service. Perhaps even more important were the differences in results achieved by the most effective, and least effective, agents. If means could be devised to select for county agent positions only men similar to the most effective agents, the educational results achieved by extension would be greatly increased.

The practical problem was, then, to discover what background, training, and other factors combined to produce successful agents and to construct instruments to measure validly those factors so that (1) counselors could better aid students to decide whether to train for extension positions; and (2) administrators could better decide whether to employ a given man as an extension agent.

**The Theoretical Problem:** The theoretical problem involved the wider area of factors of vocational selection: (1) the identification of the principal variables associated with success or failure in the vocation; (2) the development of methods by which the variables could be measured; and (3) the

\*The project as planned was composed of two parts: (1) the construction of an instrument to predict county agent success; and (2) the testing of the instrument by employing it to actually predict the success of agents at the time of their employment, and, by following their vocational experience for at least two years, to determine the accuracy of the prediction.

Since it became financially impossible to complete the project, the present report covers only the construction of the instrument, the determination of the relative contributions of the several variables measured by the instrument, and its ability to predict the original sample. Its ability to predict other samples is unknown, as is its usefulness as a counseling instrument.

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determination of the relative importance of these several variables for vocational success. The present study undertook to provide more precise answers to these questions for county agents so that some of the methods and findings could be applied or adapted to wider areas of vocational selection, particularly the teaching vocations.

**Assumptions and Hypotheses:** Four basic assumptions were made during the planning stage of the research:

(1) That the basic characteristics necessary for success in county extension work are formed prior to graduation from college. This assumption was necessary for a comparison of agent data with those of a random group of College of Agriculture seniors. It has been substantiated by virtually all recent socio-psychological research, that basic personality characteristics, interests, and values are formed prior to that age. Of course, the individual's family, community, and school backgrounds are entirely fixed prior to that age.

(2) That the major variables associated with county agent success are his background, training, intelligence level, vocational interests, attitudes, and other personality characteristics.<sup>1</sup> This assumption was made after detailed study and observation of the county agent's job and discussion of the problem with county agents and supervisors.

(3) That the above characteristics are measurable; instruments either already exist or can be created, which measure these variables.

(4) That it is possible to measure county agent effectiveness.

Two hypotheses were stated for testing. The primary hypothesis was stated: that success in county extension work can be predicted from a combination of an individual's background, training, intelligence level, vocational interests, attitudes, and other personality characteristics. The secondary hypothesis was stated: that "in-service training" can increase or decrease the probability or degree of success of an agent to a limited degree.

**Pertinent Previous Research:** Research with agricultural extension personnel has been almost totally non-existent, consisting largely of a few studies of the college courses that county agents have taken or would like to take. Many studies have been made of the effectiveness of various individual teaching techniques, but these are of marginal interest here.<sup>2</sup>

Of more methodological interest for the present research problem has been the attempts to predict the success of public school teachers and psychologists. Of particular interest is research reported by Kelly and Fiske concerning the comparative predictive efficiency of pencil and paper tests, and

<sup>1</sup>The writer is aware that the individual must also be fitted to the particular county in which he works. This problem of matching deserves investigation, but it is beyond the scope of the present project.

<sup>2</sup>For an extensive bibliography, see Herbert F. Lionberger, "Reception and Use of Farm and Home Information by Low Income Farmers in Selected Areas of Missouri," doctoral dissertation, University of Missouri, Columbia, 1950.

intensive interviews. They found that personal interviews, even the most elaborate ones of a week's duration, added nothing to the predictive efficiency of paper and pencil materials; as a matter of fact, these interviews decreased it slightly.<sup>3</sup>

Of some 700 studies made of public school teachers,<sup>4</sup> most were concerned with attempting to predict teaching success by means of one variable, such as intelligence scores, high school grades, certain personality traits, etc. Although many of these established positive correlations between their single variable and teaching success, the correlations were too low to be of much predictive value. Roster and Rolf achieved higher correlations with teaching success by combining several variables.<sup>5</sup>

An important methodological contribution has been made by researchers in constructing and weighting their instruments from actual group differences. Two of the outstanding instruments thus constructed were the (Strong) Vocational Interest Blank for Men, and the Minnesota Multi-Phasic Personality Inventory. Each was constructed from measured differences between the group that it was desired to predict and a general population.

**Theory of the Present Project:** The present research was based on the belief that it is sounder theoretically to begin with the groups that it is desired to predict, and to measure actual differences between these groups and those which it is desired to distinguish them from, than it would be to devise instruments which the investigator thinks should measure differences between the groups. In this case, the groups involved were (1) "acceptable" county agents and a random sample of college of agriculture seniors, and (2) the most effective and the least effective thirds of the "acceptable" agents (agents who have served more than 18 months without resigning or being dismissed).

Differences between the first groups provided a measure of differences between the county agent occupation and other occupations that employ agricultural college graduates; differences between the second groups measured differences in effectiveness within the occupation.

One major theoretical premise may appear self-evident, but it has been so consistently ignored that it appears necessary to state it. It is that vocational success is the product of several important variables which may not necessarily be closely related. The prediction of vocational success therefore necessitates the identification, measurement, and combination of *several* major variables associated with vocational success.

<sup>3</sup>E. L. Kelly and D. W. Fiske, "The Prediction of Success in the V. A. Program in Clinical Psychology," *The American Psychologist*, Vol. 5, No. 8 (1950).

<sup>4</sup>C. W. Stanford and J. L. Trump, section on "Pre-service Teacher Selection," *Encyclopedia of Educational Research*, edited by Walter S. Monroe, The Macmillan Company, New York, 1950.

<sup>5</sup>L. E. Roster and J. E. Rolfe, "The Measurement of Teaching Ability," *Journal of Experimental Education*, Vol. 14, pp. 6-74, (1945).

## II. THE RESEARCH PLAN

**Who Are The Most Effective Agents?** Since a major objective of the study was to locate and measure differences between the most effective and least effective agents, it was necessary to devise means to measure success in county agent work.

A brief survey of past efforts to measure professional effectiveness disclosed that three principal methods have been employed: (1) the judgment of qualified people, (2) possession or non-possession of characteristics or methods which are believed to be associated with good job performance, and (3) actual results achieved by the individual. It would appear that the third is the most desirable criterion, whenever it is possible to measure it with reasonable accuracy. For example, it is often easy in industrial production to determine worker efficiency by the number of units of the product he produces because other factors can be held relatively constant. However, the county agent may be working at a dozen different jobs—tasks as different as assisting farmers to develop farm and home plans, advising farmers on the economic outlook, training rural youth through the 4-H program, and making soil tests and recommendations. All of his different responsibilities require different and difficult measures of effectiveness. Nor can the rough and arbitrary measure of over-all increase in farm income in a county be employed because, obviously, hundreds of factors are involved besides the activities of the county agent. It was concluded, therefore, that although the actual product of the county agent's efforts is the perfect measure of his effectiveness, it cannot be used directly.

Of the two remaining measures, "Characteristics and methods believed to be associated with effective county agent work," appears less defensible, because it actually requires three approximations. It is necessary, first, to secure qualified persons to judge who is doing effective work; second, to determine which methods employed and what personal characteristics possessed were responsible for the superior performance; and finally, to determine whether any given agent possesses these characteristics or employs these methods.

Thus, the ratings of qualified persons appear to be the most valid for the occupation of county agent. Previous research has shown that when several people know the nature of the occupation and the performance of the individual, they can agree on the effectiveness of the individual. Sandiford states the case with reference to teacher ratings: . . . "although no one can define exactly what is meant by successful teaching, everyone has a good general idea of what the term means, and it may be assumed that if a sufficient number of informed persons select an individual as a successful teacher, then he is one."<sup>6</sup>

<sup>6</sup>Peter Sandiford, "Forecasting Teacher Ability," Bulletin No. 8, Department of Educational Research, University of Toronto, p. 39, (1937).

There are 3 principal groups who may be qualified to rate the effectiveness of county agents: first, members of the administrative staff who must ultimately be held responsible for his work; second, his colleagues; and third, the farm people he serves. It was believed that professional extension personnel are somewhat better qualified to serve as judges because of their experience and more extensive acquaintance with many agents. However, the people of Missouri counties can, and sometimes do, secure the removal of any county agent of whom they do not approve. Sometimes an agent is approved by his administrators and disapproved by the local farm people at the same time. It therefore appeared desirable to determine how the agent was rated among the people he served, as well as by his administrators and colleagues.

From these groups were chosen 10 raters—3 administrative, 2 colleague, and 5 local. The administrative ratings were secured from the Assistant Director of Agricultural Extension; the state agent (supervisor) of each of the 5 administrative districts; and the agent's salary, as compared with other agents of equal tenure, was used as the third source for administrative rating.<sup>7</sup> The colleague ratings were obtained from 2 of the subject matter specialists who have worked with county agents throughout the state for many years.<sup>8</sup> Three of the 5 local ratings were from farm extension leaders. These were selected by the writer from lists which the state extension office requires for other purposes. The remaining 2 evaluations were obtained from local business and professional people who had taken an active interest in agricultural extension work. This selection made it certain that the people who rated the agent knew the man and the profession involved. Only agents with at least 18 months local tenure were rated. The fact that these extension leaders were likely to be more favorable to the agent than the average local person was not a serious objection because they were selected in the same manner in each county. Any favorable bias remained a constant factor so far as comparisons between county agents were concerned.

To secure the maximum uniformity in rating, all raters used the same blank. It was composed of 27 detailed questions, of which 13 were concerned with the degree of effectiveness with which the agent discharged his duties; 14 required an estimate of important personal characteristics of the agent. Finally, the rater was asked to give his over-all ratings of the man as a county agent, taking everything into account. In this, he was allowed to consider other factors outside those on the blank.

<sup>7</sup>That is, if a given agent's salary was higher than the average of agents who had served an equal period, he was assigned a higher rating; if equal, an average rating; if below average, a lower rating.

<sup>8</sup>Subject matter specialists are the connecting link between the Agricultural Experiment Station and the county agents. They keep agents informed concerning new research in their special fields. Almost all, including those who assisted in this project, are former county agents.

**Procedures for Collecting Ratings:** The administrators and specialists were given identical instructions. The nature of the project and the use to be made of the ratings was explained in some detail, and all questions asked were answered fully before the ratings were requested. They were told that their ratings would be kept completely confidential and that no agent would be hurt or helped by their ratings. They were instructed to rate each only on his effectiveness as a county agent, and they were instructed to take into account limitations imposed upon him by the characteristics of the county in which he worked, and the extent of his experience.

The same form was employed and the same general principle was adhered to in local ratings, but some variations were necessary. The writer personally interviewed the farm, business and professional raters.<sup>9</sup> Alternates from the same lists were substituted when the person originally picked was completely unavailable (such as in the hospital or out of the state). The writer identified himself with the College of Agriculture, explained briefly the nature of the project, and emphasized that the county agent would be affected in no way by his rating. All questions were answered frankly by the interviewer, and in as much detail as the respondent's interest warranted. Sometimes this required an hour or more. No outright refusals were encountered, but two farmers were unwilling to make more than a general rating. Two elderly farmers were excused because their work had been with a previous agent.

All farmers were shown the rating sheet which contained neither their name nor that of the agent's; only a serial number by which the agent could be identified. Some farmers preferred to mark the sheet themselves; others preferred to tell the interviewer what they thought and have him make the checks. Their preference was respected. A limited amount of probing was initiated when the respondent appeared uncertain of his rating. Most respondents checked every point but they were not required to do so if they were totally unfamiliar with some phase of the agent's work.

The ratings resulted in two scores for each agent, one based on ratings on 27 points, and the other based on over-all ratings. In each case the agent was given a score of 1 for a "poor" rating, 2 for "fair," 3 for "good," 4 for "superior," and 5 for "excellent." The scores given by the 10 raters were pooled and averaged, giving each agent two numerical scores, one based on 27-point ratings and one based on over-all ratings. Since only one total rating was desired for each man, inter-correlations between raters were run, using each type score in turn. It was found that the over-all ratings inter-

<sup>9</sup>The writer conducted these personal interviews in 57 of the 114 counties of the state. The original plan envisioned all counties covered in this manner, but financial deficiencies prevented complete coverage. Since the administrative ratings alone average 0.2 lower than all 10 ratings combined for the same agent, that amount was added as a constant to the agents' scores that had only administrative ratings.



correlated higher than the 27-point ratings<sup>10</sup> and therefore was adopted as the agents' effectiveness score.<sup>11</sup>

The inter-correlations between raters are as follows: Assistant Director of Extension, and District Supervisor .63; administrators (pooled), and specialists (pooled) .67; all central office ratings pooled and all county ratings (pooled) .53; District Supervisors and subject matter specialists .58. County people tended to give ratings somewhat higher than the central staff. The mean rating given by county raters for all agent ratings was 68 per cent of the possible maximum; for central office ratings it was 58 per cent of the possible maximum.

**Selection and Construction of Research Instruments:** After a careful analysis of the county agent vocation it was assumed that the major variables associated with county agent success were: family, community and socio-economic background, school and college training, intelligence level, vocational interests, attitudes, and other personality characteristics. It was necessary, therefore, to select or construct instruments capable of measuring these variables. The Army General Classification Test and the Vocational Interest Blank For Men were chosen as the best validated measures of general learning ability and vocational interests respectively. The Minnesota Teacher Attitude Inventory appeared the most appropriate for attitudes because the county agent is one of many types of teacher. No single, complete personality inventory appeared appropriate; some were too long and some measured the wrong variables.<sup>12</sup> Finally, several individual sub-scales and portions of scales were selected.

Since no satisfactory instrument existed for the measurement of background and training, the writer constructed a "Background and Training Blank" of 142 items covering the group experience and training of the agent. State agents (district supervisors), and county agents themselves suggested to the writer some of the items in the blank.<sup>13</sup> After thorough scrutiny by rural sociology, extension, and psychology staff members it was pre-tested in a graduate research class.

**The Sample:** All of the men county agents, associate agents, and assistant agents who were employed by the Missouri Agricultural Extension Service

<sup>10</sup>A copy of the rating blank can be found in Appendix C.

<sup>11</sup>Although the 27-item score is not used in the succeeding analysis, it is believed to possess some rating value because it makes the rater think of all the main responsibilities of the county agent, which he might not otherwise do.

<sup>12</sup>Most personality inventories have been constructed with the intent of detecting neurotic and psychotic tendencies rather than for measurement of differences in such "normal" characteristics as cooperativeness, objectiveness, and other characteristics which might be important in vocational selection.

<sup>13</sup>Particularly State Agents F. E. Rogers, Vance Henry, B. W. Harrison, J. U. Morris, and R. B. Baker, and County Agents Frank Wright, William Knight, and John Murray. Not only did the agents contribute many suggestions, but they permitted the writer to accompany them while they carried on their regular duties, thus greatly accelerating the writer's understanding of the job.

as of April 1, 1951, were included in the sample. Since all were included, the sample might be considered a complete population instead of a sample; however, since the main purpose of the investigation was to measure characteristics of the present group so that increased knowledge of future groups might be possible, it is clear that the 100 per cent sample of agents employed April 1, 1951, must be considered a sample in time, of future as well as past, Missouri agents.

There is, of course, no way to predict exactly what the characteristics of future groups of agents may be. The present group differs in 2 respects from that of 10 or 20 years ago. More of the present group have had army experience and more have chosen extension work during a period when the salary of the county agent was less attractive, comparatively, than previously. Army experience does not, however, appear to have any direct association with agent effectiveness, since a comparison of agents who had army experience with those who had not failed to disclose any significant differences.

Although the present agent group differs from past groups with respect to army experience and possible choice of occupations, it may well be typical of future agent groups in those respects. It was concluded that the present agent group is an unbiased sample, in time, of future Missouri agents so far as their characteristics can presently be determined. The fact that a 100 per cent sample was obtained, eliminated many biases which are ordinarily encountered.

It appears to the writer that some reservations must be made in treating a sample selected entirely from any one state as an unbiased sample of the 48 extension services, since there are known differences in the organization and philosophies of their administration, and cultural differences among their people. However, Missouri is probably as representative as any *one state*. Its administration is about mid-way between complete integration with farm organizations and complete separation from them. The state includes in its southeast ("bootheel") a portion of the plantation economy of the Cotton South; its broken south central areas are similar to the Appalachian Mountain region; its northwest belongs to the Midwest corn belt; and the metropolitan areas of Kansas City and St. Louis give it a rural "fringe" representation.

It should be noted, however, that the Missouri Agricultural Extension Service was not representative of the extension services of other states in respect to salary of its agents in the nation. Missouri ranked 45th in this respect for men agents in 1949. It is therefore suggested that the present findings be regarded cautiously when applied to other states until such time as the Missouri findings can be tested elsewhere.

The second sample consisted of a 40 per cent sample of the graduating seniors of the College of Agriculture ( $n = 131$ ) plus all seniors who had

identified themselves as extension advisees ( $n = 38$ ).<sup>14</sup> All of this group cooperated except three, which gave approximately 98 per cent of the desired sample.<sup>15</sup>

**Collection of Field Data:** Since the research plan called for the measurement of differences between agents and non-agents, and between the most and least effective agents, every effort was made to keep other factors constant. The same inventories were administered to the above groups under the supervision of the writer.<sup>16</sup> Agents completed their inventories at their regular monthly district meetings. They worked with subject matter specialists in the morning and with the writer in the afternoon. In cases where it had been impossible for an agent to attend the regular district conference, the writer visited his county and secured the completion of the inventories.

Both students and agents were given a short explanation of the nature and the need for the research and were assured that their complete anonymity would be respected. The actual time used to complete the inventories varied between four and five hours, depending on the working rate of the informants. Smoking was permitted, a break was given, and refreshments provided midway through the period. Excellent rapport was attained and maintained. That was perhaps best illustrated by the fact that when it became necessary for the agents to mail in one inventory, only 2 of the 186 failed to do so. Research data for both samples was more than 99 per cent complete.<sup>17</sup>

**Selection and Weighting of Test Items:** The items from the inventories were selected and weighted according to their usefulness in distinguishing between agents and non-agents, and between the most and least effective agents. Presumably all the items in all the inventories possess some usefulness for measuring something, but these values were disregarded and the sole criterion of selection and weighting became an item's usefulness in differentiating between the groups that are the subject of this research. This usefulness of each item was tested by comparing how it was answered by each group. A difference between group responses significant at the 5 per cent level was required for acceptance of an item. For example, a question answered as follows was weighted as indicated:

<sup>14</sup>An advisee is a College of Agriculture student who has indicated an interest in becoming a county agent. He is advised by one of the state agents concerning the courses which will best prepare him for an agent position. Since 1948, about half of the agents employed have come from this group. Not all advisees are employed upon graduation.

<sup>15</sup>Cooperation of seniors was voluntary, but participation was strongly urged by the College administration. Most of the group participated in one of four large group sessions held during the afternoons and evenings when fewest classes were scheduled. The remainder came in as small groups to the University Counseling Bureau.

<sup>16</sup>Four graduate assistants from the University Counseling Bureau assisted the writer with the student group.

<sup>17</sup>One agent had recently suffered a nervous breakdown and could not complete three of his five inventories; one inventory was lost or misplaced; and one agent was unable or unwilling to complete two inventories, thus of some 950 inventories from the agent group, only 6 or about 0.6 per cent were not completed.

Agents:	"yes"	60%	"Undecided"	15%	"no"	25%
Non-Agents	"yes"	40%	"Undecided"	10%	"no"	50%
Weights	"yes" = +1		"Undecided" = 0		"no" = -2	

The answer "yes" was given a weight of +1 because the difference between the two groups (60 per cent and 40 per cent) is significant at the 5 per cent level but not at the 1 per cent level.<sup>18</sup> The sign of the weight is positive because more agents than non-agents answered "yes." "Undecided" received a zero score because the difference between 10 per cent and 15 per cent is not significant at the 5 per cent level. The answer "no" received a -2 weight because the difference is significant above the 1 per cent level and more non-agents than agents answered "no."<sup>19</sup>

The same item (used as an illustration above) might or might not also differentiate between the top third and bottom third of agents. In this case, for illustration, the following figures are taken:

High Agents	"yes"	80%	"Undecided"	5%	"no"	15%
Low Agents	"yes"	40%	"Undecided"	25%	"no"	35%
Weights	"yes" = +2		"Undecided" = -1		"no" = -1	

Thus, the same item may have a different value for differentiating between high and low agents from that for differentiating between agents and non-agents; or, it may differentiate between one pair of groups and not the other, in which case the item received only one set of weights.<sup>20</sup> Another example illustrates the rejection of non-significant items:

High Agents	"yes"	47%	"Undecided"	25%	"no"	28%
Low Agents	"yes"	54%	"Undecided"	20%	"no"	26%

Although there are some differences in these two distributions, they are not large enough to be considered significant, and the item would be discarded.

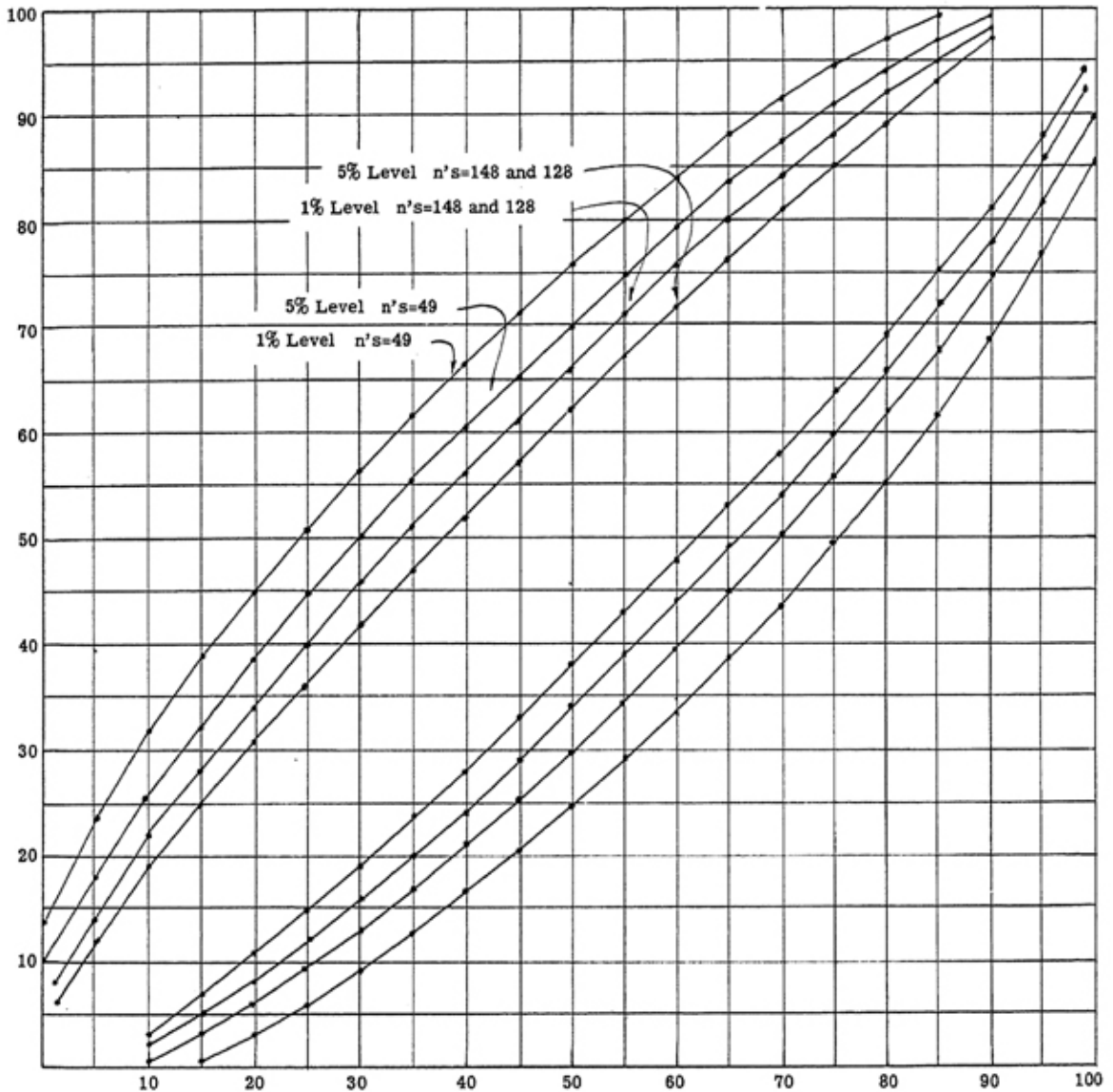
The agent-agent scale based on differences between the most effective and least effective agents, and the agent-non-agent scale based on differences between agents and a random sample of men going into all agricultural occupations *are completely separate*. Some items are included in both scales, but those items are weighted differently according to their ability to discriminate between the two pairs of groups.

A graph was constructed to expedite the estimation of significance of differences. This was accomplished by plotting the size of differences necessary to be significant for a given *n* at various percentages of the distribution. These points were then connected by a smooth curve, as illustrated in Graph 1.

<sup>18</sup>In non-statistical language "significant at the 5 per cent level" means that if we were to repeat the study with other groups of agents and students, the chances are at least 95 in 100 that a difference in the same direction would be found between the groups. The "1 per cent level" means the chances are at least 99 in 100 that a difference in the same direction would be found.

<sup>19</sup>There are a large number of methods of weighting scores; however, it has been found repeatedly on scales of any length that a simple arbitrary score correlates as highly with the dependent variable as the most intricate weighting device, provided, of course, that the weights possess the correct sign. In this case Critical Ratio was employed. A C.R. of 2.0 to 3.0 was assigned a weight of 1; 3.0 or more, a weight of 2. All items with less significant differences were discarded.

<sup>20</sup>A +3 was added to all weights so that all scores become positive numbers.



Graph 1. A Graph for the Estimation of the Significance of Differences Between two Proportions from Simple Samples from the Same Universe.

Graph 1 was constructed employing the formula  $E_D^2 = \bar{p}\bar{q} \left( \frac{1}{n_1} + \frac{1}{n_2} \right)$

from Formula 143, Thomas C. McCormick, Elementary Social Statistics, P. 266. Although the construction of a graph such as the above is time consuming, it is a worthwhile investment when several hundred proportions having the same "n" are to be tested for significance.

### III. THE CONTRIBUTION OF BACKGROUND AND TRAINING

One portion of the principal hypothesis stated for testing in this project was that there is some association between success in county agent work and the group experiences which have had a part in fashioning the agent. To test this hypothesis, a Background and Training Blank of 142 items was constructed by the writer to locate and measure the association between (1) an individual's family, community, school, and college group experiences, his training in school and on the job and (2) his success as a county agent.

Each of the 142 items was examined in turn to determine how much, if any, usefulness it had for distinguishing between agents and non-agents, and between the most effective third and least effective third of the agents. Examples are given in Tables 1 and 2.

TABLE 1--Responses of Agents and Non-Agents to the Question:  
"Have Your Parents Ever Taken an Active Part in a Farm  
Organization (That Is, in One Which Meets Regularly)?"

	Agents		Non-Agents		Upper 1/3 Agents		Lower 1/3 Agents	
	No.	%	No.	%	No.	%	No.	%
Yes	85	<u>57*</u>	47	37	34	<u>69</u>	22	<u>45</u>
No	63	<u>43</u>	81	<u>63</u>	15	<u>31</u>	27	<u>55</u>
	148	100	128	100	49	100	49	100

\* Significant differences are underlined.

TABLE 2--College Grade Point Averages of Agents and  
Non-Agents

Grade Point Average*	Agents		Non-Agents		Upper 1/3 Agents		Lower 1/3 Agents	
	No.	%	No.	%	No.	%	No.	%
Under 2.0	18	<u>12</u>	30	<u>23</u>	3	6	6	13
2.0-2.25	51	<u>35</u>	43	<u>34</u>	16	33	15	31
2.26-2.50	30	21	31	24	10	21	15	31
2.51-3.0	35	<u>24</u>	18	<u>14</u>	13	27	11	23
3.01 and Over	12	<u>8</u>	6	<u>5</u>	6	<u>13</u>	1	<u>2</u>
	146	100	128	100	48	100	48	100

\* 1.0--Inferior, 2.0--Medium, 3.0--Superior, 4.0--Excellent  
Significant differences are underlined.

A glance at Graph 1 indicates that differences in percentages of 57 per cent to 37 per cent and 43 per cent to 63 per cent for n's of 148 and 128, respectively, are significant at the 1 per cent level of significance. Since the larger number of agents indicated parents had taken an active part in farm

organizations, an answer of "yes" on this question received a weight of +2 for differentiating between agents and non-agents, "no" given a -2. (When +3 was added to each, they became 5 and 1 respectively. Three became the neutral weight.)

Does this question also differentiate between the most effective and least effective third of the agents? A glance at Table 1 shows that a greater percentage of the most effective agents came from homes in which parents took an active part in farm organizations. However, is the difference significant? The percentages to be checked are 69 per cent compared to 45 per cent, and 31 per cent to 55 per cent. A glance at Graph 1 finds that this difference for  $n$ 's of 49 and 49 is significant at the 5 per cent level but not at the 1 per cent level. The "yes" answer therefore received a weight of 4 and "no" given a 2. Table 2 illustrates the same procedure in examining the association between college grades and agent success.

An examination of differences between agent and non-agent grades in college shows that more agents had high grade-point averages and fewer had low averages than non-agents. More of the most effective agents have high averages and fewer have low averages than the least effective agents. The group differences were not very great, however. Of the 10 comparisons made in the table, only 3 were significant at the 5 per cent level. Thus, it may be said that college grades have some association with county agent success and it was worth including among some 50 background and training items. No grade-point average, however, merited a value of more than a +1 or -1 (2 or 4).<sup>21</sup>

Of the 142 background and training items analyzed in the above manner, 42 were found to differentiate significantly between agents and non-agents and 18 between the most effective and least effective agents.<sup>22</sup>

**Differences Between Most Effective and Least Effective Agents:** Although each of 18 background and training items (such as the two given as illustrations) has some value by itself in discriminating between the most and least effective agents, it is of more value to know how well we can predict the success of the agent if we know all the information contained in the 18 items; that is to say, if we combine the predictive value of all of the 18 items.

To obtain the combined predictive value of the 18 background and training items, each agent was scored on each item and his scores added. This gives the individual a "background and training" score. Since an "agent effectiveness score" was available for each agent, it was possible to determine the degree of association between agent background and training and success.

<sup>21</sup>There has been a great deal of confusion concerning the importance of high grades in college. Some employers have accorded them great importance; others have preferred to take graduates with average grades. For county agent work, the higher the grades the better, but there are dozens of other factors of equal or greater importance.

<sup>22</sup>These significant items are included in a companion publication by the writer entitled "The Missouri County Agent Inventory," University of Missouri Agricultural Experiment Station, February, 1952, pp. 13-15.

Maximum possible agent effectiveness score in Figure 1 was 100; lowest possible score 20.<sup>23</sup> Maximum possible background and training score was 71; minimum was 38.

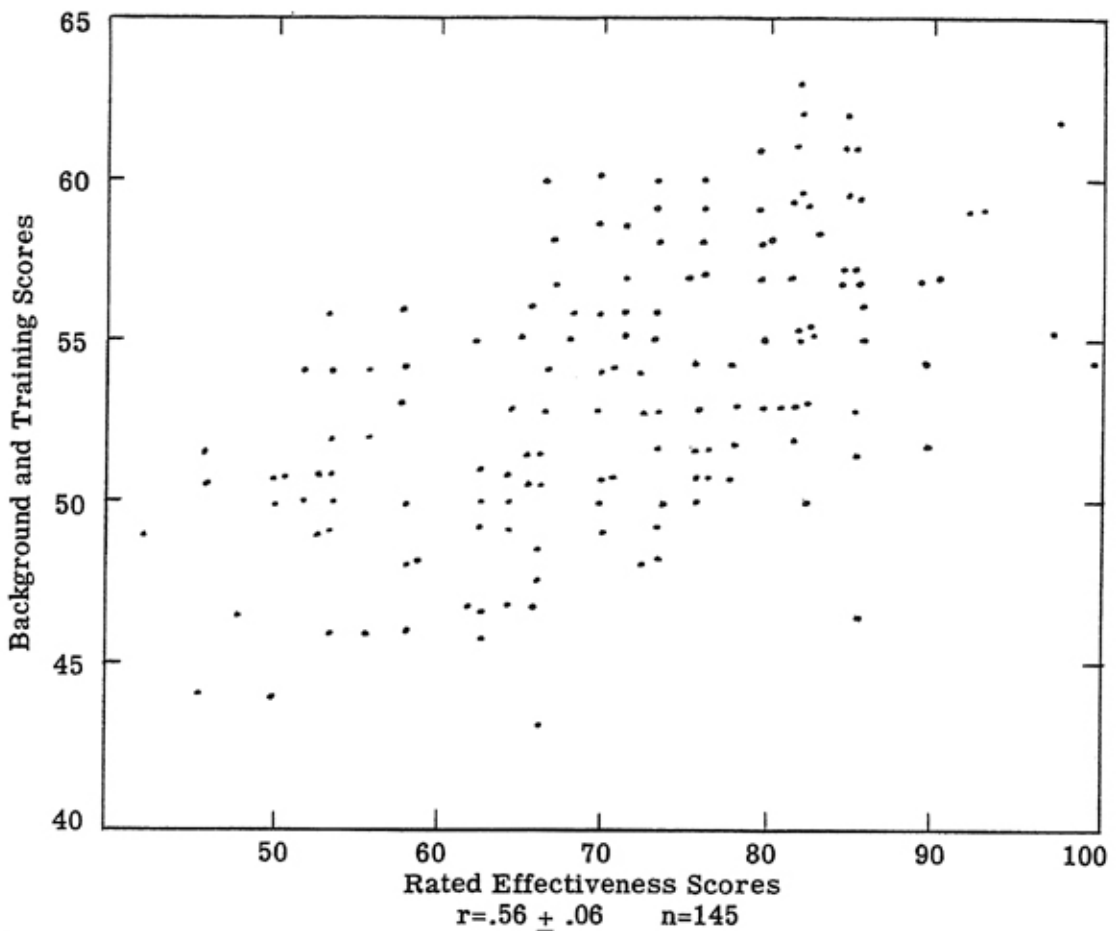


Figure 1.—The relationship between agent background and training scores, and rated agent effectiveness scores.

Both the Pearsonian  $r$  of .56 between agent background and training scores and their effectiveness scores and the scatter of their distribution on Figure 1, indicate what is generally termed a “moderate” correlation between the two variables.<sup>24</sup> Thus, although the background and training scores introduce some order into the arrangement of effectiveness scores, it is clear that a knowledge of an individual’s background and training leaves a great deal unknown concerning his potential effectiveness as an agent. While the correlation coefficient is .56, the coefficient of determination is only .314, which means that by itself and independent of other measures, background and

<sup>23</sup>Agents were scored on a 1.0 to 5.0 range. Their score was multiplied by 20 here to increase ease of comprehension.

<sup>24</sup>A high background and training score, of course, indicated that the agent’s background and training was very similar to that of effective agents as a group; a low score indicates he resembled the less effective group in so far as his background and training was concerned.



training, as here measured, accounted for a little less than a third of the total variance in agent effectiveness. It is evident that other important variables are present in addition to background and training.

No significant differences were found between agents who specialized narrowly in one agricultural department and those who took broader but less intensive training. Neither was any difference found between those who had taken graduate work and those who had not. Nor is there any significant differences between agents who took vocational agriculture in high school and those who did not.

Of the 27 items referring to agents' teaching methods in the field, only 2 showed significant differences between the most effective and least effective agents. It appears reasonable to conclude, therefore, that differences in county agent effectiveness are not associated to any considerable degree with differences in agents' high school or college preparation, or in differences in the teaching techniques they emphasize in their work.<sup>25</sup>

**Background and Training Differences Between Agents and Non-Agents:**<sup>26</sup> Following the procedures outlined, the background and training of agents was compared with non-agents. Forty-two items were found to differentiate between the two groups at the 5 per cent level of significance or above. (Two of these are illustrated in Tables 1 and 2). Each man in both groups was scored on each of the 42 items and his score added to give him a background and training score based on differences between agents and non-agents. The higher the score, the greater the indication that any given individual's background and school experience resembled that of agents as a group rather than non-agents as a group.

Table 3 shows the tendency of these 42 items to differentiate between agents and non-agents.

Since the categories of agents, new agents, advisees, and College of Agriculture seniors (excluding advisees) did not form a continuous quantitative variable, association became a more appropriate measure of variation than correlation. The corrected coefficient of contingency ( $\bar{C}$ ) for Table 3 is .756. Since the purpose of this score is to distinguish between agents and non-agents, its value can be stated in terms of how effectively it separated the two groups. When the distribution of agents and non-agents was divided at a score of 135, 21 of the agents with over 18 months' service fell below that score and 12 of the general sample of agricultural seniors fell above it. Thus, 240 were placed

<sup>25</sup>"In-service training" of agents is treated in Appendix "B". Copies of the Background and Training Blank employed in this study may be obtained upon request from the Department of Rural Sociology, University of Missouri.

<sup>26</sup>Non-agents have been defined as graduates of the College of Agriculture excluding those men who were in training to be county agents. All were assumed to have farm background and to be in good enough health to do active work. "Agents" here referred to agents who have worked for the Agricultural Extension Service at least 18 months. This period has allowed a certain amount of attrition among those agents least suited by interests or abilities for extension work.

TABLE 3--Background and Training Scores (Long Scale) of Experienced Agents, New Agents, Extension Advisees, and Seniors of the College of Agriculture (Excluding Advisees).

	123 and Under		123-134		135-143		144 and Over		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
Agents	2	2	19	13	49	33	78	53	148	101
New Agents	2	5	18	49	11	30	6	16	37	100
Advisees	7	19	16	43	11	30	3	8	37	100
Seniors	66	57	37	32	11	10	1	1	115	100

Table 3 is combined into two groups for computation of chi square: (1) scores of 134 or below and (2) 135 and above.  $X^2$  is 147.9.  $P > .01$

correctly and 33 incorrectly. As might be expected with a less homogeneous group, the scores did not separate advisees from agricultural seniors in general as well, but a dividing line of 124 placed 96 correctly and 56 incorrectly.

To summarize briefly, of the 142 background and training items employed, 42 distinguished agents from non-agents, and 18 distinguished between high and low agents. When scores from these items were combined they accounted for a considerable portion of the variance between agents and non-agents, and between most effective and least effective agents; but it was apparent that there must be additional important variables involved.

#### IV. THE CONTRIBUTION OF VOCATIONAL INTERESTS

A second portion of the principal hypothesis stated for testing in this project was that there is some association between an individual's success as a county agent and his vocational interests. The importance of an individual's interest in his work has come to be so completely accepted that the problem was less to demonstrate the relationship than to determine its relative importance, and to develop accurate measurements of its presence in a prospective county agent.

The method employed in developing a measure for the vocational interests of county agents parallels that already described for background and training except that since a suitable instrument (Vocational Interest Blank for Men)<sup>27</sup> had been developed previously, this blank was used instead of one constructed for the purpose. Each of the 400 items in the Blank was examined to determine how much, if any, usefulness it had for distinguishing between agents and non-agents, and between the most effective and least effective third of the agents. Table 4 illustrates the procedure.

The group differences above can be checked for significance on Graph 1. For some reason, a larger per cent of agents than of non-agents liked the

<sup>27</sup>By Edward K. Strong, published by the Stanford University Press, Stanford, California.

TABLE 4--Per Cent of Agents and Non-Agents Who Indicated a Like, Dislike, or Indifference to Physician as an Occupation.

	Agents		Non-Agents		Upper 1/3 Agents		Lower 1/3 Agents	
	No.	%	No.	%	No.	%	No.	%
Like	73	<u>50*</u>	45	<u>35</u>	31	<u>63</u>	19	<u>40</u>
Indifferent	34	<u>23</u>	50	<u>39</u>	11	<u>22</u>	11	<u>23</u>
Dislike	40	<u>27</u>	34	<u>26</u>	7	<u>14</u>	18	<u>37</u>
	147	100	129	100	49	99	48	100

\* Significant differences are underlined.

occupation of physician, and a smaller per cent of agents were undecided. A glance at Graph 1 indicates that the difference between the per cent of agents and non-agents who like the occupation of physician is significant at the 5 per cent level but not at the 1 per cent level. Thus, "like" received a weight of 4, "undecided" a weight of 2, and "dislike" a weight of 3.

The same item had a different value for distinguishing between upper and lower agent terciles. A significantly larger proportion of the higher agents liked the occupation of physician than did the lowest third agents. Since the differences were significant at the 5 per cent but not at the 1 per cent level of significance, "like" received a 4, "undecided" a neutral 3, and "dislike" a score of 2.

These data do not reveal "why" a greater proportion of agents than non-agents, and the most effective rather than the least effective agents, liked the profession of physician. It might be interesting to know why, but it is not necessary for present purposes.

A second occupational item illustrates a group of items that distinguish between agents and non-agents but not between high and low agents.

Since more agents than non-agents liked physics and since the difference was significant above the 1 per cent level, the item was included in the Long Scale, and the answer "like" was assigned a weight of 5, "indifferent" a 2 since the difference is significant at the 5 per cent but not at the 1 per cent level; "dislike" was weighted 3 because differences were not significant in that category.

An examination of the differences between high and low agents on this item reveals some differences; but differences of that size for a sample of 98 cases might be due to chance in more than 5 times in 100, so the item was rejected for the Short (high agent - low agent) Scale.

**Differences in Vocational Interests of Most Effective and Least Effective Agents:** Of the 400 vocational interest items examined in the above manner, 57 were found to differentiate between the most effective and the least

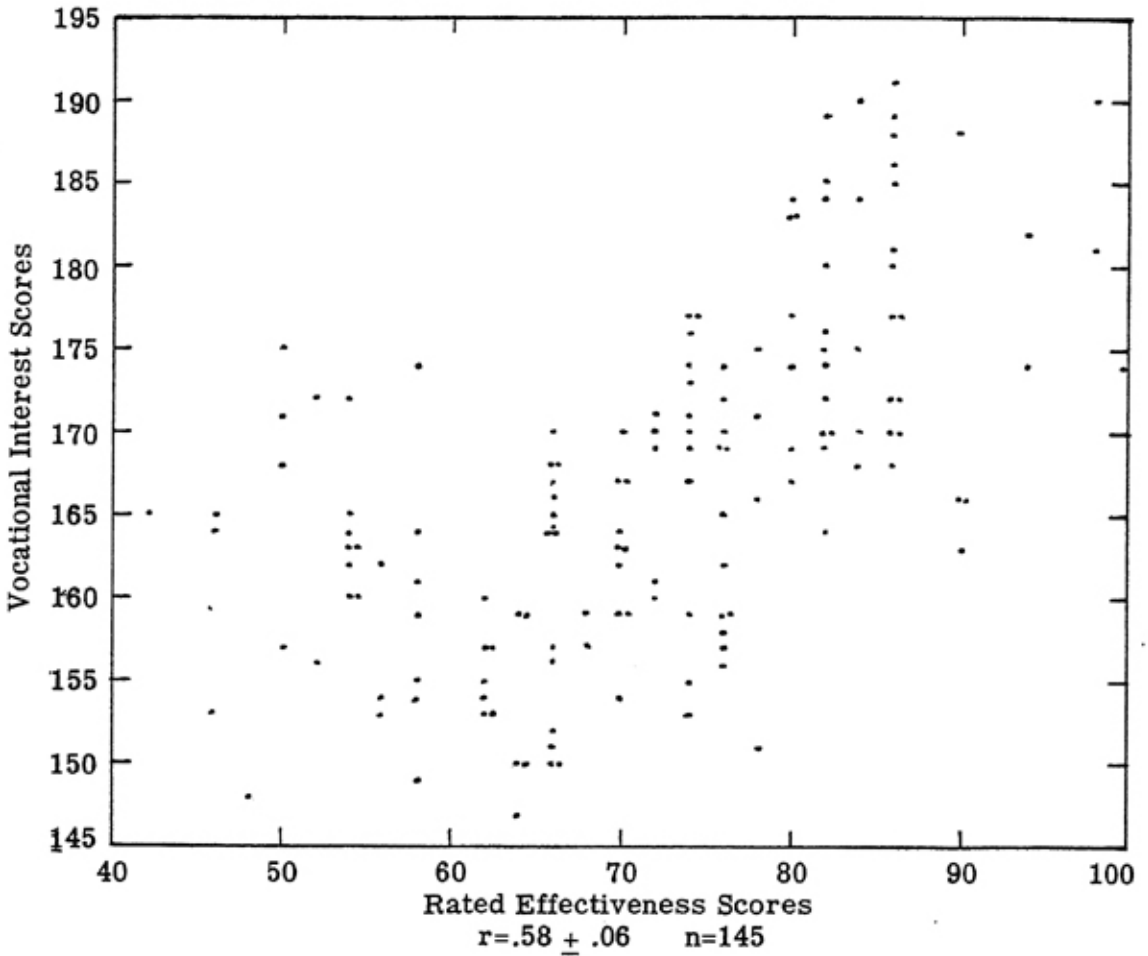


Figure 2.—The relationship between agent vocational interest scores and rated effectiveness scores.

effective agents and were included in the Short Scale. Each response to these 57 items was weighted in the manner described above.

To obtain the total predictive value of vocational interests, each agent was scored on each of the 57 significant items. These 57 items were added to give the agent a vocational interest score. This score indicated the agent's degree of similarity to the upper third agent group. To determine the value of vocational interest alone as a predictor of county agent success, the agents' vocational interest scores were correlated against their rated effectiveness scores. The highest possible vocational interest score was 215, the lowest possible 124. The highest possible effectiveness score was 100, the lowest possible 20.

Both the Pearsonian  $r$  of .58 between agents' vocational interest scores and their effectiveness, and the scatter of their distribution (Figure 2) indicate what is generally termed a "moderate" correlation between the two variables. Thus, although the vocational interest scores introduce some order into the arrangement of agent effectiveness scores, it is clear that a knowledge of an individual's vocational interests leaves a great deal unknown concerning his

potential effectiveness as an agent. While the Pearsonian  $r$  is .58, the coefficient of determination is only .336 which means that by itself, and independent of other measures, vocational interests can account for about a third of the total variance in agent effectiveness. It is evident that other important variables are present in addition to vocational interests.

**Vocational Interest Differences Between Agents and Non-Agents:** Following the same procedures, the vocational interests of agents were compared with those of non-agents (graduates of the College of Agriculture excluding extension advisees). A total of 164 of the 400 items were found to differentiate between the two groups at the 5 per cent level of significance or above (2 of these are shown in Tables 4 and 5). Each man in both groups was scored on the 164 items and his score added to give him a vocational interest score based on difference between agents and non-agents. The higher the score, the greater the indication that any given individual's vocational interests resembled that of agents as a group rather than non-agents as a group.

**TABLE 5--Per Cent of Agents and Non-Agents Who Indicated a Like, Dislike, or Indifference to Physics as a School Subject.**

	Agents		Non-Agents		Upper 1/3 Agents		Lower 1/3 Agents	
	No.	%	No.	%	No.	%	No.	%
Like	79	<u>54*</u>	46	<u>36</u>	28	57	23	48
Indifferent	47	<u>32</u>	57	<u>44</u>	14	29	17	35
Dislike	21	<u>14</u>	26	<u>20</u>	7	14	8	17
	147	100	129	100	49	100	48	100

\* Significant differences are underlined.

Table 6 indicates the usefulness of the totaled scores of these 164 vocational interest items for discriminating between agents and non-agents.

Since the categories of agents, new agents, advisees, and College of Agriculture seniors (excluding advisees) do not form a continuous quantitative variable, association is more appropriate than correlation as a measure of relationship. The corrected coefficient of contingency for Table 6 is .84. Since the purpose of this score is to distinguish between agents and non-agents, its value can best be stated in terms of how effectively it separated the two groups. When the distribution was divided at a score of 530, eleven agents with 18 months service fell below that figure and ten of the random group of agricultural college seniors fell above it. All but 21 members of these groups were correctly placed.

Vocational interest scores also significantly separated the advisees and new agents from the senior group (excluding advisees); although, since ad-

TABLE 6-- Vocational Interest Scores (Long Scale) of Experienced Agents, New Agents, Extension Advisees, and Seniors of the College of Agriculture (Excluding Advisees).

	500 and Under		501-129		530-559		560 and Over		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
Agents	2	1	9	6	43	30	91	63	145	100
New Agents	4	11	10	27	16	43	7	19	37	100
Advisees	20	54	12	32	4	11	1	3	37	100
Seniors	81	70	24	21	9	8	1	1	115	100

Adjacent groups in Table 6 are combined for computation of  $X^2$ ; that is, all scores for 529 or less are combined and all of 530 or more are combined.  $X^2$  is 213.1.  $P > .01$ .

visees and new agents had not gone through the selective processes that the experienced agents had, they did not form as homogenous a group, and therefore were not differentiated with the same precision. However, when 500 was taken as a cutting point, 131 were placed correctly and 58 incorrectly.

To summarize briefly, of the 400 vocational interest items tested, 164 differentiated between agents and non-agents and 57 between upper and lower third agents. When scores from these items were combined, they explained an important portion of the difference between agents and non-agents, and between the most and least effective agents, but much variation is left unexplained by vocational interests alone.

## V. THE CONTRIBUTION OF ATTITUDES

A third part of the major hypothesis stated that there is an association between the attitudes that agents have toward the people with whom they work, and their success as county agents. At the time the selection of instruments was made, there was no inventory which specifically measured the attitude of adult educators toward the people they teach; however, for public schools, "The Minnesota Teachers Attitude Inventory" had been developed.<sup>28</sup> It appeared likely that questions which validly measure the attitudes of teachers toward pupils might measure parallel attitudes of county agent teachers toward the people they serve. In other words, if an individual's attitudes are essentially democratic, they tend to be democratic toward both children and adults, although the expressions of the attitude may be somewhat different.

Each of the 150 items in this Inventory were tested to determine its value, if any, for differentiation between agents and non-agents, and between the most

<sup>28</sup>By Walter W. Cook, Carroll H. Leeds, and Robert Callis, published by the Psychological Corporation, Chicago, Illinois.

TABLE 7--Response of Agents and Non-Agents to the Statement:  
 "A Good Motivating Device Is the Critical Comparison of a  
 Pupil's Work With That of Other Pupils."

	Agents		Non-Agents		Upper 1/3		Lower 1/3	
	No.	%	No.	%	Agents No.	%	Agents No.	%
Strongly Agree	2	1	3	2	1	2	1	2
Agree	20	<u>14*</u>	37	<u>29</u>	3	<u>6</u>	11	<u>23</u>
Undecided	24	<u>16</u>	28	<u>22</u>	8	<u>16</u>	8	<u>17</u>
Disagree	59	<u>40</u>	35	<u>27</u>	22	45	19	39
Strongly Dis- agree	42	29	26	20	15	31	9	19
	147	100	129	100	49	100	48	100

\* Significant differences are underlined.

effective and least effective agents. Table 7 illustrates the content of the items as well as the statistical procedure.

Two responses to this item significantly differentiate between agents and non-agents. Since the difference in the per cent of agents and non-agents who "agree" with the statement is significant above the 1 per cent level of significance, "agree" received a weight of 1 and "disagree" received a 4 because the difference between agents and non-agents was significant at the 5 per cent but not at the 1 per cent level. The other three responses to the item did not significantly distinguish between agents and non-agents and therefore received a neutral weight of 3 on the Long Scale.

Only one response to the item in Table 7 distinguished significantly between the most effective and least effective agents. Since fewer of the high tercile than of the low tercile agreed, "agree" received a score of 2, one point below the neutral point of 3. Since none of the other answers significantly differentiated between the most and least effective agents, all other responses to the item received a neutral weight of 3 on the Short Scale.

Table 8 provides another example of the type of attitude question employed. In this case the item distinguished between agents and non-agents but not between upper and lower agent terciles.

The only response to the statement, "Classroom rules and regulations should be considered inviolable," which differentiated between agents and non-agents was "disagree." It received a weight of 4. The item was included in the Long Scale, with all responses other than "disagree" receiving neutral weights of 3. Since none of the responses to the item distinguished significantly between high and low agent terciles, it was not included in the Short Scale.

**Attitude Differences Between Most Effective and Least Effective Agents:**  
 Of the 150 items contained in the Minnesota Teacher Attitude Inventory, 14

TABLE 8--Responses of Agents and Non-Agents to the Statement:  
 "Classroom Rules and Regulations Should Be Considered Inviolable."

	Agents		Non-Agents		Upper 1/3 Agents		Lower 1/3 Agents	
	No.	%	No.	%	No.	%	No.	%
Strongly Agree	1	1	2	2	0	0	0	0
Agree	36	25	34	26	12	25	12	25
Undecided	33	<u>22*</u>	42	<u>33</u>	9	18	14	29
Disagree	71	<u>48</u>	46	<u>36</u>	24	49	21	44
Strongly Dis- agree	6	4	4	3	4	8	1	2
	147	100	128	100	49	100	48	100

\* Significant differences are underlined.

were found to discriminate between the most effective and least effective agents. Each item was weighted in the manner described, and each agent was scored on the significant items, which resulted in an agent attitude score. The size of the attitude score indicated how closely the individual's attitudes resembled those of the top third of the agents.

Figure 3 shows the correlation between attitude scores and agent effectiveness scores. Minimum possible attitude score was 34; maximum 57. Minimum possible rated effectiveness score was 20; maximum 100.

Both the pattern of scores in Figure 3 and the positive correlation of .43 indicated that agent attitude scores have some value as a predictor of agent effectiveness; the coefficient of determination is only .185, however, which indicates that only about one sixth of the total variation in agent effectiveness scores is associated with these attitudes independent of other measures. Attitudes, as measured herein, have some predictive value but are not of much value by themselves.<sup>29</sup>

**Attitude Differences Between Agents and Non-Agents:** Of the 150 attitude items tested, exactly half were found to differentiate between agents and non-agents (that is, at least one response to the item differentiated). An attitude score was computed by scoring each man on the 75 items and adding the scores. Table 9 gives the distribution of the attitude scores of agents with 18 months or more service, new agents, advisees, and College of Agriculture seniors, excluding advisees.

Since agents with 18 months of service, new agents, advisees, and seniors excluding advisees do not form a continuous quantitative variable, some measure of association was indicated. The corrected coefficient of contingency ( $\bar{C}$ ) for Table 9 is .65. However, since the purpose of the Long Scale is to

<sup>29</sup>It is well to remember that the attitude inventory employed was not constructed for the measurement of the attitude of this particular group. A specially constructed inventory might locate and measure greater attitude differences among agents than the present one.



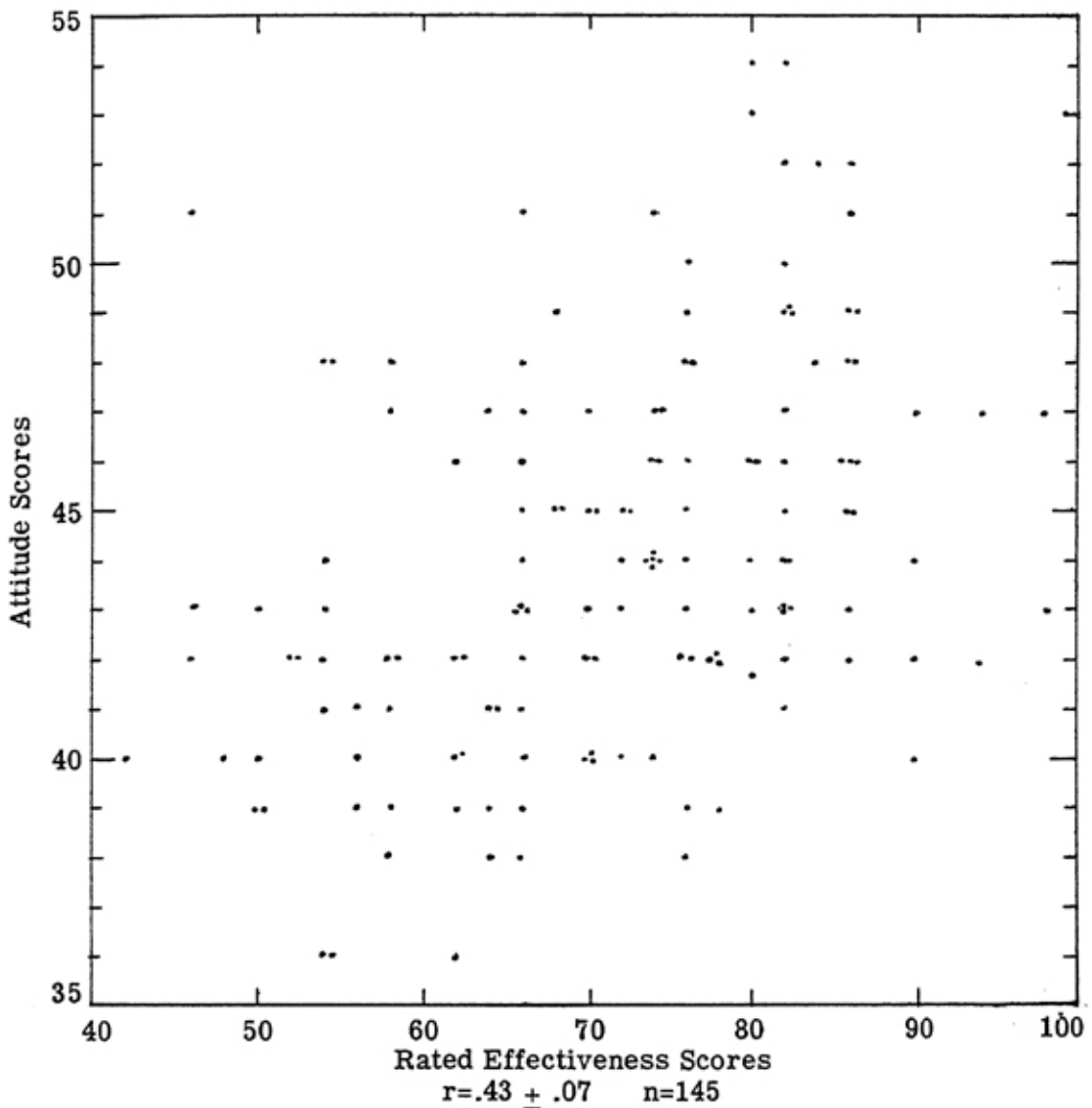


Figure 3.—The relationship between agent attitude scores and rated agent effectiveness scores.

provide measures of differences between agents and non-agents, the most simple indication of the attitude section of the Long Scale lies in its usefulness in separating agents from non-agents. When a cutting point at 240 was selected, 23 seniors fell above and 28 agents fell below it. Two hundred ten were placed correctly. This indicates that attitudes are less useful than the other variables considered, but, even so, it placed four times as many people correctly as incorrectly. By itself, it did not distinguish significantly between seniors and advisees, but it did between seniors and advisees combined with new agents.

## VI. THE CONTRIBUTION OF PERSONALITY

A fourth part of the principal hypothesis tested stated that there is a relationship between the personality of an individual and his effectiveness as an

TABLE 9--Attitude Scores (Long Scale) of Experienced Agents, New Agents, Extension Advisees, and Seniors of the College of Agriculture (Excluding Advisees).

	225 and Under		226-239		240-253		254 and Over		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
Agents	7	5	21	14	45	31	73	50	146	100
New Agents	4	11	12	32	13	35	8	22	37	100
Advisees	11	31	13	37	9	26	2	6	35	100
Seniors	50	43	42	37	18	16	5	4	115	100

For the computation of  $X^2$ , all groups below 239 are combined and all of 240 or more are combined.  $X^2$  is 99.  $P > .01$ .

TABLE 10--Responses of Agents and Non-Agents to the Question: "Do You Find Generally That If You Want a Thing Done Right, You Must Do It Yourself?"

	Agents		Non-Agents		Upper 1/3 Agents		Lower 1/3 Agents	
	No.	%	No.	%	No.	%	No.	%
Yes	43	<u>30*</u>	67	<u>52</u>	17	35	9	20
Undecided	11	<u>8</u>	10	<u>8</u>	6	12	3	6
No	91	<u>63</u>	51	<u>40</u>	26	<u>53</u>	34	<u>74</u>
	145	101	128	100	49	100	46	100

\* Significant differences are underlined.

agent. This factor in agent success was not only proposed by extension administrators and county agents but also by most farmers interviewed.

The treatment of personality below is selective rather than exhaustive. It was believed that county agents differed among themselves and differed from other agricultural groups with respect to certain "normal" characteristics. Stated another way, the problem is not whether county agents have better or poorer mental health than other groups but whether they differ in such respects as aggressiveness, cooperativeness, etc. For that reason, the personality section was limited to questions which were believed to measure such characteristics as aggressiveness, cooperativeness, agreeableness, self-confidence, and energetic behavior.

Each of the 200 items was tested to determine its usefulness for differentiating between agents and non-agents and between the most effective and least effective agents. Table 10 shows one of a group of items that differentiate between both pair of groups.

These differences may be checked for significance of differences by

TABLE 11--Responses of Agents and Non-Agents to the Question:  
"Are People, in General, Out to Get More Than They Give?"

	Agents		Non-Agents		Upper 1/3 Agents		Lower 1/3 Agents	
	No.	%	No.	%	No.	%	No.	%
Yes	63	<u>43*</u>	80	<u>63</u>	21	43	22	48
Undecided	19	<u>13</u>	18	<u>14</u>	5	10	6	13
No	63	<u>43</u>	30	<u>23</u>	23	47	18	39
	145	99	128	100	49	100	46	100

\* Significant differences are underlined.

reference to Graph 1. It shows that a significantly greater proportion of agents than non-agents answered "no" to the question referred to in Table 10. Since the difference was significant at the 1 per cent level, "no" received a weight of 5, "yes" a weight of 1, and "undecided" a neutral weight of 3.

A glance at Graph 1 indicates that between upper and lower agent ter-ciles the only answer which differed significantly was the "no." Since the difference was only significant at the 5 per cent level, "no" received a weight of 2; both "undecided" and "yes" received neutral weights of 3.

Table 11 illustrates another group of personality items which differentiated between agents and non-agents, but not between agent groups.

Differences between agents and non-agents were highly significant for both "yes" and "no" but non-significant for "undecided"; therefore, "yes" received a weight of 1, "no" 5, and "undecided" a neutral 3. Since no significant differences were found between agent groups, the item was not included in the Short Scale.

**Personality Differences Between Most and Least Effective Agents:** Of the 200 personality items tested, 26 were found to differentiate between most effective and least effective agents. Each agent was scored on the 26 items, and a personality score computed for each agent. Figure 4 shows the relationship between agent personality scores and rated effectiveness scores. Personality scores ranged from a possible low of 52 to a high of 99, and rated effectiveness scores from 20 to 100.

Both the Pearsonian  $r$  of .66 and the scatter of scores on Figure 4 indicate a moderate correlation between personality scores and rated agent effectiveness. The coefficient of determination is .436, which indicates that personality as here measured, independent of other measures, accounted for about two-fifths of the total variation in the rated effectiveness scores of agents. Thus personality appears to be the most important *single* predictor of agent effectiveness so far considered. However, since it by itself leaves more than half of the variability unexplained, it is not an entirely satisfactory predictor employed alone.

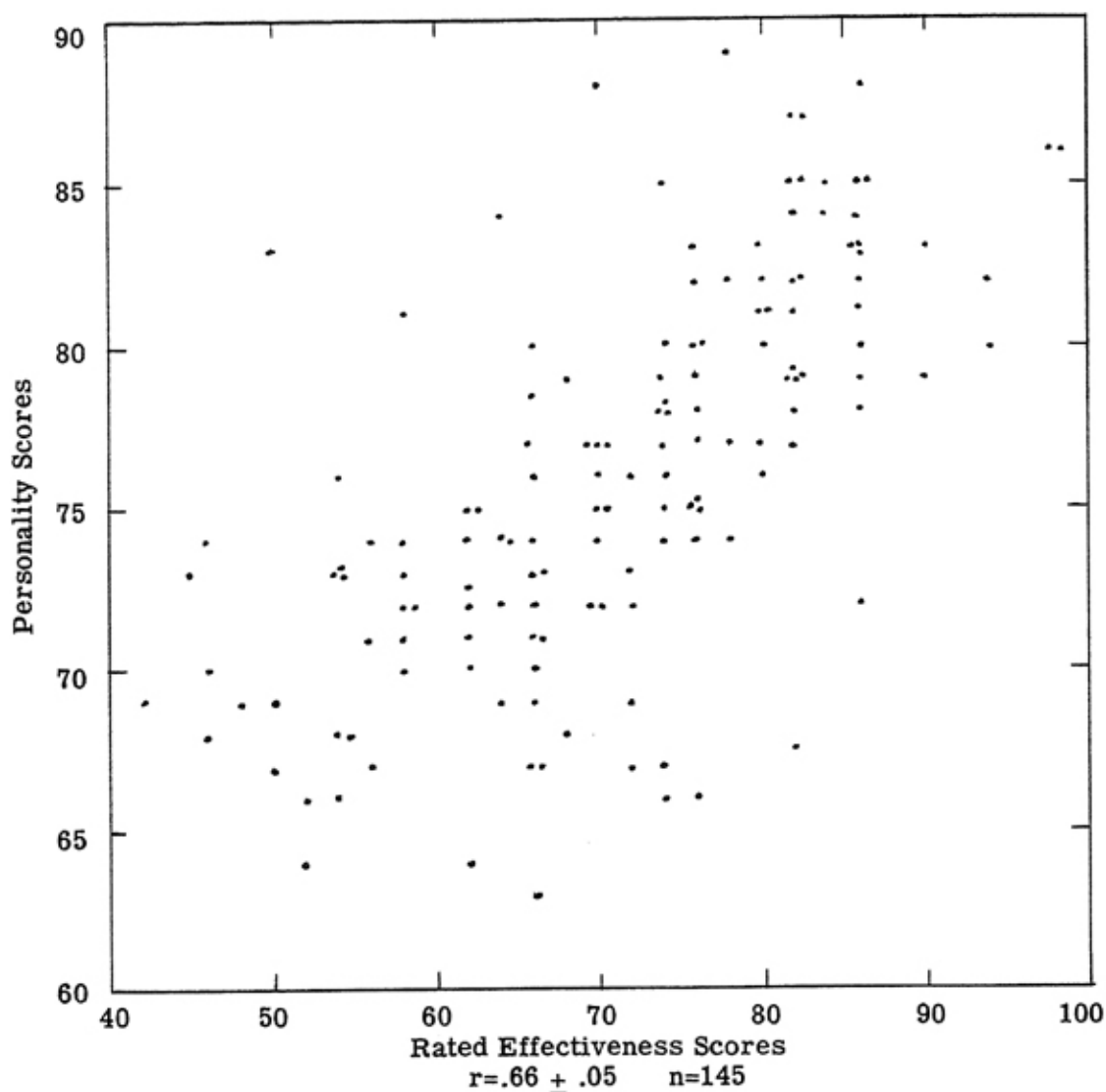


Figure 4.—The relationship between agent personality scores and rated effectiveness scores.

**Personality Differences Between Agents and Non-Agents:** Of the 200 personality items tested in the manner described above, 114 were found to distinguish significantly between agents and non-agents. From these, a personality score was computed for each agent with 18 months or more service, each new agent, each advisee, and each agricultural college senior. The distribution of these scores is shown in Table 12. Since the categories, agents with 18 or more months service, new agents, advisees, and seniors excluding advisees do not form a continuous quantitative variable, corrected coefficient of contingency ( $\bar{C}$ ) was employed as a measure of association. ( $\bar{C}$ ) is .71. However, since the purpose of this group of personality items was to differentiate between agents and non-agents, it is perhaps most useful to see how well the scores separated agents from non-agents. When 384 was taken as a cutting point, 25 agents fell below that point and 17 seniors excluding advisees fell above the point. Thus, 219 were placed correctly and

TABLE 12--The Distribution of Personality Scores (Long Scale) of Experienced Agents, New Agents, Extension Advisees, and Seniors of the College of Agriculture (Excluding Advisees).

	354 and Under		355-383		384-410		411 and Over		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
Agents	6	4	19	13	47	32	74	51	146	100
New Agents	6	16	14	38	12	32	5	14	37	100
Advisees	13	37	9	26	10	29	3	8	35	100
Seniors	57	50	41	36	11	9	6	5	115	100

For computation of  $X^2$ , all scores of 383 and below are combined and 484 and above are combined.  $X^2$  is 126.  $P > .01$

42 were placed incorrectly. It differentiates significantly between seniors and both advisees and new agents, but with much less precision.

## VII. THE COMBINED CONTRIBUTION OF BACKGROUND, TRAINING, VOCATIONAL INTEREST, ATTITUDES, AND PERSONALITY

The major hypothesis tested in this study states: "Success in county extension work can be predicted from a combination of an individual's background, training, intelligence level, vocational interests, attitudes, and other personality characteristics." The hypothesis has been supported in part in preceding sections of this report. In separate analyses, each of the separate variables (except general learning ability) has been shown to have some predictive value when taken separately. Although each of the four variables had some predictive value, no one alone accounts for more than 43 per cent of the variability in agent effectiveness. This inability of any *one* variable to predict satisfactorily the dependent variable was anticipated, but it was believed that the combination of several important variables, each possessing limited predictive value, would be able to predict agent effectiveness satisfactorily.

**Total Differences Between Most and Least Effective Agents:** The initial step taken to combine the four variables was to add together for each agent his background and training, vocational interest, attitude, and personality scores to form a total agent inventory score based on all items which differentiate between most and least effective agents. This total, unweighted score was correlated against the agent effectiveness scores (see Figure 5). The possible range of agent inventory scores was from 248 to 422; the possible range of rated effectiveness scores was from 20 to 100.

Both the pattern of scores in Figure 5 and the Pearsonian  $r$  of .73 indicated that an unweighted total inventory score was a better predictor of the dependent variable rated agent effectiveness than any one of the four variables

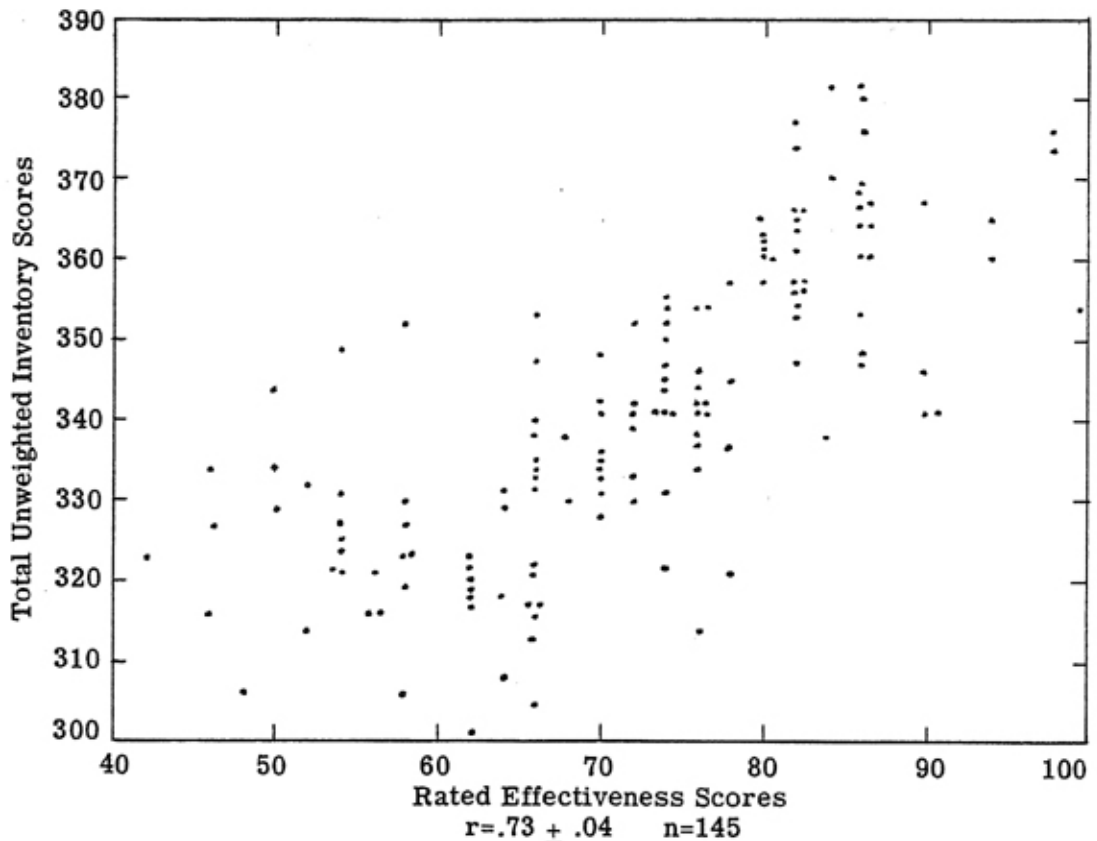


Figure 5.—The relationship between total unweighted inventory scores and rated agent effectiveness scores.

which comprise it. The coefficient of determination is now .533. However, there was no particular reason to suppose that a simple total of individual items would give the optimum weight to the four variables included in the inventory. The unweighted total actually gave a weight of 49 to Vocational Interests, 23 to Personality, 16 to Background and Training, and 12 to Attitudes.

**The Comparative Importance of Background and Training, Vocational Interest, Attitudes, and Personality for Agent Effectiveness:** It was assumed that the above variables were in part independent, in part overlapping; that is, that a correlation existed between the four variables, but that it was low enough to justify separate measures. Table 13 indicates that the assumption was justified.

To determine the unique contribution of each variable the Doolittle Method for the solution of a Multiple Correlation (R) was employed.<sup>30</sup> The contribution of each variable is summarized in Table 14.

From Table 14 it is evident that a considerable gain in predictive effi-

<sup>30</sup>For an excellent discussion of multiple prediction, see J. P. Guilford, *Fundamental Statistics in Psychology and Education*, Chapter 16. The McGraw-Hill Book Co., New York, 1950. For a detailed explanation of the Doolittle Method, see pp. 442-446.

TABLE 13--The Inter-Correlation of Background and Training, Vocational Interests, Attitudes, and Personality.

	Vocational Interests	Personality	Attitudes	Background and Training
Vocational Interests		.538	.172	.442
Personality	.538		.226	.313
Attitudes	.172	.226		.325
Background and Training	.442	.313	.325	

TABLE 14--The Comparative Contributions of Background and Training, Vocational Interest, Attitudes, and Personality to County Agent Effectiveness.

Variable	No. Items Tested	No. Items Significant	Beta Weight	r with Dependent Variable	r X Beta Weight
Vocational Interests	400	57	.1909	.580	.1107
Personality	200	26	.4294	.660	.2834
Attitudes	150	14	.2105	.430	.0905
Background and Training	142	18	.2758	.563	.1553
					<u>.6399</u>

$R^2 = .6399$   $R = .800 \pm .03$

ciency was achieved by reweighting the variables contained in the inventory. The Pearsonian  $r$  of .73 is increased to .80 for  $R$ . An even more significant gain is noted in the coefficient of determination which increased from .533 to .640; that is, 64 per cent of the variation in rated agent effectiveness is now associated with variation in inventory scores.

With respect to the comparative contribution of the four variables, the best estimate which can be made is that Vocational Interests contribute about 11 per cent, Personality 28 per cent, Attitudes 9 per cent, and Background and Training 15 per cent.<sup>31</sup> Approximately 36 per cent is unexplained.

**Predictive Value of the Short Scale:** A further estimate of the predictive value of the Short Scale can be obtained by means of the Standard Error of Estimate.

Employing the formula

$$1.2345 = 1 \sqrt{1 - R^2} 1.2345,$$

<sup>31</sup>If additional variables were added, the net contribution attributed to the above variables would probably be changed somewhat. In addition, it should be remembered that each variable as presently measured contributes the above amount; more complete measures of any of the above variables might increase the contribution of that variable.

**TABLE 15--The Ability of County Agent Inventory Score to Predict Rated Agent Effectiveness of the Original Sample\***

Inventory Score	Rated Upper 1/3	Rated Middle 1/3	Rated Low 1/3	Total
High 1/3	39 (39)	9 (8)	0 (1)	48 (48)
Middle 1/3	9 (9)	30 (36)	11 (9)	50 (54)
Low 1/3	0 (0)	11 (8)	37 (36)	48 (44)

Figures in parentheses are agents placed by weighted inventory scores.

\* The weighted sub-section scores increased the accuracy of prediction from 73% to 76%, but one agent was misplaced two categories.

**TABLE 16--The Distribution of Total Scores (Long Scale) of Experienced Agents, New Agents, Advisees, and Seniors of the College of Agriculture (Excluding Advisees).**

	1209 and Under	1210-1285	1286-1360	1360 and Over	Total
Agents	0	10	46	89	145
New Agents	0	16	18	3	37
Advisees	16	17	5	0	38
Seniors	68	42	5	0	115
	84	85	74	92	335

the Standard Error of Estimate<sup>32</sup> was found to be .378. Since this figure was based on a score of Poor = 1, Fair = 2, Good = 3, Superior = 4, and Excellent = 5, the chances are 95 in 100 that an agent whose predicted score is 4.0 will actually be rated between 3.244 and 4.756; that is, that his actual rating will vary less than one full category from his predicted rating. This is shown roughly in Table 15.

It must be noted that the above R of .80 and  $r^2$  of .64 are based on the ability of the inventory to predict rated effectiveness of the original sample. As Guilford points out, this should be considered a *maximum correlation*. The ability of the inventory to predict rated effectiveness of an independent sample will ordinarily be less than it was on the original sample. The formula<sup>33</sup> for the "shrinkage" of R to its estimated value for the prediction of an independent sample is:

<sup>32</sup>Formula from Guilford, p.433. See footnote 30.

<sup>33</sup>Guilford, p.434. See footnote 30.



$$R_c^2 = 1 - (1 - R^2) \frac{(N - 1)}{(N - m)}$$

Substituting for  $R^2$ , .64, for  $N$ , 145, and for  $m$ , 4, the value of  $R^2$  corrected for bias becomes .629 and for  $R$ , .793. This is an estimate, however. Cross-validation must establish actual value of  $R$  for predicting independent samples.

**Total Differences Between Agents and Non-Agents:** To determine the total differences between agents and non-agents, scores were added from the four sub-scales. The distribution of total scores is shown in Table 16.

Table 16 shows that the Long Scale separates agents from non-agents with some precision. Seniors and advisees were cut off entirely above 1360 and agents were cut off below 1210. When the distribution was divided at 1285, 10 agents fell below the cutting point and 5 seniors above. Theoretically, there should be some overlapping because there probably are some men in the non-agent group who are more like successful agents as a group than are some individual agents.

It is not presently possible to determine with the same precision the relative importance of Background and Training, Vocational Interests, Attitudes, and Personality between agents and non-agents. It has been shown that the highest coefficient of contingency based on differences between agents and non-agents was found for Vocational Interests scores, followed by Background and Training, Personality, and Attitudes in that order.<sup>34</sup> General Learning Ability scores proved to be of no value (see Appendix A).

**Validity and Reliability:** From the discussion above, it is evident that the best estimate of the validity of the Short Scale was obtained from  $R = .793$ . Less precisely but in a form easier to visualize, the same thing is shown in Table 15. These empirical evidences of validity are reinforced from a theoretical position by the fact that all components of the scale were selected and weighted by their demonstrated ability to differentiate between most and least effective agents. It should be remembered, however, that the limits of the geographical universe from which Missouri county agents are a sample has not yet been determined. Neither has it been tested on an independent sample.

The validity of the Long Scale based on differences between agents and non-agents can best be estimated from Table 16. Since it is based entirely on the demonstrated differences between agents and non-agents, its validity should be high, as Table 16 indicates that it is. When a cutting point of 1285 was taken, it incorrectly placed only 15. This indicates that the inventory included and measured a large proportion of the differences between agents and non-agents.

<sup>34</sup>The relative contribution of the four variables could be determined experimentally by increasing and decreasing the weights of the four variables until maximum separation of groups was achieved. A limited amount of experimental reweighting was possible. The best weights found were the coefficients of contingency between each variable and the scores of agents and non-agents.

One qualification appears necessary. In the first section of this report one of the assumptions stated was that the vocational interests, attitudes, and personality characteristics are principally formulated prior to the senior year in college. Previous research has substantiated this assumption; however, there probably is *some* change in these attributes following college graduation and such changes would be included in the measured differences of the Long Scale. An attempt to check the size of such changes was made by comparing the responses of the oldest and youngest agents on some 40 personality items. No significant differences were found. It would be desirable, however, to investigate this matter further than has been possible in this study.

Reliability of the two scales is not known precisely because test-retest data are not presently available. It is, however, above .852, a figure obtained from the Kuder-Richardson Formula 20. Since that formula is primarily a test of homogeneity, it seriously understates the reliability of an instrument which is known to measure several not closely related variables. However, it provides a minimum figure.

A test of the susceptibility of the inventory to faking was made. Since all agents had answered all questions previously under conditions calculated to secure their true responses, it remained necessary only to have them complete the inventory faking their scores as high as possible. Agents were employed rather than students partly for convenience since it would have been necessary for students to complete the inventories twice, partly because it was believed that the agents would provide a more rigorous test.

It was found that on the Short Scale based on most effective - least effective agent differences, the group was able to make its scores an average of 3 per cent higher, although 5 of the 26 actually obtained lower scores. A difference of 3 per cent for a group of this size is, of course, non-significant. With respect to the Long Scale based on agent - non-agent differences, the faked high scores actually averaged lower.

Present evidence indicates, then, that even agents with several years experience cannot fake the Inventory significantly. It would perhaps be desirable to have students attempt to fake it, but since experienced men in the profession cannot do so, it appears unlikely that students would be able to.

## VIII. SUMMARY AND CONCLUSION

**Theory:** The prediction of county agent success was based entirely on differences between groups: (1) between county agents presently satisfactorily doing the job and the groups they are drawn from—that is, graduates of the College of Agriculture in general; (2) between the most effective and least effective agents. These provided two definitions of effectiveness: the first, that enough success on the job and enough interest in it so that the individual was not discharged or did not resign during the first 18 months;

the second, that the individual was more successful than at least two-thirds of the agents who had been on the job 18 months or more.

Second, it was based on the theory that vocational success is the product of a number of variables, rather than any one, which must be accurately measured and correctly weighted to predict success.

**Construction:** Five inventories were administered to these groups: Vocational Interest, General Learning Ability, Personality, Attitudes, and Background and Training. Each *individual item* of these inventories (except General Learning Ability) was examined to determine whether there was a significant difference between the way it was answered by the groups. Individual items which showed differences at the 5 per cent level of significance (C.R. of 2.0 or more) between the responses of county agents and graduates of the College of Agriculture in general, or between the high and low agent terciles, were retained and placed in the new inventory. All items which did not show differences significant at the 5 per cent level were discarded.

Thus, the Missouri County Agent Inventory contains two scales. The Long Scale of 392 items is constructed from differences between county agents and non-agents; the Short Scale of 115 items is constructed from differences between the most effective and least effective agents. There is a 42 per cent overlap in the two scales.

**The Sample:** The sample consisted of all the men county agents, associate agents, and assistant agents employed by the Missouri Agricultural Extension Service on April 1, 1951. One hundred per cent sample was secured; however, only those who had been employed at least 18 months were used in the construction of the inventory ( $n = 148$ ). A random sample of the 1951 senior class in the Missouri College of Agriculture was secured ( $n = 131$ )—98 per cent of the sample was obtained—plus all senior extension majors ( $n = 38$ ).

The Inventory is based entirely on Missouri data, and it is not known how representative the findings may be for other states.

**Rating Procedure:** In order to construct the high-agent—low-agent scale, it was necessary to determine who the most and least effective agents were. Agents were rated by two administrators, two extension subject matter specialists, salary with service constant, three farm extension leaders in the agent's county, and by two non-farm extension leaders in the agent's county. These 10 ratings were given equal weight, and pooled.

**Validity:** Since all individual items were selected because of their demonstrated ability to differentiate between groups, the Inventory has high face validity. The Pearsonian  $r$  between the sub-sections of the Short Scale of the inventory and rated agent effectiveness were as follows: Attitudes, .43, Background and Training, .56, Vocational Interests, .58, and Personality, .66. General Learning Ability above that required for college graduation contributes nothing. The sub-sections inter-correlate as follows: Vocational Interest and

Personality, .54, Vocational Interest and Background and Training, .44, Vocational Interest and Attitudes, .17, Personality and Attitudes, .23, Personality and Background and Training, .31, Attitudes and Background and Training, .33. The multiple correlation,  $R$ , of the inventory scores with rated effectiveness was .80. This, in turn, gave a coefficient of determination of .64. When these figures were corrected for bias, (bias due to the fact that the original sample is used instead of an independent sample) they became .793 and .629 respectively.

An examination of a 3 by 3 contingency table showed that of the 48 agents scoring high on the inventory, 39 were rated high, 9 were rated medium, and none rated low. Of the 48 scoring low on the inventory, 37 were rated low, 11 were rated medium, and none were rated high. There was a 40 per cent overlap among agents' scoring medium on the scale. The unweighted inventory placed 73 per cent of all agents correctly; the weighted inventory, 76 per cent of the original sample.

Since the categories "agent" and "non-agent" do not form a continuous quantitative variable, neither  $r$  nor  $R$  was appropriate; however, the coefficient of contingency provided an approximation of the association. The Long Scale based on 392 items, each of which significantly distinguished between agents and non-agents, provided a rather precise distinction between the two groups. Of the 145 agents and 115 agricultural college seniors (extension advisees excluded) only 15 were incorrectly placed when a cutting point was selected at their combined mean score.  $C$  between these two groups and their totaled Long Scale inventory scores was .87. The Long Scale also distinguished significantly between the random senior group and the extension advisees and new agents but with less precision.

Reliability of the two scales is not known precisely because test-retest data are not presently available. It is, however, above .852, a figure obtained from the Kudor-Richardson Formula 20. Since that formula is primarily a test of homogeneity, it seriously understates the reliability of an instrument which is known to measure several not closely related variables. However, it does provide a minimum figure. Present evidence indicates that the inventory cannot be faked significantly.

**Comparative Contribution of the Variables Measured:** For the differences between the most effective and least effective agents, it was possible through the use of multiple correlation to determine with some precision the relative importance of the several variables associated with county agent success. Of the 63 per cent of the variation in rated success among agents which is explained by the inventory scores, Attitudes contributed 9 per cent, Vocational Interests 11 per cent, Background and Training 15 per cent, and Personality 28 per cent. General Learning Ability beyond that required for graduation from College was found to contribute nothing. This was, it should be remembered, variation *within* the professional group.

The contribution of the several variables to the variance between agents and non-agents has not been determined with the same degree of exactness. However, the highest coefficient of contingency was found from differences in Vocational Interests, followed by Background and Training, Personality, and Attitudes in that order. Again, learning ability beyond that required for college graduation contributed nothing.

**Further Research:** The present study based on the variables of Background and Training, Vocational Interests, Attitudes, and Personality has explained about 63 per cent of the variation in agent effectiveness in the original sample. The present findings must be considered tentative, and the instrument further developed. The Missouri County Agent Inventory should be considered a research instrument until further validated. Further research, in addition to cross-validating present findings, might seek to explain some of the presently unexplained variation. This might be done by extending the measurement of some of the present variables. Values as a variable might add something not presently included in vocational interests or personality. Also part of the unexplained variation may be related to the imperfect matching of agents to counties.<sup>35</sup>

In addition, parallel projects might be undertaken in related occupations.

<sup>35</sup>Some exploratory work has been done in these areas by Dr. Edward Moe and Associates at Cornell University.

#### APPENDIX A—

##### THE NULL CONTRIBUTION OF GENERAL LEARNING ABILITY

One part of the principal hypothesis tested in this study stated that there is a relationship between general learning ability of the agent<sup>36</sup> and agent effectiveness. This part of the hypothesis was not supported. There was no relationship between an agent's general learning ability and his success as an agent, nor was there any considerable difference between the scores of agents and other graduates of the College of Agriculture. The General Learning Ability scores of agents and seniors are summarized in Table 17.

Agents had slightly higher average General Learning Ability scores than the random senior group, excluding advisees. Notably there were more agents in the next to the highest category and fewer in the lowest. The differences were not statistically significant for a group of this size. The smaller number of agents with relatively low scores might be accounted for by the consistent policy of not hiring graduates with very low grade point averages. Since there is a correlation of .50 between "intelligence" scores and college grades, a consistent policy of not hiring the poorest students would result in hiring fewer men with relatively low general learning ability.

<sup>36</sup>As measured by the Army General Classification Test, first civilian edition.

TABLE 17--General Learning Ability Scores of Agents and Non-Agents

	119 and Under		120-125		126-133		134 and Over		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
Agents	27	18	32	22	49	33	39	27	147	100
Non-Agents	30	26	26	23	31	27	28	24	115	100

TABLE 18--General Learning Ability Scores of Most Effective, Intermediate, and Least Effective Agents.

	119 and Under		120-125		126-133		134 and Over		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
Low 1/3	11	22	7	14	17	35	14	29	49	100
Middle 1/3	9	18	10	20	20	40	11	22	50	100
High 1/3	7	15	15	31	12	25	14	29	48	100
	27		32		49		39		147	

It must be remembered, however, that a score of 119, while comparatively low for these groups is high for the general population. A score of 125 puts the individual in the 90th percentile, 133 in the 97th percentile. Thus, over 25 per cent of both county agents and agricultural college seniors have General Learning Ability scores within the highest 4 per cent of the adult population. Only one agent and one senior scored below the midpoint of the general population.

The General Learning Ability score of the most effective, intermediate, and least effective agents were compared. Their scores are summarized in Table 18.

Differences in general learning ability between most effective, intermediate, and least effective agents were non-significant. Not only were the differences non-significant, but also they yielded no consistent pattern.

From the above, it may be concluded that there were no significant differences in general learning ability between the most successful and least successful agents or between agents and College of Agriculture seniors in general, although the differences between agents and seniors consistently favored the agents. The only conclusion that the writer can offer is that the College of Agriculture seniors who have an "M" (or "C") grade point average, or better, possess such a high level of general learning ability or "intelligence" that it was removed as a limiting factor and the success of the agent depended on other variables.

#### APPENDIX B--IN-SERVICE TRAINING

It is the policy of the Missouri Agricultural Extension Service to provide special professional training for its agents during the initial period that they are employed. There is little university work designed particularly for future extension agents. Most professional training is given in a county under the supervision of an experienced agent.

The training period is planned for three months, although this varies considerably according to the needs of the people in the county, the need of the Extension Service for agents for regular appointments, and the previous experience of the new agent. This initial period is essentially for training, with a training outline provided which familiarizes the new agent with his future duties, office routines, and some basic skills and procedures that he will need.

**In-Service Training and Agent Effectiveness:** The secondary hypothesis stated for testing stated that in-service training can increase or decrease the degree of success of an agent to a limited extent. The results of the present study were somewhat inconclusive as a test of the above hypothesis. The most direct test of it may be seen in Table 19.

Those who had had in-service training were divided into two groups, those trained by the agents who trained the most agents, and those trained by agents who had trained relatively few agents.

Table 19 indicates there were no statistically significant differences between the agents trained in the so-called "training counties" and those trained elsewhere. If there were any considerable differences in the training received, it must be assumed that the advantages of each training situation were offset by other disadvantages.

The differences are greater between agents who have had training and those who have had none; however, the differences were only significant at the 7 per cent level.<sup>27</sup>

<sup>27</sup>Between the highest third agents who had no training and those who were trained in other than "training counties."

TABLE 19--The Relationship of In-Service Training to County Agent Success.

	High 1/3		Middle 1/3		Low 1/3		Total	
	No.	%	No.	%	No.	%	No.	%
In-Service Training in "Training Counties"	10	33	8	27	12	40	32	100
Other In-Service Training	32	37	30	34	25	29	87	100
No In-Service Training	6	19	12	39	13	42	31	100

Thus, there is some evidence to support the hypothesis that in-service training is associated with the degree of success later achieved by agents, but the evidence is far from conclusive. Of course, this is not the only purpose of in-service training. It acquaints the new agent with the problems, procedures, and some of the skills of county agent work more quickly than if he had to go through a long period of trial and error on his own, and it better serves farm people by giving them at least a partially trained agent rather than one entirely unfamiliar with the job.

**Initial Agent Experiences and Agent Success:** It was believed possible that the first impressions and experiences of the agent on the job might influence later success. The results indicated, however, that these initial experiences do not have much effect on the degree of eventual success of the agent. For example, there was no statistically significant difference in the way that the following questions were answered by the most effective and least effective agents:

"In the county you trained in, how well did the agent and home agent get along?"

"Compared with other county programs you are acquainted with, how successful would you say the one was in the county in which you trained?"

"In the county in which you trained, how did you feel toward the county agent?"

"In the county in which you trained, how harmonious were the relationships between Extension and other county organizations?"

"In the county in which you trained, how much of a contribution did you feel you made?"

Three questions dealing with the activities and attitudes of the agent's wife indicated a slight difference between most and least successful agents, with the wives of the most successful agents showing a more favorable attitude toward the Agricultural Extension Service as a profession. The differences were not significant, however. Neither were any significant differences found between agents who decided to become agents early and those who decided at college graduation or later.

Three questions concerning the initial period showed significant differences. A larger percentage of the men who later became the most effective agents indicated that they felt at home and accepted in their county soon after their arrival. This appears likely to be a result rather than a cause, however. Contrary to what might have been expected, more of the most effective agents felt that relationships between the agent and sponsoring organization were not entirely satisfactory and that there was some antagonism toward the Agricultural Extension Service on the part of some people. Since there is no reason to suppose a casual relationship between negative experience and later success, it appears probable that these differences may be explained in part by the fact that the most effective men average slightly older and Extension Service was not as fully accepted at the time they began work as it is now. Also, it may indicate a little more social sensitivity on the part of the most effective agents.

**Teaching Techniques and Agent Effectiveness:** It was believed possible that part of the differences between most effective and least effective agents might be explained by differences in the methods they employ to get the job accomplished. To test this

TABLE 20--Emphasis Placed on Result Demonstrations and Newspaper Articles by the Most Effective and Least Effective County Agents.

	Result Demonstration		Newspaper Articles	
	High 1/3 No. %	Low 1/3 No. %	High 1/3 No. %	Low 1/3 No. %
Emphasize More	16 <u>33*</u>	7 <u>14</u>	29 <u>59</u>	18 <u>37</u>
Emphasize the Same	30 <u>61</u>	40 <u>82</u>	15 <u>31</u>	26 <u>53</u>
Emphasize Less	3 6	2 4	5 10	5 10
	49 100	49 100	49 100	49 100

\* Significant differences are underlined.

possibility, agents were given the list of teaching techniques listed below and asked to check: (1) whether they emphasize the technique more, about the same, or less than their colleagues; (2) whether the technique is one of the most effective, intermediate, or least effective for getting the job done, and (3) whether they feel that the technique should be emphasized more, the same, or less than it was last year (assuming the total budget is the same). The techniques listed were:

Result demonstrations  
Method demonstrations  
Lecture meetings  
Newspaper articles  
Films and pictures

Circular letters  
Farm visits  
Office calls  
Bulletins

A comparison of the emphasis placed on the above techniques by the most effective and least effective agents found significant differences on only two. The most effective agents more often felt they emphasized result demonstrations and newspaper articles more than their colleagues. This is shown in Table 20.

**Summary and Conclusions:** No statistically significant differences were found between the effectiveness of agents trained in different ways or between agents who received in-service training and those who didn't, although differences favoring the agents with training were near significant (see Table 19).

There is no evidence that initial experiences as a county agent are associated with eventual success as an agent.

In only 2 of 27 comparisons were significant differences found between teaching techniques emphasized by most effective and least effective agents. These were result demonstrations and newspaper articles.

Thus, it appears that there was not much difference between the most and least effective agents with respect to their in-service training, initial experiences as an agent, and emphasis on particular teaching techniques. The in-service training program has other functions, however, particularly it brings the new agent to an acceptable level of efficiency more quickly than if he were put on his own on a job immediately, and it gives better service to the farm people with whom he works during his first regular assignment.



**APPENDIX C--THE INSTRUMENT**

Confidential

Serial Number \_\_\_\_\_

Place a check (X) under the word that best describes his teaching in each case.

	Poor	Fair	Good	Superior	Excellent
Office calls: Does he supply the desired information quickly, completely, and so that it can be used?					
Farm visits: Does he understand individual farms and give useful suggestions?					
Method demonstrations: Are they clear, convincing, and interesting?					
Result demonstrations: Does he use the results effectively to convince other farmers?					
Lecture meetings: Are they interesting and well-attended?					
Bulletins: Does he let farmers know what bulletins are available? Can they get them when they want them?					
Circular letters: Are they timely, interesting, and convincing?					
Newspapers: Does he make full use of them by reporting extension news, announcements, and success stories of extension cooperators?					
Pictures, films: Does he use them to teach? Does he follow them with a discussion?					
Training 4-H leaders: Do his leaders know what to do and how to do it?					
Training other leaders: Do his other leaders effectively promote the cooperative extension work?					
Recognizing needs of the farm people in his county: Does he know what the people of his county need in an extension program?					
Securing information that he doesn't have at hand: Does he secure it and get it to farm people promptly? Does he get what they want?					

2. How Does He Get Along With People?

	None	Little	Some	Much	Very Much
<u>How helpful is he?</u>					
<u>How friendly is he?</u>					
<u>How cheerful is he?</u>					
<u>How impartial is he?</u>					
<u>How enthusiastic is he?</u>					
<u>How much confidence in himself?</u>					
<u>How much interested in his work?</u>					
<u>How much interested in farmers' problems?</u>					
<u>How much appreciation does he show of others' contributions?</u>					
<u>How much respect for farmers' abilities?</u>					
<u>How much respect for farmers' preferences?</u>					
<u>How much respect does he show for local customs?</u>					
<u>How cooperative is he in working with other organizations?</u>					
<u>To what extent has he become a part of the community?</u>					

3. What is your over-all estimate of this Extension Agent's ability as a teacher? Poor \_\_\_\_, Fair \_\_\_\_, Good \_\_\_\_, Superior \_\_\_\_, Excellent \_\_\_\_.

In making your over-all estimate, what, if anything, did you take into account besides the points listed above?

4. What is your over-all estimate of him as an Extension Agent? Poor \_\_\_\_, Fair \_\_\_\_, Good \_\_\_\_, Superior \_\_\_\_, Excellent \_\_\_\_.

## APPENDIX D—FARMER COMMENT

Farmers interviewed in the course of the study were encouraged to write in at the end of the rating sheet (see Appendix C) what they took into account in evaluating the agent's work besides the points listed on the rating sheet. Thus, their comments are selective in that, in general, they usually omitted comment on the points listed on the rating sheet. Of approximately 250 county people interviewed, about 60 per cent made one or more comment. The more frequent of these are discussed below.

**Hard Worker:** The most frequent complimentary comment made was that the agent was a hard worker. Most often when this comment was made, it appeared that the agent was being compared with farmers in this respect rather than other professional workers. In only two cases was it particularly pointed out that an agent didn't work very hard. This did not mean that he did nothing, but rather that he kept strictly to office hours and spent a good deal of time in the office. Farmers appeared to value hard work for itself as well as for the result it obtains.

**A Good Cooperator:** Next in frequency of favorable mention was that the agent worked well with other organizations, both farm and town. As might be expected, this was mentioned most often in counties which had several farm organizations or in a large town. In one predominantly urban county, farmers mentioned that a good agent needed to be a good politician to get the county court appropriation for Agricultural Extension work. Open conflict with other organizations was frowned upon in most cases, but one individual took a positive view and pointed out that both organizations sent top men into the county and that the people were getting wonderful service.

Although farm people value a good cooperator, they feel that it can be overdone (that is, that he can spend too much time working with other organizations), since several commented that they liked their agent because he "sticks to business."

**Not Conceited, Likes Job, Helpful:** These were listed about an equal number of times and appear to be important in the eyes of farm people. Only two agents were specifically termed conceited and two over-confident. Farm people like agents who have plenty of confidence in themselves, but any suggestion that the agent feels superior is resented and resisted. One agent appeared to be failing as an agent for this reason. He was in the top 1 per cent in intelligence, apparently was aware of it, and appeared to feel that this excused him from the necessity of working very hard.

**Able to Demonstrate Suggestions:** The ability of an agent to actually perform the operations that he recommends to the farmers was mentioned less often than the points above, but it was always mentioned in connection with an agent who was rated very high. Sometimes this ability was mentioned with respect to the agent's own farm operations, sometimes on the farms of cooperating farm people.

Sometimes in connection with the above comment the additional point was made that the agent wasn't afraid of physical labor or afraid of getting dirty. However, farmers were critical of agents who worked at routine jobs with the farmer too much. They felt that, in general, his job was to bring new knowledge and techniques rather than to spend too much time simply assisting farmers with their regular work.

**Good Moral Character:** This characteristic of agents was mentioned often in connection with agents who took an active part in community affairs. Farmers feel that the county agents exerts a considerable influence on farm youth and it must be in the direction they approve. No instance was mentioned of an agent whose conduct was not acceptable.

**Miscellaneous:** Being a "good mixer" was mentioned several times, and not being able to mix was mentioned in a few cases. Being an active church worker was mentioned favorably several times, but in no case was an agent criticized for not taking part in church activities. Apparently agents generally dress appropriately; only one case of an agent presently employed being too dressy and two of being too "sloppy" (around the office) were mentioned. Lack of aggressiveness was mentioned several times, most often in connection with younger and relatively inexperienced agents. Favoritism toward a farm organization, usually the sponsoring organization, was mentioned by four farmers. Only one case was recorded of the agent not being generally well informed on subject matter.