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Recognizing Personality Characteristics Related to Managerial Potential in Agriculture

H. A. Gilbert

K. R. Krause

P. L. Williams

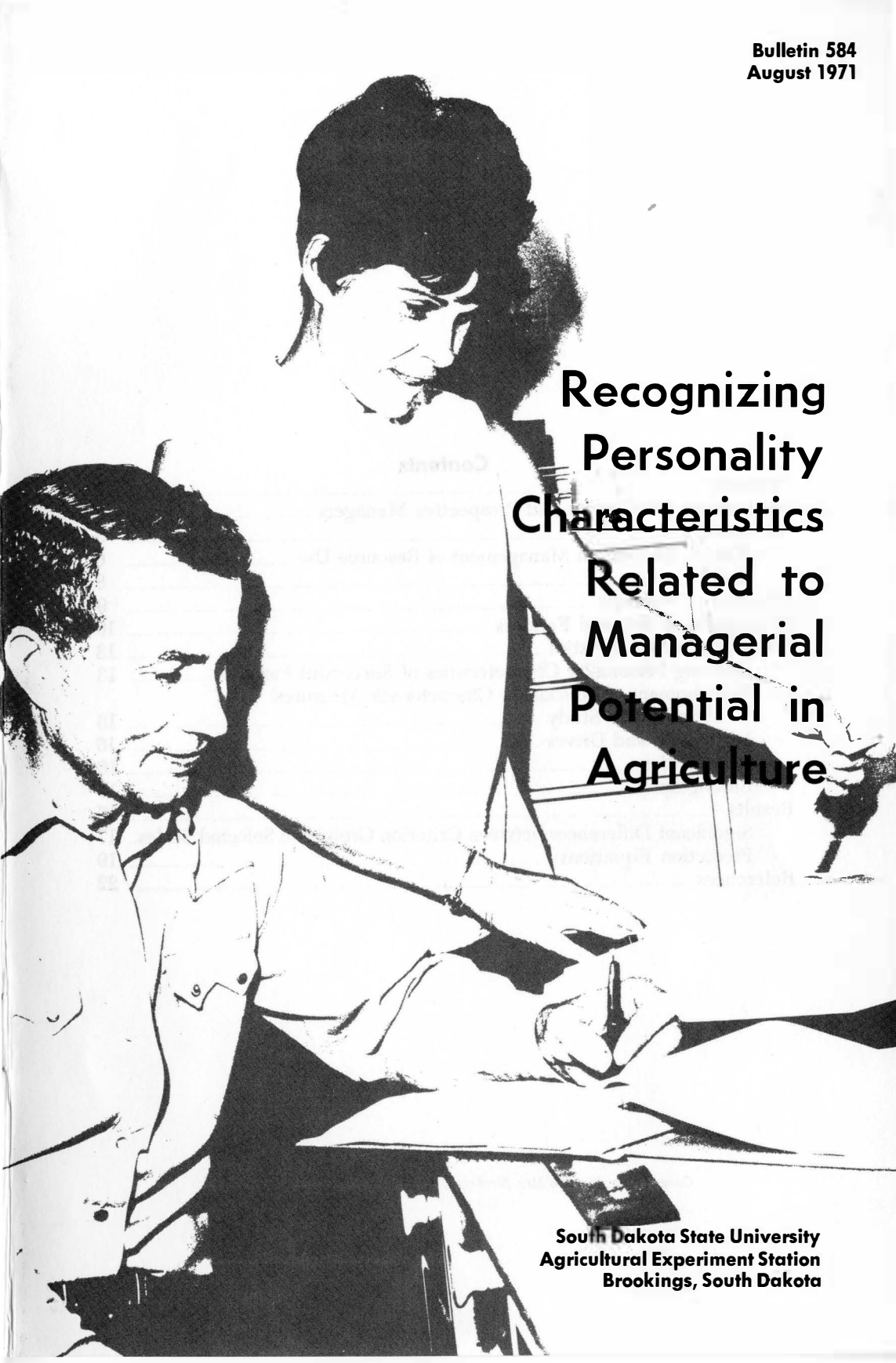
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**Recognizing
Personality
Characteristics
Related to
Managerial
Potential in
Agriculture**

**South Dakota State University
Agricultural Experiment Station
Brookings, South Dakota**

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Recognizing Personality Characteristics Related to Managerial Potential in Agriculture

Summary

Most research and analysis in farm management has been concerned with physical and capital relationships. Knowledge in the area of farm firm survival and growth is limited, though it is an emerging area of emphasis. Very limited farm management research has dealt with the personality characteristics of managers. However, the economic and social strength of agriculture will be determined in part by personality-based behavior of managers of farm firms. The project described here was an effort to relate measures of personality characteristics to potential managerial success.

Changes in net worth were determined from records of the Farmers Home Administration and Production Credit Association borrowers who co-operated in the study. Relevant personality characteristics were determined by administering to these borrowers and their wives a series of personality tests. Specifically, these tests sought to describe the potential managers' personalities with regard to motivations and drives, biographies, and abilities.

Some of these tests previously had been validated in other personality studies; some had been developed in other types of management studies. Further instruments were formulated specifically for this study.

This study was exploratory in nature. The sample was too small to provide conclusive, refined prediction instruments. Given these limitations, however, the utilized approach indicates that farmers lacking personality characteristics necessary to become successful managers can be identified. However, additional testing and consideration of other independent variables may develop more reliable relationships than were developed in this study.

The criterion variable—change in net worth—appears as one of the key variables in analyzing farm growth. The approach used in this study was to relate this variable to

By **Howard A. Gilbert**, associate professor of economics, **Kenneth R. Krause**, former associate professor of economics and **Paul L. Williams**, former professor and head, Department of Psychology.

personality characteristics of the human element in farm management.

Successful farmers differed significantly from their unsuccessful counterparts in response to personality test questions. Successful farmers completed more problems on the adaptability and abstracting tests and indicated more masculine interests and displayed interests more like those of chemists, Forest Service men, and aviators. Conversely, they revealed interests dissimilar to those of life insurance salesmen, bankers, advertising men, and real estate salesmen. They also scored lower on economic motivation, and scientific orientation, and higher on gross motivations and drives, authoritarianism, independence, manifest anxiety and the gross Strong scales.

Implications for Current and Prospective Managers

While measures of human characteristics as they relate to managerial success in farm and agribusiness firms are not highly developed, more facts have been learned and more services are available than are being utilized by present and prospective managers or their credit agencies.

The manager who is established and surviving, as well as the student who is uncertain of his management potential in agriculture, must first understand himself and his family and the relationship of these to the vocational environment. Some people are able to do this without counseling or analysis from outside the family, while others are not.

This study offers rather conclusive evidence that investigations of farm management must include consideration of both members of the farm couple, at least for the types of farms studied. Wives of successful farmers differed significantly from the unsuccessful farmers' wives. Successful farmers' wives scored higher on the authoritarianism, independence, scientific orientation, L validity, F validity, and risk aversion scales, and on a summation of Strong Interest scores. They indicated interests more like nurses and music teachers and less like those of English teachers and buyers.

Successful couples were quicker to discuss and agree on objectives for the farm family and business. They were also more confident that they controlled their own destiny.

Most perhaps would have developed greater management success if they had received help.

There are several levels and types of management in agriculture. Although a person and/or his family may not have the potential for some types of management, he/they may succeed in others. For instance, a farmer may be unsuccessful in administering his own diversified farm, but may be quite successful, if guided, in directing production on his employer's farm.

Appropriate counseling and greater self-understanding may move a family up the success scale without decreasing their independence. Individuals or families can

Types of Services Available

Need	Source of Help
Career guidance	Extension service, churches, public school counselors, private counseling services, universities
Training guidance	Extension service, public school counselors, private counseling services, universities
Marriage counseling	Guidance centers, churches, private psychiatrists
Self-understanding	Public school counselors, universities, churches, guidance centers

secure relevant guidance from several sources. Recently, educational institutions such as universities and public schools have responded to public demand and have developed counseling services. Psychological and psychiatric assistance is also available on a public and private basis. Some of the public services are free of charge or require only a nominal fee. Fee schedules for private assistance are established according to the professional training

required. The number of visits and the type of tests and consultations required depend upon the nature of the problem.

Services to evaluate agricultural management potential are not well developed; however, increasing interest and demand probably will encourage further development. Land-grant colleges and universities may pioneer in the development of this public interest area.

Introduction

This publication discusses how people concerned with management can recognize personality characteristics related to managerial success. Research results and examples cited are concerned primarily with farm management. However, some of the principles presented might apply to a broader range of management roles, both within and outside agriculture, and in both private and public businesses.

This analysis is not intended as a substitute for competent advice from an experienced teacher, counselor, or advisor. Yet it should supplement the competence and insight

they possess. Unfortunately, understanding the role of human behavior in management is difficult and often has been neglected. The analysis is thus an effort to improve the well being of individuals by guiding them in their personal involvement in management and to encourage more efficient resource use including that of the management resource.

The influence of the manager's or potential manager's wife is considered in this study. Certainly the influence of a wife's needs and attitudes about her husband's career is not unique to farming. However, it is more significant in farming be-

cause of: (1) the typical aggregation of household finances and farm business finances, (2) the wife's direct presence and participation in farm work and decisions, or (3) the frequent division of labor which delegates to the wife a partial and sometimes a primary managerial role, while the husband's contribution is primarily labor input.

The potential impact of improved selection and training of managers for various private and public roles is significant. It has been pointed out that by a small increase in management efficiency, South Dakota's food and fiber production could result in a several-fold increase in net income. To achieve this improvement considerable restructuring of farm firms, agri-business firms, and state and local government may be required.

Human Element in Management of Resource Use

Managerial behavior involves an interaction of internal and external conditions. The internal conditions have been identified as values, goals, motivations, drives, desires, knowledge, skills, performance, attitudes, aptitudes, and biography (background or experience). External conditions include the dictates of product and input markets, technological change, the social system, relations with other management units, weather, disease, pests, government and other organizations.

During the past century, efforts in American agriculture have been directed primarily towards efficient use of machines, land, livestock, crops, buildings, and water. The predominant interest of research and education has been in physical production

with emphasis on land and the machine rather than on man. Recently, attention has been directed toward the role the human element plays in management. The managerial ability of a student, farmer, or agri-business firm manager might have as much influence on the level of agricultural output as the machine or soil type.

Two developments during the last 20 years are emphasizing the needs of management in food and fiber production—specifically those needs resulting from financial management changes and farm firm growth.

First, farmers currently spend between 70% and 80% of their gross income on purchased inputs compared to less than 50% 25 years ago (1).¹ A further increase is projected, and in some types of farm production only a small margin between income and expenses will be possible. When 50% or less of the gross income was spent on purchased inputs, much of the input was composed of labor, which could be shifted readily from production of one commodity to production of another. This reduction in risk-reducing flexibility is expected to continue as farmers invest more heavily in specialized production machines and chemicals. Thus, while the farm manager himself was once the all purpose input, today specialized non-human inputs do not allow the same production flexibility. Specialization of non-human resources has not been matched by specialization of human resources. Therefore it is important to identify those special-

¹Numbers in parentheses refer to references at the end of the bulletin.

ized human characteristics necessary for effective farm management.

Secondly, the enlargement of farms has been a major development. There have been increases in acres per farm, land values per acre, capital requirements per man, and total capital requirements per farm. These changes have been projected to continue, along with increases in demand for food and fiber and changes in the structure of production and marketing. As a result, farmers and agriculture are relying more heavily on borrowed capital and are moving into a money economy, thereby increasing the farm managers' interdependence with other segments of the economy.

The lenders' task of appraising potential borrowers' ability to successfully obtain, use, and repay credit has become more complex. Lenders suggest that differences in managerial skills are becoming more crucial. Borrowed funds, both public and private, can be expected to be more efficiently used when made available to farmers with higher probabilities of success.

A major re-evaluation of society's obligation to farm managers may be appropriate. The basic philosophy has been that anyone should be able to farm if he can locate on some farm land. The farmer who later encounters management difficulties sometimes seeks a guarantee of continued income from his farming rather than seeking employment alternatives where his opportunities and productivity might be greater. This reticence to seek employment where productivity is greatest may be due to a lack of awareness of his potential in various employments.

Methods of manager selection currently used lack accuracy in identifying managerial potential. Owners of agricultural resources use intuition to a large degree as well as biographical and personal information when delegating management responsibility. An individual's past accomplishments in dissimilar situations often are given significant consideration. In many farm firm situations, a son or son-in-law replaces the parents in managing an enterprise. Creditors tend to go along with a prospective, young manager if he comes from a "good family." Little consistent, specific consideration is given to motivations, goals, abilities, or managerial processes.

An industrial management consultant suggests that management ability can be measured and the output of management improved (2). However, he cautions against taking too narrow a view of management performance. Management cannot be easily categorized, packaged, and sold by commercial firms like a machine or a ton of fertilizer. He further indicates that executive ability seems to have little relation to innate intelligence, imagination, or brilliance. However, effective managers do manifest certain habits and practices that can be profitably learned by people having the necessary personality traits.

In one exploratory study of success in the use of credit, it was found that lenders do not obtain all data relevant to predicting success, especially data involved in risk prediction (3). For instance, character and management ability are not duly recognized as being closely re-

lated to a farmer's ability to repay a loan. The study concludes that indicators of management ability need to be developed to assist lenders as they extend credit.

Manager advancement in non-farm production and in some farm situations is often an outgrowth of a non-technical analysis of personnel in lower echelons. A foreman is selected from a work group, a supervisor from a group of foremen, and an executive from a group of supervisors. Intuition of those making the appointment continues to be utilized to a large degree, along with biographical and personal information. Performance and biography are thus the most objective information used in the selection of managers in these situations.

Conventional economic analysis of farm management performance has focused on production coefficients—yield per acre, feed per hundred pounds gain, farm size in acres of land or head of livestock, returns per ton of fertilizer, or value of farm production per \$1.00 non-feed cost. However, an Illinois study suggests that such measures do not describe the quality of farm management (4), but are merely measures of returns to management. The study concluded that a better understanding of farmers' attitudes, skills, objectives, and behavior is needed to evaluate performance and to teach farmers and prospective farmers how to achieve greater managerial success.

An agricultural industrial economist suggests that agricultural enterprise managers of the future will be identified largely by their professional management capacities

and not by their knowledge or training in technical agriculture production, per se (5). He believes we have seen the end of the unique era in which farm control was obtained primarily by inheritance from farm parents.

An agricultural economist at a land-grant university suggests that in a few years the farm entrepreneur will spend most of his time in decision making with emphasis on financial management, as opposed to physical labor or operation of machines (6).

One leader in applied behavioral science expects major advances in understanding the human element in management (7). He refers to the use of new techniques made possible by the advent of computer technology.

A North Central States farm management research group indicates there is significant potential for learning how to select and train people with innate managerial ability (8).

In spite of these advances, a well-developed theory for identifying managerial potentials does not exist. The evidence indicates that an interdisciplinary approach must be used in studying relevant human activity. Knowledge of industrial psychology, industrial sociology, and political science needs to be integrated with economic analyses of resource use.

Need

With increasing emphasis on effectiveness of specific types of business management, people in more occupations need to identify important attributes of managerial skill. This publication explores the

relationship of personality characteristics of farmers and their wives to the degree of their success in farm management.² Improved recognition of such characteristics and accuracy in prediction of success is particularly valuable for people in the positions noted below.

- **Lending officers who make daily lending decisions.** These decisions may affect the success of the financial institution, the success of the borrowing farm manager, and the quality of life in the community.

- **School, church, or government personnel who frequently offer vocational advice.** It is important for such personnel to understand various personality characteristics and to be aware to which individuals can be guided for optimal resource use.

- **Parents who are concerned with helping a child reach his greatest productive potential.** Farm parents sometimes must choose between committing resources to their own children or to more productive alternative managers. Also, the parents may exert considerable influence on the development of a child's personality, that is until he is able to guide himself or until he finds other people or institutions of guidance. Even if he has reached adulthood and has some professional skills, he may still draw upon the wisdom which the parents have obtained through experience.

- **High school or college students who are interested in agriculture.** In the home community or at college these young people may face very limited opportunities for evaluation of their own management potential.

Selection of Farmers

Farmers and their wives who were interviewed for this study were selected from Farmers Home Administration and Production Credit Association borrowers in eastern South Dakota.

The stated purpose of the Farmers Home Administration (FHA) program is to provide financial and supervisory assistance to individuals, associations and communities in rural areas in strengthening fam-

ily farms, improving living conditions in rural communities, and increasing rural incomes. Credit eligibility of farmer applicants is limited to those whose credit needs cannot be met through commercial channels.

The FHA program is designed primarily to help eligible applicants by developing well-defined goals, and adapt their individual qualifications, needs and desires to goal achievement under the guidance of qualified FHA supervisory personnel.

The stated purpose of the Production Credit Association (PCA) is to provide farmers with sound credit which in turn will enable

²A more detailed and technical discussion of this research may be found in Krause, Kenneth R., and Paul Williams "Personality Characteristics Related to Farm Managerial Success," Technical Bulletin 30, South Dakota State University, Brookings, 1971. A much more extensive bibliography of relevant research is also included in that publication.

them to realize the maximum profit from their vocation. Credit policies include tailor made loans to fit each farmer's particular needs, dependable credit through bad times as well as good, and reasonable interest costs.

All 64 Brookings County FHA borrowers who held operating loans and/or real estate loans from 1960 through 1964 were selected for intensive study. Also, 39 Sioux Falls PCA borrowers who had shown an increase in financial position purposely were selected for the net worth increase they had shown.³

After the borrower cases were initially selected by the authors, each case was discussed with the county FHA supervisor or with the PCA manager or associate manager to assure consistency in the financial data as reported in files for each borrower. The supervisor or manager in each case was personally acquainted with the borrowers and their operation during the time period under consideration.

Description of Selected Farmers

For descriptive purposes, the selected FHA borrowers were divided into successful, unsuccessful, and limited success according to their change in net worth during the period of analysis (Table 1).⁴

³Approximately 60% of the PCA borrowers experienced an increase in net worth from 1960 to 1964.

⁴The possible influence of 1960-1964 conditions on success should be considered. Management decisions which resulted in an increase in net worth during this particular period may not be "success" producing decisions under other conditions.

For purposes of developing prediction models, the FHA borrowers were classified as successful or unsuccessful reflecting whether they had demonstrated an increase in net worth over the five-year period. There were 32 FHA farmers in the successful group and 31 FHA farmers in the unsuccessful group.

Interview and test questions were administered to all of the borrowers mentioned above who were still farming in May of 1966. Twenty-one successful FHA farmers and their wives completed all of the interview and test questions and an additional five completed part of the material which could be used. In the unsuccessful group nineteen completed all of the interview and test questions and six more completed part of the material. Thirty-two PCA farmers and their wives completed all of the material and an additional five couples completed part of the material.

The limited success category was utilized at this stage of the analysis to separate those farmers who had experienced very little net worth change from those who incurred significant increases or decreases. The limited success borrowers were classified as successful or unsuccessful for the personality analysis.

The average original loan was considerably larger for the successful farmer than for the other two groups. The proportion of the borrowers initially placed under intensive supervision increased with

Table 1. Age and Background of Farmers Selected for Intensive Study

	FHA			PCA§
	Successful*	Limited Success†	Unsuccessful‡	
Average year started with agency	1957	1955	1957	¶
Average original loan size	\$13,755	\$10,182	\$10,803	¶
Number of farmers by type of FHA supervision				
intensive 	13	9	21	
limited	13	5	5	
Mean age in 1960 (years)	35.5	40.7	40.2	37.8
Average farming experience by 1960 (years)	12.2	18.1	19.8	10.9

*Data refer to 26 farmers who showed an increase in net worth during the 1960-1964 period.

†Data refer to 11 farmers who showed very little change in net worth during the 1960-1964 period. These farmers were later classed as either successful or unsuccessful according to whether the small change in net worth was positive or negative.

‡Data refer to 26 farmers who showed a decrease in net worth during the 1960-1964 period.

§Data refer to 39 farmers who showed an increase in net worth during the 1960-1964 period.

¶Data not available.

||Intensive supervision involves frequent farm visits by the FHA lending officer.

decreasing success. (Thus the basis for determining intensity of supervision is related to success. However, the fact that several unsuccessful farmers were under intensive supervision while some unsuccessful farmers were under limited supervision indicates a noteworthy lack in precision.) Farmers in the successful group averaged almost five years younger than those in the other two groups and had only two-thirds the farming experience. (PCA borrowers were of an average age midway between the extremes of the averages of the FHA groups but they averaged less farming experience than any of the FHA groups.)

The proportion of managers who were farm owners generally decreased with decreasing farming success (Table 2). (The PCA group

had the highest proportion of farm owners of all the groups).

Average net worth of successful and limited success farmers was essentially the same, both at the time of the original loan application and in 1960, the date of the earliest records analyzed. The unsuccessful farmers averaged well over half again as great a net worth, both at the time of the initial loan application and in 1960. (In 1960, the net worth of the PCA borrowers was greater than any of the other groups.) Although initial net worth is generally negatively correlated with success, change in net worth is positively correlated with success (by definition of success) to the degree that ending net worth is also positively correlated with success. Although beginning owned assets were generally (but weakly) in-

Table 2. Financial Experience of Farmers Selected for Intensive Study

	FHA			PCA*
	Suc- cessful*	Limited Success*	Unsuc- cessful*	
Farm Tenure				
owners	17	5	15	27
renters	9	6	11	12
proportion of owners65	.45	.58	.69
Net worth				
at the time of loan application	\$ 8,923	\$ 8,546	\$15,841	†
1960	11,547	11,474	18,020	\$21,187
1964	20,465	13,001	9,758	36,634
relative change, time of loan				
through 1964	+129%	+52%	-38%	†
relative change, 1960-1964	+77%	+13%	-46%	+73%
Total assets				
owned, 1960	\$25,966	\$21,524	\$35,629	\$33,846
owned, 1964	44,187	31,989	38,156	57,594
owned, relative change, 1960-1964	+70%	+49%	+7%	+70%
owned, average, 1960-1964	36,469	28,061	38,814	45,725
managed, average, 1960-1964	57,394	49,303	54,711	83,198
owned/managed, averages, 1960-196464	.57	.71	.55
Total debt				
1960	\$18,334	\$17,315	\$23,936	\$13,063
1964	30,988	27,998	35,740	20,247
relative change, 1960-1964	+69%	+62%	+49%	+55%
Average number of creditors, year end....				
	4.9	6.8	8.3	2.7
Annual expenses and income, 1960-1964				
average				†
living expense	\$ 2,452	\$ 2,386	\$ 2,798	
farm operating expense	7,020	5,763	8,113	
total farm expense	9,472	8,149	10,911	
total farm income	13,612	11,139	15,406	
net income	4,140	2,990	4,495	

*For description, see Table 1.

†Data not available.

versely correlated with success, ending owned assets and managed assets were both (weakly) positively correlated with success.

Total indebtedness and number of debtors were generally inversely correlated with success, though relative change in indebtedness was directly correlated with success.

Expenses (of all categories included) and net income were less for the limited success farmers than for the successful group. However, the unsuccessful group ranked

higher than either of the other FHA groups in all expense categories and in net income.

The PCA group exceeded all the FHA groups in: a) net worth at the beginning of analyses; b) net worth at the end of the analysis; c) owned ending assets; d) average owned assets; and e) average managed assets. This group also had the lowest owned/managed asset ratio and the least beginning and ending total debt and average number of creditors.

Personality Characteristics

Defining Personality Characteristics of Successful Farmers⁵

To assist in defining personality characteristics relevant to farm managerial success, five group sessions were conducted prior to the actual study. In these sessions particular emphasis was placed upon defining success in farming and identifying the factors considered relevant to achieving success in farming.

The first session was with a panel of non-farm leaders who commonly associated with farmers — county Extension service personnel, officers of farm lending institutions, and land-grant university professors.

The other panels consisted of seven successful and seven unsuccessful FHA borrowers and their wives (i.e., separate group sessions were held with successful FHA wives, unsuccessful FHA wives, successful FHA men, and unsuccessful FHA men). The separate com-

ments of each husband and wife were compared. The farmers and their wives were asked to discuss such questions as:

1. What is farm, family, and community success? What characteristics have you observed in farmers and their wives whom you consider successful?
2. What do risk, independence, and economic motivation mean in farming?
3. How do degree and style of communication between the husband and wife affect family and farm business objectives and goals?
4. To what degree do you ascribe your destiny to self-determination, particularly regarding the outcome of your farm enterprise?

Development of Personality Characteristic Measures Used in the Study

The model that was adopted as the guide for this study suggests that the important attributes of a farm manager are the experiences

⁵The possibility should be noted that success could have been achieved for reasons not identified here and that a "success personality" developed after the fact.

Table 3. Motivation and Drive Scales

Author	Men's Scales	Women's Scales
	(Non-Vocational Attitude Scales)	
Hobbs (10)	Risk Aversion Economic Motivation Scientific Orientation Independence	Risk Aversion Economic Motivation Scientific Orientation Independence
Aderno (11)	Authoritarianism	Authoritarianism
Taylor (12)	Manifest Anxiety L Validity Scale F Validity Scale K Validity Scale	Manifest Anxiety L Validity Scale F Validity Scale K Validity Scale
James (13)	Internal-external Orientation	Internal-external Orientation
	(Vocational Interest Scales)	
Strong (14)	Group 1 Artist Psychologist Architect Physician Osteopath Dentist Veterinarian	Artist Author Librarian English Teacher Social Worker Psychologist Lawyer Social Science Teacher YMCA Secretary Life Insurance Saleswoman Housewife Elementary Teacher Office Worker Stenographer-Secretary Business Education Teacher Home Economics Teacher Dietitian Occupational Therapist
	Group 2 Mathematician Physicist Engineer Chemist	
	Group 3 Production Manager	
	Group 4 Farmer Aviator Carpenter Printer Math-Science Teacher Industrial Arts Teacher Policeman Forest Service Man	Nurse Math-Science Teacher Dentist Laboratory Technician Musician (Performer) Physical Therapist Engineer Femininity-Masculinity
	Group 5 YMCA Physical Director Personnel Director High School Social Science Teacher	

City School Superintendent
Social Worker
Minister

Group 6
Musician (Performer)

Group 7
CPA

Group 8
Senior CPA
Accountant
Officeman
Purchasing Agent
Mortician
Pharmacist

Group 9
Sales Manager
Real Estate Salesman
Life Insurance Salesman

Group 10
Advertising Man
Lawyer

Group 11
President-Manager Concern
Occupational Level
Specialization Level
Masculinity-Femininity
Interest Maturity

reflected in his biography, his motivations and drives, and his capabilities (9). There are many ways in which each of these categories might be conceptualized, and consequently, many instruments and scales that might be used to represent and measure these concepts.

Whenever possible, validated personality tests were used. However, a paucity of previously validated behavioral or personality variables adaptable to farm managerial evaluation exists; consequently, three approaches were combined in

selecting indicators of the personality with a high potential for successful farm management:

- Measures of personality variables were included that had been developed and validated in other farm managerial evaluation studies.
- Measures of motivation, biography, and capability variables that had been developed in studies other than farm managerial evaluation were considered for their applicability to farm management.

- Individual questions were formulated and variables were developed within the study, itself, to analyze facets of the farm management personality not duly covered by previously validated instruments.

Motivations and Drives

This study incorporated from other managerial evaluations four measures of motivations and drives designed to measure attitudes towards risk aversion, economic motivation, scientific orientation, and independence (Table 3).

An authoritarianism scale was included since this syndrome was believed to be related to the aspects of personality which are associated with lack of creativity and which influence decision making. (Characteristics of an authoritarian personality include lack of flexibility in attitudes, need for structure, and reliance on authority figures despite possible resentment of them.)

Since anxiety has proven to be relevant in decision making, this general area was included as a part of the study of motivational structure.

Due to their experience talking with farmers, the authors also hypothesized that success was related to the degree to which a farmer felt he “controlled his own destiny” rather than feeling he was merely “a victim of fate.” The internal-external scale which purports to measure this dimension was included in these tests.

Three validity scales were included, as is common with personality tests, to check for consistency in attitudes throughout the test.

Inclinations toward various types of vocations also have been considered indicative of motivations. Thus, a number of vocational interest scales were included.

Capabilities

Three validated measures of ability were used: (1) an adaptability test, (2) a figures test, and (3) an abstracting test. All of these measures were selected because they had been designed for, and validated with, personnel engaged in employment positions requiring educational attainments similar to those commonly found in agriculture. In

Table 4. Biography Scales*

Factor	Men	Women
1	Aggressive conservatism	Financial knowledge
2	External farm and financial help	Life aspirations
3	Farm operations procedures	Submissiveness
4	Life expectations	Rebellion toward parental negativeness
5	Low socioeconomic status	General attitude
6	Farm independence	Unresolved rebellion

*The naming or labeling of factors involves an analysis of the nature of the items most influential on each factor and an estimation of what these reflect. Therefore, names or labels comprise basically a hypothesis about the nature of the abstractions otherwise called Factor 1, Factor 2, etc. Only the six most significant scales for men and the six most significant for women were labeled.

addition, the authors developed and used an "animal production knowledge test."

Biography

Numerous variables have been used in identifying influences of background or experience on a manager and his wife and on the relevant interrelationship between them. The most recent variation, generally referred to as the "bio-data" approach, featured the use of highly structured, multiple-choice questions dealing with specific experiences or feelings about specific biographic events. Basically, this

was the approach adopted for this study.

A questionnaire of 521 questions was developed. Because of the relative significance of answers in explaining different dimensions of biographies of the farmers and their wives, 12 variables (i.e., sets of questions) were aggregated for men and 10 for women (Table 4). Farmers' answers to 70 questions were significantly different among the successful and unsuccessful FHA borrowers and the PCA borrowers. Answers given by the farmers' wives to 46 questions were significantly different between the groups.

Results

Significant Differences between Criterion Groups on Selected Scales

Student t values were calculated to determine statistically significant differences between criterion groups on the various scales. Criterion groups were defined according to change in net worth. This analysis identified significant differences between successful and unsuccessful FHA men for 12 of the scales and between the unsuccessful FHA and the PCA men on one scale (Table 5).

In summary, the successful FHA group completed significantly more problems than the unsuccessful FHA group on the adaptability and abstracting tests. The successful group indicated interests more like those called masculine in general, and more like chemists, aviators, and Forest Service men, and less like life insurance salesmen, real estate salesmen, bankers and advertising men. The successful men scored lower on the economic motivation

and scientific orientation scales. Only on the risk aversion scale was the PCA group significantly different from the unsuccessful FHA group—the latter group showing the lower score.

From these scores, it would appear that the farmer who is "too sociable" in his interests is less effective than the one who prefers, or at least can tolerate, the relative independence and somewhat isolated hours of activity that are necessary in farming. Capable abstract thinkers are more likely to succeed. The farmer whose primary motivation involves chances of high monetary returns regardless of risks is less likely to succeed, possibly because excessive carelessness or demonstration of wealth is costly.

The scales developed within this study show the successful FHA farmers to be more intensely motivated in general, more flexible though independent, anxious and scientifically oriented and less eco-

Table 5. Mean Values for Previously Validated Scales which Showed Significant Differences among the Three Criterion Groups for Men

Level of Significance*	Validated Scale	Mean Values		PCA
		Successful FHA	Un-successful FHA	
1%	Risk Aversion		57.5	62.5
	Number Completed: Abaptability	29.2	24.1	
	Strong Score—Life Insurance Salesman....	21.8	29.1	
5%	Strong Score—Masculinity-Femininity	55.8	49.8	
	Strong Score—Chemist	28.5	20.9	
	Strong Score—Aviator	43.6	35.7	
	Strong Score—Banker	33.1	38.7	
10%	Strong Score—Real Estate Salesman	34.6	39.9	
	Economic Motivation	61.5	65.9	
	Scientific Orientation	78.8	83.9	
	Number Completed: Abstracting	19.3	11.4	
	Strong Score—Advertising Man	21.5	24.9	
	Strong Score—Forest Service Man	34.7	27.8	

*The level of significance represents the probability that a mean value difference this large would occur strictly by chance. The lower the percentage level of significance, the more conclusive is the evidence.

nomically motivated. The K and L validity scales may indicate a desire to present a more positive picture of oneself (Table 6).

There is strong support for the predictive value of the scales developed from responses by the FHA groups. When these same scales were applied to a comparison of the unsuccessful FHA group and of the PCA group, the ordinal difference was the same in all significant comparisons. As would be expected, the results of the tests were generally less significant for the latter comparisons than for the original validating sample.

There is considerable similarity between the results obtained for women and for men (Table 7). With a single exception (the internal-external scale which was significant

for both comparisons), comparisons of the FHA wives' responses and those of the PCA wives with the unsuccessful FHA wives' served to strengthen conclusions already reached on the men's tests. Note also that every comparison which was significant for the FHA comparison was confirmed by the PCA-unsuccessful FHA comparison.

The wives' responses substantiate much of the evidence obtained from the husbands' tests. In addition, their conviction that the farm couple does control its own professional destiny is a complement to the potential success of their management.

In addition to the cited differences between successful and unsuccessful men and between successful and unsuccessful women,

Table 6. Mean Values for Significant Scales which Were Developed within this Study and which Showed Significant Differences among the Three Criterion Groups for Men

Level of Significance	Significant Scale	Mean Values		
		Successful FHA	Unsuccessful FHA	PCA
1%	Gross Scale Score	97.0	90.3	
			90.3	95.5
	Authoritarian	11.7	10.3	
	Independence	11.7	10.9	
	Economic Motivation	12.6	11.6	
	F Validity Scale		9.9	10.8
	Manifest Anxiety	10.5	8.7	
5%			8.7	9.6
	Gross Strong Scale	40.1	24.2	
			24.2	35.8
10%	K Validity Scale		9.0	9.8
	Significant Authoritarian		10.3	10.6
	Significant Independence		10.9	11.4
	Scientific Orientation	10.5	10.3	
			10.3	10.5
	Economic Motivation		11.6	12.0
	L Validity Scale	9.9	9.4	
K Validity Scale	9.8	9.0		

there was a noteworthy difference in the degree to which successful and unsuccessful couples could discuss and agree on objectives for the family and farm business. A successful couple was much freer to discuss these objectives and much quicker to agree on them. Also, the successful group felt that future success was available to them, while the unsuccessful group viewed farming to be a "big gamble" and expected corporations to take over farming soon.

Prediction Equations

Several regression models were developed and tested: men alone, women alone, and men's and women's individual variables combin-

ed. The most conclusive results were obtained when individual men's and women's variables were put into the same equation (Table 8). Three forms of the criterion variable (change in net worth) were tested:

- (1) a straight percentage change in net worth from 1960 through 1964, Y_1 ,
- (2) a comparison of percentage change in net worth during the 1960 through 1964 period with at least 30 Production Credit Association borrowers with the same number of years farming experience, Y_2 , and
- (3) the 1960 through 1964 percentage change in net worth weighted by the number of

Table 7. Mean Values for Significant Scales which Were Developed within this Study and which Showed Significant Differences among the Three Criterion Groups for Women

Level of Significance	Significant Scale	Mean Values		
		Successful FHA	Unsuccessful FHA	PCA
1%	Gross Scale Score	111.2	102.1	
			102.1	112.7
	Internal-External		10.2	10.1
	Authoritarian	13.4	11.9	
			11.9	13.2
	Independence	11.4	10.9	
			10.9	11.6
	Scientific Orientation	12.0	10.8	
			10.8	11.6
	Economic Motivation		11.1	12.9
	L Validity Scale	8.9	6.3	
			6.3	10.1
	F Validity Scale	11.9	10.5	
	K Validity Scale		10.3	12.2
Manifest Anxiety		9.6	8.9	
Risk Aversion	11.9	10.7		
		10.7	11.8	
Gross Strong Score	82.9	74.3		
		74.3	83.2	
10%	Internal-External	10.4	10.2	

years of farming experience scaled from 1 through 9, Y_3 .

The negative sign for men on Life Expectations for Y_1 and Y_2 suggests farmers who hold low expectations for life apparently are less successful in increasing their net worth. This was expected.

The negative sign for women for the number correct on the animal husbandry test was not expected. Apparently, wives of the successful farmers are not so involved with farm livestock as wives of the unsuccessful farmers.

The Strong scores on the women's variables for English teacher, buyer, and physical therapist showed

negative signs as expected. These activities would take a woman away from the farm home and business and would be expected to correlate negatively with farm success. The fact that nurse and music teacher showed positive signs may indicate that these activities can be accomplished in the farm home.

With Y_1 and Y_2 , the sign was as expected for all positive independent variables entering the equations.

All of the positive signs with Y_3 were expected. The negative sign for the number correct on the animal husbandry test for women was consistent with a negative sign under Y_1 and Y_2 . The negative sign for

Table 8. Variables Entering the Final Equations for Y₁, Y₂, and Y₃

Scale	Dependent Variables		
	Percent change in net worth (1960-1964) Y ₁	Net Worth change (1960-1964) compared with that of PCA borrowers Y ₂	Percent change in net worth (1960-1964) Scaled 1 through 9 Y ₃
Men			
Ability			
Number Completed: Adaptability.....			+*
Number Completed: Abstracting.....		+	
Motivations and Drives			
Gross Risk Aversion	+		
Strong Score Banker	+	+	+
Significant Risk Aversion			+
Gross Significant Strong Score	+		-†
Biography			
Aggressive Conservatism		+	+
Life Expectations	-	-	
Women			
Ability			
Number Correct: Animal Husbandry Test..	-	-	-
Motivations and Drives			
Gross Scientific Orientation	+		
Gross Manifest Anxiety	+		+
Gross Internal-External		+	+
Gross L Validity	+	+	+
Strong Score English Teacher	-		
Strong Score Buyer	-		-
Strong Score Nurse	+		
Strong Score Music Teacher	+		
Strong Score Physical Therapist	-		
Strong Score Femininity-Masculinity	+		
Gross Significant Strong Score	+	+	+
Scientific Orientation	+	+	+
Authoritarian		+	
Biography			
Financial Knowledge	+	+	
Unresolved Rebellion	+		+
	R ² =.729	R ² =.667	R ² =.731

*+Indicates that the variable entered the final equation with a positive weight.

†-Indicates that the variable entered the final equation with a negative weight.

the Strong score for buyer given by women was also expected. The negative sign for the gross significant Strong score for men was not consistent with the sign for this variable with Y_1 and Y_2 , and was not expected. The negative value of this variable is significant with Y_3 . The explanation for the negative sign ap-

parently lies in the interaction of this variable with other motivation variables or in the fact that the variable was developed from selected questions that represent interests non-complementary to the goal of increasing the net worth of the farm firm.

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