Mentoring and career development of university agricultural education faculty in the United States

Kresha Eastman
Iowa State University

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Mentoring and career development of university agricultural education faculty in the United States

Eastman, Kresha, Ph.D.
Iowa State University, 1988
Mentoring and career development of university agricultural education faculty in the United States

by

Kresha Eastman

A Dissertation Submitted to the Graduate Faculty in Partial Fulfillment of the Requirements for the Degree of DOCTOR OF PHILOSOPHY

Major: Agricultural Education

Approved:

Signature was redacted for privacy.

In Charge of Major Work

Signature was redacted for privacy.

For the Major Department

Signature was redacted for privacy.

For the Graduate College

Iowa State University
Ames, Iowa
1988

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CHAPTER I. INTRODUCTION

The 1980s will likely be remembered as a decade of economic decline, financial cut-backs, and overall "belt-tightening" throughout much of American society. This era of limited resources has resulted in a renewed interest in the importance of individuals to organizational success (Willbur, 1986). Employees are being recognized as valuable resources and successful organizations are working to maximize their existing human resources.

The corporate world has recently been bombarded with literature emphasizing the value of people. Peters and Waterman (1982), in their well known book, *In Search of Excellence*, contended that for any organization to succeed it must develop its human resources. They pointed to the importance of recognizing people as the key to organizational success, by stating that organizations must "treat people as adults. Treat them as partners; treat them with dignity; treat them with respect. Treat them--not capital spending and automation--as the primary source of productivity gains" (Peters and Waterman, 1982, p.238).

that in an increasingly highly technological world, effective organizations must be sure to include "High Touch" people elements in everything they do. Such elements would include a concern for personal growth, an emphasis upon recognizing and discovering individual potential, and more direct employee involvement in determining career direction. Incorporating such high touch people considerations into the way of doing business is what, according to Naisbitt (1982), differentiates successful organizations from those that have failed.

The renewed interest in capitalizing on human resources has not escaped the academic world. Blackburn and Baldwin (1983) aptly pointed out that "in a labor-intensive enterprise like higher education, human resources are the most valuable commodity. The vitality and effectiveness of a college or university is directly linked to the quality, resourcefulness, and vigor of its faculty members." Today's conditions of limited resources and ever-increasing demand for accountability have made the optimum performance of faculty a top priority.

Faculty career development is recognized as an important factor in maintaining faculty vitality (Hynes, 1984; Ruch, 1984; Braskamp et al., 1982; Baldwin and Blackburn, 1983). Career development and advancement are believed to be influenced by a variety of personal
characteristics and skills including intelligence, effort, competence, judgment, interpersonal skills, communication skills, motivation, personality, appearance, stamina, confidence, cunning, sex, race, and ethnic background (Queralt, 1981). In addition, evidence suggests that environmental and organizational factors may play a significant part in the academic career development process (Fowler, 1982). One such factor is that of sponsorship or mentoring.

The importance of mentoring to the career success of managers and executives in business and industry is well documented (Willbur, 1986; Rutherford and Wiegenstien, 1985; Pascale, 1984). However, research investigating the influence of such relationships on academic career advancement is relatively sparse. Queralt (1981) reported that mentors had a significant influence on the career development process of university faculty and administrators in Florida. Corcoran and Clark (1984) found that faculty members described as "highly active" seemed to have had the advantage of a greater degree of sponsorship with their advisors whom they described with greater affection and as serving them in more professional helpful ways. They state that "sponsorship seems to be vital for a successful academic career" (Corcoran and Clark, p. 150). Cameron and
Blackburn (1981) reported that sponsorship plays an important role in the placement process of new assistant professors. Gardner (1985) contended that popular faculty development efforts are those that include the establishment of faculty mentors for new faculty.

Although no research was found pertaining to the role of mentors or sponsors in the career development process of university agricultural education faculty, investigating the influence of such relationships would be worthwhile. Agricultural education is a unique profession whose impact extends far beyond the walls of the university. In such a people-oriented profession, the "ripple effect" of university teaching is widely felt through several channels. The heavy "service" demands of professionals in agricultural and extension education (in addition to research and teaching demands), increase the outflow of information and knowledge from university professionals, while also increasing demands on those professionals. The wide variety of demands faced by faculty in agricultural and extension education makes the need for support within the profession extremely important. The potential significance of mentoring in agricultural and extension education may be even more far-reaching than in other academic disciplines.
Purpose of the Study

The purpose of the study was to determine the extent to which the professional career development of university agricultural education faculty has been influenced by mentors, and to examine the relationship between mentoring and selected indicators of career development. Secondary purposes of the study were to identify functions performed by mentors of university agricultural education faculty, and to develop a profile of the mentors of university agricultural education faculty.

Objectives

Specific objectives of the study were to:

1. Determine the extent to which the professional career development of university agricultural education faculty has been influenced by a mentor or mentors.

2. Identify functions of persons serving as mentors to university agricultural education faculty.

3. Compare the extent of mentoring influence experienced by university agricultural education faculty when they are grouped by current academic rank, age, gender, undergraduate grade point average and graduate grade point average.
4. Identify characteristics of persons serving as mentors to university agricultural education faculty.

5. Determine the performance of university agricultural education faculty on the following indicators of career development:

   a. years to move from assistant to associate professor.

   b. years to move from associate to full professor.

   c. administrative positions held.

   d. national leadership positions held.

   e. national awards received.

   f. professional awards received at the state or local level.

   g. articles published.

   h. books authored or coauthored.

   i. master's students advised.

   j. doctoral students advised.

   k. grants received.

   l. satisfaction with current position.

   m. satisfaction with career progress.

6. Compare the performance of university agricultural education faculty on selected indicators of career development when they are grouped by the extent of
mentoring influence experienced.

7. Determine the relationship between mentoring influence and the following indicators of career development:
   a. years to move from assistant to associate professor.
   b. years to move from associate to full professor.
   c. administrative positions held.
   d. national leadership positions held.
   e. national awards received.
   f. professional awards received at the state or local level.
   g. articles published.
   h. books authored or coauthored.
   i. master’s students advised.
   j. doctoral students advised.
   k. grants received.
   l. satisfaction with current position.
   m. satisfaction with career progress.

The general research question of interest is: Is there a relationship between the extent of mentoring influence on the professional career development of university agricultural education faculty and their career development
Assumptions and Delimitations

The major assumption underlying the study is that the professional careers of university agricultural education faculty in the United States have been influenced by one or more individuals. This study provided information regarding the extent to which agricultural education faculty perceived their professional careers to have been influenced by another person or persons. The word "mentor" was used to describe the "significant others" identified in this study. It was assumed that those perceiving high levels of mentoring influence had experienced more comprehensive relationships with their mentors.

The study was intended to provide a measure of the extent to which university agricultural education faculty perceived their professional careers to have been influenced by a mentor, and to examine the relationship between the extent of mentoring experienced and their career development. It is recognized that there are many factors that influence the career development process of academicians. Mentoring, although believed to be a significant factor, is only one of many possibilities. This investigation is primarily limited to examining the influence of mentoring received by agricultural and
education professionals. The extent of mentoring given by agricultural and extension professionals is likely to influence professional career development.

Need for the Study

Maximization of resources has become a major concern of colleges and universities. More and more, academic decision-makers are recognizing that capitalizing on valuable faculty resources is essential to institutional vitality (Blackburn and Baldwin, 1983; Lee, 1985). Eliciting top faculty performance necessitates creating an environment in which individual and professional needs are met. Effective career development programs address the need to establish faculty growth and support systems that address a variety of individual needs and concerns (Baldwin and Krotserg, 1985).

Few studies have been done exploring the influence of mentoring on faculty career development. Although an abundance of literature exspousing the benefits of mentoring on the career development and success of corporate managers and executives can be found (Willbur, 1986; Rutherford and Wiegenstien, 1985; Pascale, 1984), little has been done to examine the the role of mentoring on the career development of academicians.
The need to develop faculty resources in agricultural education is essential to maintain a vital, progressive, positively oriented profession. Crawford (1987), in the 1986 AATEA Distinguished Lecture called upon department heads/chairpersons to develop the "people" resources in agricultural education. Given the possible potential contribution of mentoring on faculty career advancement, a study investigating these benefits to the agricultural education profession seems worthwhile.

Implications and Educational Significance of the Study

The purpose of the study is to determine if mentoring plays a facilitating role in the professional career development of university agricultural educators. While academic advancement and career development are undoubtedly influenced by a variety of factors, the literature suggests that mentoring may be a significant variable (Queralt, 1981; Gardner, 1985; McNeer, 1983).

The findings of this study may be of interest to educators interested in developing their own careers, as well as to those concerned about the development of agricultural education faculty as a whole. Apparently, little attention is currently paid to the idea of developing mentoring as a career-enhancing skill among faculty in agricultural education.
Educational decision-makers may use the findings of this and similar studies as a basis for the incorporation of a mentoring element in professional development and preparation programs. Explicit encouraging of the development of mentoring relationships may greatly benefit junior faculty and graduate students hopeful of entering careers in university agricultural education.

Operational Definitions

Mentor. A person who serves as a teacher, an advocate, a host or guide into a new social world; an exemplar to admire and emulate, and a counselor giving moral support.

Sponsor. A person who opens up opportunities for another less influential individual. One who uses influence to promote another person within an organization or profession in order to facilitate the other persons advancement. Mentors may sponsor their protégés and sponsors may act as mentors.

Significant other. A person who exercises major influence over the attitudes and behaviors of another.

Developmental relationship. A relationship that enables an individual to address concerns about self, career and family by providing opportunities to gain knowledge, skills and competence, and to address personal and professional dilemmas.
Protegé/mentee. A person under the care or guidance of a mentor.

Faculty. Individuals holding academic rank at a university, whose principal occupation is to generate and transmit knowledge.

Agricultural education faculty. Persons holding academic rank in a department of agricultural education or agricultural and extension education at a four-year college or university in the United States.

Career. The sequence of jobs, occupations or work experiences held during a person's working life.

Career development. The growth experienced by an individual in his/her occupation (or series of occupations). Career development may be in terms of professional advancement, recognition, productivity and/or satisfaction.
CHAPTER II. REVIEW OF THE LITERATURE

The Mentor Concept

The personal and professional lives of all people are influenced by interaction with other human beings. Relationships with peers, superiors, subordinates, friends, and family members are essential sources of support both during periods of major transition and throughout the ongoing process of career development (Kram, 1985).

Relationships that support career development enable an individual to address the challenges encountered moving through adulthood and through an organizational career. According to Kram (1985, p. 2) "the prototype of a relationship that enhances career development is the mentor relationship."

Although mentoring has become a popular concept in recent times, the idea itself is quite old. The word "mentor" came from Greek mythology. In Homer's Odyssey, Odysseus entrusted his house and son Telemachus to his loyal friend "Mentor" when he set off to fight the Trojan War. Thus, the term historically denotes a "trusted guide and counselor, and the mentor-protégé relationship, a deep and meaningful association" (Galvez-Hjornvik, 1986, p. 5).

Current literature on mentoring reveals diverse perspectives on the meaning and nature of the word. The
most comprehensive view of mentoring is offered by Levinson (1978) who stated that a mentor is one who "takes a younger man under his wing, invites him into a new occupational world, shows him around, imparts his wisdom, cares, sponsors, criticizes, and bestows his blessings" (Levinson, 1978, p. 23). In Levinson's mind, a mentor impacts all aspects of a protegé's life. McNeer (1983) restricted her concept of mentoring to that of facilitating career growth when she defined mentoring as "a form of adult socialization used to develop organizational leaders." Kanter (1977) used the term "sponsor" to describe those people who act as "teachers or coaches and whose functions are primarily to make introductions or to train a young person to move effectively through the system" (Kanter, 1977, p. 181). Kram (1980) discussed mentor-type relationships that she referred to as "developmental relationships." A developmental relationship is one that enables

...individuals to address concerns about self, career and family by providing opportunities to gain knowledge, skills and competence, and to address personal and professional dilemmas. Such relationships benefit both individuals; these relationships thrive precisely because they respond to current needs and concerns of the two people involved (Kram, p. 2).

Building on an idea similar to Kram's (1985) notion of "developmental relationships," Shapiro et al. (1978)
described such relationships in terms of a continuum:

We propose that this system of professional patronage and sponsorship, what we call the "patron system" is comprised of a range of advisory/guiding personae...Such personae form a continuum with "mentors" and "peer pals" as end points, and..."sponsors" and "guides" are internal points on this continuum. We define "mentors" as the most intense and "paternalistic" of the types of patrons described by this continuum."Sponsors" serve as the two-thirds point on our continuum; they are strong patrons but less powerful than mentors in promoting and shaping the careers of their proteges. We describe the one-third point on the continuum by using the term "guides." These individuals are less able than mentors and sponsors to fulfill the roles of benefactor, promoter, or champion to their proteges, but they can be invaluable in explaining the system. Their primary functions are to point out pitfalls to be avoided and shortcuts to be pursued, and generally to provide valuable intelligence to their proteges (Shapiro et al., 1978, p. 55).

Shapiro's model provides a useful framework through which various support roles can be clarified. The roles of guide, sponsor, and mentor identified in the model fit Kram's (1985) description of developmental relationships.

The diversity of perspectives about what a mentor relationship actually is and how it benefits the people involved contributes to confusion regarding the term and the extent to which mentoring is occurring in organizational settings. As Merriam (1983, p. 165) pointed out, "how
mentoring is defined determines the extent of mentoring found." Reohr (1981, p. 4) stated that:

individuals...generally happen upon mentors and define the term from their individual experiences with mentors rather than holding perceptions of what they ought to be striving to obtain through that type of relationship. Without experience of mentors, some people find it difficult to define the term.

Statements such as Merriam's and Reohr's can be supported by examining the findings of different studies on mentoring. Levinson (1978) indicated that mentor relationships of the type he described were rare. However, other researchers (Rawles, 1981; Queralt, 1981; Reohr, 1981) whose definition of "mentor" is more broad, report finding considerably higher incidences of mentoring.

The mentor relationship is complex. Hunt and Michael (1983) indicate that the mentor's age, gender, organizational position, power, and self-confidence are the most commonly cited characteristics in discussing the nature of the relationship. Levinson (1978) noted that the mentor who "serves the traditional function" is usually older than the protégé by a half-generation (8-15 years). Although mentors can be much older, or even younger than their protégés, Levinson cautioned that such age differences pose special hazards:
When the mentor is a full generation older—say twenty years or more—there is a greater risk that the relationship will be symbolized by both in parent-child terms. This tends to activate powerful feelings, such as excessive maternalism or paternalism in the elder, and dependency or Oedipal conflicts in the younger, that interfere with the mentoring function. When the age difference is less than 6-8 years, the two are likely to experience each other as peers. They may be intimate friends or collaborative co-workers, but the mentorship aspects tend to be minimal (Levinson, 1978, p. 99).

Weber (1980) noted that the mentor-protege interaction synthesizes characteristics of the parent-child relation and peer friendship without being either. He suggested that the mentor accept the protege as an equal and a friend, yet their differences in age and experience means they are not peers. Weber (1980, p. 20) stated:

The relationship more closely resembles peer friendship when the parties are closer in age and experience, parent-child when the gap between their ages is greater. In either case, mentoring is a nurturing relationship between two adults without implication that the protege is treated like a child.

In addition to age and role, gender is also an important trait that influences the mentor-protege relationship. Male-female mentoring relationships have special complexities. Female proteges often experience overprotectiveness, greater social distance, and general discomfort in male-mentored relationships (Kram, 1985).
male-female mentoring relationships, both participants must deal with sexual tensions and fears, public scrutiny, and stereotypical male-female roles (Hunt and Michael, 1983). Erkut and Mokros (1984) indicated that a basic tenet of psychological theories of identification is that people emulate models who are perceived to be similar to themselves in terms of personality characteristics, background, race, and sex. However, findings by Alleman and Newman (1984), and Zey (1984) challenge this idea. Their findings indicate that mentors and proteges are not necessarily similar and that strong interpersonal relationships do not always characterize the mentor relationship.

Mentors are from outside the protege's family, thus interest in the protege is derived from qualities in the protege's personality. The nonfamilial relationship enables the mentor to confirm the protege in a way that a parent, because of a vested interest, cannot (Kellerman, 1978). Hanson (1983) indicated that mentors demonstrate more association and provide more constructive input into subjects' positive self-concepts than does either parent and also show more "complementarity" with subjects than do either mother or father.
Mentoring and Adult Development

Extensive research by Levinson (1978) and others (Sheehy, 1976; Gould, 1978; Vaillant, 1977) has examined the role of mentoring in the process of adult development. Until recently, it was believed that psychosocial development took place in only the pre-adult stage of life, and that by the time one reached adulthood, such development was complete. Beginning with the work of Erikson (1950) who described eight stages in the life of a person, a realization that development is a life-long process emerged.

Research on adult development has established that individuals at different stages of life face predictable needs and concerns which are characteristic of their particular age and history (Kram, 1985). Levinson (1978) described adulthood as a series of stable and transitional periods. During stable periods (lasting six to seven years), a person works to build a satisfactory life structure. The adult must make important decisions about his or her lifestyle and direction and then work to pursue personal values and goals within the structure he or she has formed. Eventually, however, the assumptions, conditions and behavior patterns of a stable period become inadequate to cope with changed circumstances in life. At this point the adult must enter a transitional period. Now the
individual assesses his or her life situation and typically begins to alter his or her previous life structure. A transitional period can be an uncomfortable or even threatening time. A person must consider what elements of one's life (e.g., marriage, career) to maintain and which to redefine or abandon. No two transitional periods are the same and each covers a four to five year span. During transitions, changes are required to separate oneself from the past and to examine future possibilities. They can be periods of crises, upheavals, and intense soul-searching. A transitional period "ends when a man makes his crucial commitments and is ready to start on the tasks of building, living within, and enhancing a new life structure" (Levinson, 1978, p. 52).

According to Levinson (1978) this sequential process continues through the entire adult period. Each of the phases defined presents unique tasks and thus encourages the individual to continue developing. It is during the early adult years that having a mentor is most important to the process of development. As the individual becomes more established and confident, he or she begins to serve as a mentor to others.

Erikson (1950) believed that during the middle age period of life, the major psychosocial task is to resolve the issue of generativity versus stagnation, where genera-
Activity is a concern for the next generation. As adults begin to face the fact that their life accomplishments will be limited by their mortality, they develop a need for a sense of continuation of the self. They can continue to have an impact on their environment through their progeny, thus they begin to take on mentoring roles. Mentoring is an effective way in which values, skills and information can be passed on to the next generation.

Levinson (1978, p. 97) viewed the "mentor relationship as one of the most developmentally important relationships a person can have in early adulthood." Based on his study of forty men, Levinson (1978, p. 97) stated that:

...the mentor may act as a teacher to enhance the younger man's skills and intellectual development. Serving as a sponsor, he may use his influence to promote the young man's (career) entry and advancement. He may act as a host and a guide, welcoming the initiate into a new occupational and social world and acquainting him with its values, customs, resources and cast of characters. Through his own virtues, achievements and way of life, the mentor may be an exemplar that the protege can admire and seek to emulate. He may provide counsel and moral support in times of stress.

In addition to serving as a teacher, sponsor, counselor, developer of skills and intellect, host, guide, and exemplar, Levinson (1978, p. 98) stated that "the mentor has another function, and this is developmentally the most
crucial one; to support and facilitate the realization of the dream." The "dream" represents the vision each young man has about the kind of life he wants as an adult. Levinson (1978) further described the mentor relationship as an intense form of love, as lasting from two to three years (at most ten), and as having an eight to fifteen year difference between mentor and protégé.

In Levinson's small sample, the most successful men had mentors as young adults. Levinson thus concluded that not having a mentor could be a great handicap to one's psychological and career development. A longitudinal study by Vaillant (1977) supported Levinson's conclusions. In a study of 95 Harvard graduates, Vaillant found that men judged to be "best outcomes" had been capable of "sustained relationships with loving people" in both career and personal life. The mentors adopted in young adulthood ceased to be important for these men by age 40. After 40, the successful became mentors themselves. Those men judged to be "worst outcomes" had not had mentors. They were:

...less willing to assume responsibility for other adults. Apparently, they were able to give less to their children; for their offspring could neither achieve their father's level of academic success nor adjust to the world--socially and emotionally--as easily as the offspring of the "best outcomes." Finally, to the extent that it can be measured in dollars and cents, they gave less of themselves back to the world (Vaillant, 1977, p. 350).
Despite the importance of mentoring, Levinson felt that little mentoring actually takes place. He noted that:

...most young men receive little mentoring, and good mentor relationships are rare indeed. Poor mentoring in early adulthood is the equivalent of poor parenting in childhood; without adequate mentoring a young man’s entry into the adult world is greatly hampered. Some degree of emotional support, guidance and sponsorship is needed to smooth the way to make the journey worthwhile (Levinson, 1978, p. 338).

Several researchers (Sheehy, 1976; Kram, 1985; Erkut and Mokros; 1984) agreed with Levinson’s conclusion that little mentoring is taking place. Referring to developmental relationships in organizational settings, Kram (1985, p. 2) stated that “these kinds of relationships are not readily available to most people in organizations; they remain a greatly needed but relatively rare occurrence in most work settings.”

Mentoring and Career Development

Recently, increased attention has been paid to the relationship between career development and adult development. The main theme of adult development researchers is that adults, like children and adolescents, continue to develop and change in significant ways. The theories of adult development suggest that adults pass through a series of sequential, often age-related life
stages. Each stage provides different experiences and presents different tasks for the adult to complete. Thus, the character and needs of a person gradually change as he or she moves from one stage to the next.

The largest number of articles and databased studies on mentoring and career development have come from the business sector. Since the release of Passages by Sheehy (1976) in which the importance of mentors in the career development process was stressed, an onslaught of writing and research on mentoring ensued.

Much of the excitement about mentoring can be traced to a study reported in a 1979 issue of Harvard Business Review (Roche, 1979). Nearly 4,000 executives listed in the "Who’s Who" column of the Wall Street Journal were surveyed about their mentoring relationships. Of the 1,250 executives who responded to the survey, two-thirds reported having had a mentoring relationship. Roche went on to report that the mentored executives made more money at a younger age than their nonmentored counterparts, were better educated, were more likely to follow a "career plan," and reported being happier with their career and derived greater pleasure from their work.

Research has indicated that learning the basic ground rules and expectations of an organization is critical to a young manager’s future career success (Berlew and Hall,
1966; Schein, 1971; Schein 1985). Kram (1980) supported the concept of the importance of the early socialization process. Based on her study of eighteen mentoring relationships, she reported that:

...all the young managers learned in the early years of their organizational experience that relationships with more senior managers are important. These senior managers could provide sponsorship, coaching and visibility to the young manager; their approval, support and interest were critical for career advancement. The primary developmental relationship often aided the young manager in learning how to establish other such relationships. Often the senior manager would coach the young manager on how to establish rapport and credibility with other senior managers. Experience in this relationship provided a useful model and coaching; the key senior manager paved the way for other relationships through exposure and visibility to significant others (Kram, 1980, p. 181).

Dalton et al. (1977) suggested that mentoring was one stage in the career development process. Individuals progress through a succession of career stages, beginning with apprentice and moving to craftsman, mentor, and organizational influencer. During the apprentice stage, mentoring relationships are formed as individuals work under the close supervision of more experienced people. At the craftsman stage, the individual demonstrates his or her competence and builds a reputation as a technically competent individual within the organization. He or she is then ready to enter
the third stage, during which he or she assumes broader responsibility for guidance and development of the next generation of organizational and professional workers. At the final stage, individuals become a force in shaping the future of the total organization. Dalton et al. (1977) determined that many people bypass the apprentice stage and can never reach the stage of mentor or organization influencer without a suitable mentor.

**Mentoring functions**

A major function of a mentoring relationship is to facilitate a person's career growth and success. Although in the classic Levinsonian sense, a mentor is fundamental to all aspects of one's development, other researchers and theorists view the primary benefits of mentoring as those affecting performance in the workplace (Zey, 1984; Kram, 1985; Kanter, 1977).

Kram (1985) summarized mentoring functions into two broad categories that she termed career functions and psychosocial functions. Career functions are those aspects of a relationship that enhance learning the ropes and preparing for advancement in an organization. Psychosocial functions are those aspects of a relationship that enhance a sense of competence, clarity of identity, and effectiveness in a professional role. While career functions serve,
primarily, to aid advancement up the hierarchy of an organization, psychosocial functions affect each individual on a personal level by building self-worth inside and outside the organization.

Career functions are made possible because of the senior person's experience, organizational rank, and influence in the organizational context. By providing career functions, the senior colleague develops support among subordinates and respect among peers and superiors for developing talent for the organization. Both individuals benefit from these functions by increasing their position of influence through the relationship (Kram, 1985).

Psychosocial functions are possible because of an interpersonal relationship that fosters mutual trust. The quality of this interpersonal bond enables the younger person to identify with the older, and to find a model whom he or she would like to emulate. According to Kram (1985, p. 2), when a relationship provides both career and psychosocial functions, "it best approximates the prototype of a mentor relationship." The range of specific functions provided vary from one relationship to another. In a study of eighteen developmental relationships, all provided career functions, and three did not provide any psychosocial functions (Kram, 1985).
Zey (1984) conceptualized the functions of mentoring as hierarchial in nature with teaching at the lowest level and sponsoring at the highest. Those functions at the top of the hierarchy are of most value to the protégé. The most basic mentoring function is that of teaching. The protégé receives instruction in organizational skills, management tricks, and social graces. At this level the protégé may receive inside information. While these functions may enable the protégé to perform his or her job more effectively, expand his or her knowledge of the field, and learn the subtleties of organizational survival, they are not equivalent in career importance to the mentoring in which the mentor actively intervenes on the protégé's behalf.

The second-level mentoring function in Zey's model is psychological counseling and personal support. Through this function, the mentor enhances the protégé's sense of self through confidence building and pep talks. The mentor may also offer advice regarding the protégé's personal life in order to help the protégé confront and conquer the strains of executive life (Zey, 1984, p. 35).

At the third level of the mentoring hierarchy, the mentor makes his or her support of the protégé public. At this level, the mentor intercedes on the protégé's behalf in the organization, and runs interference for him/her where needed. The mentor attempts to protect the protégé and to
serve as his or her advocate, as a marketing agent for the protegé in the organization. The mentor utilizes his/her position to make available to the protegé money, resources, and supply and communication lines that would ordinarily be unavailable to a junior member (Zey, 1984).

Zey described the most intense and useful function of mentoring as sponsorship. Support provided at the fourth level of the hierarchy is of greatest benefit to the protegé. The mentor puts his or her reputation on the line by actively promoting the protegé and by giving him or her important responsibilities.

Kanter (1977) viewed sponsorship as extremely important to organizational success. Sponsors hold positions in organizations that enable them to stand up for the person being sponsored and to promote that person for promising opportunities. Sponsors often provide the occasion for junior people in an organization to bypass the hierarchy; to get inside information, to short-circuit cumbersome procedures, or to cut red tape. Kanter (1977) also suggested that individuals gain "reflected power" from their sponsors. It is not only what a sponsor says about an individual, but the knowledge that he or she is a sponsor that empowers the less experienced person and creates opportunities for movement and advancement.
Kram (1985) described mentoring functions similar to those of Zey (1984). Mentors use their organizational influence to provide opportunity for the protegé to gain exposure and visibility in the organization. They also coach, and protect their protegé. Among the psychosocial functions described by Kram are role-modeling, counseling, friendship and acceptance, and confirmation.

In a study of 307 men and women in professional associations and graduate programs at the University of New Mexico, Bova and Phillips (1984) found that proteges learned specific behaviors from their mentors. They classified the behaviors into four categories: risk-taking behaviors, communication skills, political skills, and specific skills related to one’s profession.

While much of the discussion of mentoring focuses on benefits to the person being mentored, Zey (1984) pointed out that mentoring also benefits the mentor and the organization in significant ways. According to Zey, mentors build empires through their proteges. Proteges assist mentors in performing jobs and contribute to an increase in the mentor’s reputation. Proteges contribute to the stock of knowledge required by the mentor to maintain his or her position. Proteges often become trusted advisors and gain access to the organization’s policy planning inner circle where the protegé can test the corporate waters on key
issues. Finally, the development of a protege provides the mentor with a feeling of pride, and a sense of contributing to the organization (Zey, 1984).

Organizations benefit through mentoring in several ways. Mentors help proteges understand the organization and become more accepting of its goals and mores. Mentoring prevents talented people from becoming lost in the corporate woodwork and loyalty toward mentors becomes a major factor in reducing turnover. Through mentors, important knowledge and skills are transferred to proteges, and the mentor becomes an important factor in the transformation of technical workers to executives. Thus, mentoring reduces the haphazardness of management development. Mentoring facilitates the smooth transfer of the managerial reins from one generation of executives to the next. The mentor transmits corporate values and other key components of the corporate culture to the next generation of leadership. Mentoring fosters productivity by enhancing skills of proteges. Mentoring serves as an informal mode of corporate reorganization for maximum efficiency. Mentoring produces managers who are comfortable with power and possess the motivation and ability to mobilize people and resources (Zey, 1984).
It should be noted that although mentoring has potentially powerful benefits, it is not without risk to both individuals involved. Levinson (1978, p. 334) noted that "there is plenty of room for exploitation, undercutting, envy, smothering and oppressive control on the part of the mentor and for greedy demanding clinging attention, self-denying gratitude, and arrogant ingratitude on the part of the recipient." Zey (1984) also discussed risks involved in mentoring, indicating that if the protege fails or resigns from the organization, the mentor has wasted valuable time and energy and may lose influence and position within the organization for his or her apparently poor judgment.

Career Development for University Faculty

Enhancing the career development process of university faculty is of utmost importance considering their role in shaping American society. As pointed out by Schuster (1986) the faculties of colleges and universities have a profound impact on the general condition of American society. They are entrusted with the higher education of about two-fifths of every generation of young people. "They train virtually all the society's leaders in the professions, in government, and in business. They train the teachers, the clergy, the journalists, the physicians, and all others whose primary functions are to inform, shape and guide human development"
The United States depends on its faculty members for much of the nation's basic research, philosophical and religious inquiry, public policy analysis, social criticism, cultivation of literature and the fine arts, and technical consulting. Through both their teaching and their research, faculty members play an enormous role in the economic progress and the cultural development of the nation. In short, faculty members exercise great influence on the destiny of the United States.

Making the most of available resources has become the challenge of the decade. Nearly every aspect of today's society has felt the impact of economic hard times. Higher education is no exception. Educational decision-makers are seeking creative means to maximize the use of existing resources.

In a labor-intensive enterprise like higher education, human resources are the most valuable commodity. "The vitality and effectiveness of a college or university is directly linked to the quality, resourcefulness, and vigor of its faculty members" (Baldwin and Blackburn, 1983a, p. 5). Smith (1978, p. 1) noted that "A university is its faculty. The excellence of a university is the excellence of its faculty."
Despite the importance of a vital faculty, "large numbers of faculty in colleges and universities are going about the motions of teaching and research without energy, enthusiasm, or a sense of purpose (Edgerton, 1981). According to Finn (1984, p. 33) many professors do little more than meet their scheduled classes and "give the same lectures year after year." Brookes and German (1983), pointed to rapid changes in higher education as one factor resulting in reduced faculty vitality. "The long history of social support for education has given way to increasing criticism. It is suggested that educators don’t know what they are doing or that they are failing to do either what they should be doing or to do what they claim to be doing" (Brookes and German, 1983, p. 1).

According to Baldwin and Krotseng (1985, p. 6), "A general decline in the quality of academic work life appears to be underway." Austin and Gamson (1983) reported that a "speed-up"—more work for the same pay—is occurring in many places. Professors are asked to assume heavier teaching and committee loads and to continue their research efforts with obsolete equipment, fewer support services and meager financial resources.

Brookes and German (1983, p. 1) contended that:

...devaluation of the educational enterprise has brought with it a concomitant reduction in the
status of the teaching profession. Faculty members, who entered the profession under very different conditions have watched their purchasing power shrink with each salary check. As they unionized to buttress their shrinking economic status, they discovered that they also were losing the esteem and social status that the professoriate had enjoyed since World War II. Educational institutions, responding to social, political and economic challenges are fighting for their own survival. Many have instituted industrial management systems and have increased demands on employee contribution, productivity, and commitment. These attempts to secure institutional vitality have compounded the morale problem facing the professoriate.

Other changes in the academic environment have contributed to problems facing today's faculties. Baldwin and Blackburn (1983a) argued that long term prospects for advancement in the academic career are discouraging for many faculty members. Low retirement rates and steady-state conditions in higher education have virtually eliminated career mobility for many college professors. Few have the opportunity to move on to challenging new assignments either where they currently work or at some other college or university. Moreover, limited faculty hiring is gradually increasing the generation gap that inevitably develops between students and professors. Many academic institutions are losing the "ginger of newness" once provided by a steady influx of fresh, enthusiastic new professors.

Rapid changes in the academic profession have resulted in widespread dismay, anger, confusion, and resentment.
Colleges and universities can no longer afford to overlook the legitimate needs and hopes of faculty no matter how intense the struggle for institutional survival becomes. It is the faculty who shape the image and future of their institutions. They are also central to the mission of the institution. It is, therefore, essential that their concerns be heard and addressed. Studies of the academic culture suggest that it is not conducive to the continued growth and development of its professionals (Brookes and German, 1983).

Maintaining faculty vitality is essential to the future of higher education. Faculty motivation and enthusiasm are influenced by a variety of factors including opportunities for growth in academic career. Kanter (1979) discussed the negative impact of vocational "stuckness." By providing opportunities for meaningful career growth, colleges and universities can prevent lowered aspirations and occupational disengagement that is characteristic of "stuck" professionals.

Fowler (1982, p. 27) noted that:

...career advancement (of university faculty) has been found to depend to a large extent on the skills and abilities of professionals, yet the structure and character of the organization are also important. Mentoring relationships have been described as one way for young professionals to obtain support in an organization and to learn the
implicit and explicit ways in which the organization functions.

Numerous researchers supported Fowler's claim that mentoring is important to the career development of university faculty (Carter, 1982; McNeer, 1983; Reohr, 1981; Schneider and Zalesny, 1982; Erkut and Mokros, 1984; Corcoran and Clark, 1984; Cameron and Blackburn, 1981).

Corcoran and Clark (1984, p. 150) stated that "sponsorship...seems to be vital for a successful academic career. In their study of the vitality of two groups of university faculty (a highly active group and a representative group), at a large, research-oriented land-grant university, they found that "the highly active group seems to have had the advantage of a greater degree of sponsorship from their advisors whom they describe with greater affect and as serving them in more professionally helpful ways" (Corcoran and Clark, 1984, p. 149).

Referring to the career growth of women in academe, Reohr (1981) stressed the importance of mentoring relationships to the career survival and growth of women faculty members. Schneider and Zalesny (1982) theorized that becoming involved in mentoring relationships is a way in which faculty can continue to have an impact on their environment. By fulfilling needs of generativity, faculty are more likely to maintain vigor and enthusiasm in their
professional lives. Schneider and Zalesny (1982, p. 17) noted that "mentoring behavior was likely only in those academicians who had been relatively successful in gratifying their central needs through their academic work."

Rawles (1981) studied 567 American scientists to determine whether those who had mentors were more self-actualizing that those who did not. Rawles found that over 66 percent of the subjects reported having had a mentor, and a positive relationship was discovered between the level of self actualization and having had a mentor.

Queralt (1981) examined the role of mentoring on the career advancement process of 292 members of the State University System of Florida. She concluded that:

...mentors can contribute significantly to the advancement of the academic careers of faculty members and academic administrators....Academics with mentors showed higher levels of performance, prestige, and satisfaction than academics without mentors (Queralt, 1981, p. 118).

Evidence on the frequency of mentoring among academicians is inconclusive, depending, in large part, on the definition of mentoring used. Erkut and Mokros (1984) examined the influence of gender on the formation of mentoring relationships, and concluded that men and women receive equally little career mentoring from their professors. Queralt (1981) and Reohr (1981), on the other hand, found
mentoring to be quite common among faculty.

Despite the existent research on mentoring in education, Merriam (1983) lamented the general condition of such research. She contended that

...little can be said with regard to either the prevalence or importance of mentoring for students, teachers or administrators in educational settings. That people devoted to the intellectual and personal development of students are not more aware of mentoring is puzzling. Either it is indeed a rare occurrence, or researchers have yet to find ways to tap into its existence.

The career development process of faculty

The career development process of university professors appears to follow a pattern similar to the life stages of the men in Levinson's (1978) study. Braskamp et al. (1982) conducted a study in which he adapted the conceptual framework outlined by Levinson (1978) to examine the career development process of faculty in higher education. Braskamp et al. (1982) used the three professorial ranks as the major stages of the professional life of faculty members. Their study focused on only the professional development of faculty. However, they indicated that faculty see their professional development as interrelated to other aspects of their lives--i.e., family, friends and leisure activities. According to Braskamp et al. (1982, p. 18):
the career development of a professor seems to follow a rather consistent pattern which is tied to advancement through the professorial ranks. In our judgment, rank is more than an external symbol of the amount of time one has spent in academe; it has sufficient explanatory power to advance it as the key concept in describing and understanding how faculty state their goals, engage in specific work activities, use feedback on their progress, react to the organizational culture, interpret expectations and opportunities, and balance the continual conflict between professional and personal demands.

Prior to entering a professional position, individuals undergo a stage that Corcoran and Clark (1984) call anticipatory socialization through which they take on the values of the group to which they aspire to belong. For faculty members, much of the anticipatory socialization process occurs during graduate school. It is also during this stage that aspiring professors develop mentor-protege relationships, often with their major professors (Reohr, 1981).

The second stage of career socialization is that of occupational entry and induction in which the individual sees what the organization is actually like and attempts to become a participating member of it. If all proceeds well, the professor moves into the third and final stage of role continuance. At this point, the new member has internalized role specifications, developed a sense of satisfaction with work and developed a high degree of job involvement and commitment. Once the professor has reached the third stage
of career socialization, they begin to take on mentoring roles to help new professors through the process.

Braskamp et al. (1982) indicated that the early stage of professing is similar for all professors. Faculty express narrow, short-term, self-directed goals. They want to succeed as faculty members and be promoted by their institution. At this stage, professors are generally most concerned with achieving the things that have direct pay-off value at the institution. Assistant professors are predominantly direct achievers; i.e., they publish, write, demonstrate their competence by performing independently of others (Lipman-Blumen et al., 1980). Assistant professors indicate that they have little choice but to expend most of their energies into their professional work; their long-range survival is dependent upon their self-centeredness (Corcoran and Clark, 1984).

In a study of the way in which new professors spend their time, Myers and Mager (1980) noted that "new professors engage in relatively little personal professional development." New professors indicated that their struggle for survival leaves little time for concern about professional development. It is during this time that Reohr (1981), indicated that mentoring relationships are most important to faculty. Mentoring functions of sponsorship, protection, coaching and role modeling are all of potential-
ly great benefit to the new assistant professor. Support of a mentor can help sustain a new faculty member until he or she is able to embark in other career development activities. Despite the importance of such relationships, Myers and Mager (1980, p. 15) indicated that "less than a handful of the respondents referred to such an arrangement."

Once an individual reaches the associate professor stage, they are entering a stage similar to Corcoran and Clark's role continuance. By receiving promotion and tenure, they have been successful at "meeting the most critical hurdle of their professional life" (Braskamp et al., 1982, p. 22). They now search for a more balanced view of their lives, trying to integrate their personal and professional lives.

Braskamp et al. (1982) noted that associate professors begin to devote some of their energies to helping others as a way to fulfill their need for generativity. "They begin to view themselves as role models and act as mentors to younger faculty" (Braskamp et al., 1982, p. 23). They can look beyond themselves and assess what is best for the profession, which is to help develop the next generation of scholars.

Reaching the full professor rank brings with it an assessment of one's current activities. Full professors
often begin to think about exploring new challenges such as administration or consulting. Full professors have internalized an obligation to their profession and have a well-established set of standards regarding excellence of work. Their goals and aspirations reflect considerable thought to the type of contribution they wish to make to society. They express a greater need for helping others. Mentoring began as an associate professor takes on additional importance. Full professors begin to receive rewards of mentoring by receiving recognition from their peers as being developers of talent for the profession. They take pride in seeing their proteges become contributing members of the profession.

**Indicators of academic career development**

While there are certain accepted indicators of career advancement in an academic position (e.g., academic rank), career development is, at least in part, a subjective experience which is difficult to measure and evaluate. According to Queralt (1981, p. 33), "academics vary widely in perspective and show much disagreement about the criteria by which their performance or career development should be evaluated."

Despite the difficulty of measuring one's career growth, several criteria appear in the literature. Among the most frequently mentioned is that of publishing
activity. Lewis (1975) and Wilson (1979) have argued that the evaluation of merit in the academic community tends to be based largely on publishing activity. Blackburn and Havighurst (1979) noted that rate of publication is an important variable in the careers of academics—"a fundamental attribute of this occupational group." At many universities, rate of publication has a direct bearing on an individual's ability to receive tenure and promotion. Reskin (1977) and Long (1978) found a positive relationship between rate of publication and sponsorship early in the academic career. Finkelstein (1984) indicated that the direct effect of sponsorship is clear and strong. The most prolific publishers are those who have the benefit of a productive, prestigious sponsor. Publishing activity early in one's career has a strong effect on later career publishing activity.

Today's conditions of economic cutbacks have made it more important for universities to obtain finances from a variety of sources. In fact, according to Lewis (1975), a university's success is measured, in part, by the ability of its faculty members to obtain grants from the federal government, large foundations, or other sources. Queralt (1981, p. 37) stated that "an individual's ability to attract grant funds is an important measure of career development in universities."
A potential source of visibility and prestige for the academic professional and for the university he or she represents is the individual's willingness to assume leadership roles in professional service organizations. Kanter (1979) indicated that acquiring leadership roles in professional organizations is an important means by which faculty gain respect and prestige in the eyes of their colleagues. Assuming a leadership role frequently constitutes an honor, award or special recognition that is bestowed upon the individual. Queralt (1981, p. 40) indicated that:

...the presidency of a national or international professional organization, directorship of a national or international foundation, the editorship of a professional journal, the headship of a national board, task force or examining board...are clearly honorific...and are indicative of high status or high reputation among colleagues.

Summary

The age-old concept of mentoring is gaining new attention as a potentially beneficial means of enhancing one's career development. Mentoring is thought to contribute to the adult development process by providing an important means of support during critical times. People who develop mentoring relationships in early adulthood appear to be more successful in their personal and professional lives. These same people are more likely to
serve as mentors to younger individuals when they reach later stages of adulthood.

Mentoring benefits the career development process by providing a means for professional socialization to occur early in one's career. As adults mature in their professional lives, they begin to take on mentoring roles with younger individuals which enables them to pass on their experiences and retain their organizational influence.

Mentors perform functions that benefit both the professional and psychosocial development of their protégés. Influence in an organization is important to enable the mentor to help his or her protégé work up the organizational ladder, but, as pointed out by Kram (1985), the personal aspects of mentoring relationships are important as well.

Interest in mentoring, while most prevalent in business and industry, has not escaped the academic world. Increasing demands on shrinking resources has resulted in a need to maximize the potential of human resources. At colleges and universities, emphasis on developing faculty resources has resulted in an interest in mentoring as a possible means of contributing to faculty vitality.
CHAPTER III. PROCEDURES

The purpose of this study was to determine the extent to which the professional careers of university agricultural education faculty have been influenced by mentors, and to examine the relationship between mentoring influence and selected indicators of career development.

The study utilized a descriptive research design. Best (1981) defined descriptive research as that which describes what is. Descriptive research "involves the description, recording, analysis and interpretation of conditions that exist. It involves some type of comparison or contrast and attempts to describe relationships between existing, nonmanipulated variables" (Best, 1981, p. 25). Borg and Gall (1987) referred to the importance of descriptive research in education, noting that it enables researchers to learn about the behavior of complex human beings.

In this study, mentoring is defined as the process through which one person (a protégé or mentee) receives support and guidance from another person (a mentor or sponsor) who acts as an informal teacher, guide, host or advocate. Because the study was exploratory, the concept of mentoring was intentionally kept very broad and included all types of developmental relationships.
Population and Sample

The study was concerned with the career development of agricultural educators in institutions of higher education. Thus, the accessible population consisted of all agricultural education faculty members currently holding positions at four-year colleges or universities in the United States. Faculty members in the population must have held a rank of assistant professor or higher, and have been listed in the 1988 Directory of Teacher Educators in Agriculture (Herren, 1987), or the 1987 Agriculture Teachers Directory. Visiting professors and professors emeritus were not included in the population. In all, 282 individuals were identified as meeting the criteria. Three faculty members serving on the researcher's committee were excluded from the final population, resulting in a total of 279 individuals.

The entire population constituted the sample for this study. This procedure was used to generate the most accurate description of the variables under consideration.

Instrumentation

A search of the literature failed to reveal any standardized instrument capable of measuring the career development of university faculty or aspects of their mentoring experiences. It was therefore necessary for the
researcher to construct a self-report questionnaire to conduct the study.

The instrument was developed from an extensive review of the literature and from studies done by Willbur (1986) and Queralt (1981). The word mentor was not included in the questionnaire in an effort to reduce bias resulting from diverse perceptions of the meaning of the word. The questionnaire consisted of four parts. Part I assessed the respondents' perceptions of the extent to which their professional careers had been influenced by a mentor, and identified the functions that mentors perform. The rationale underlying Part I of the research instrument was the belief that most faculty in agricultural education have received and recognized support, guidance, and encouragement of individuals, and that such support has had an impact on their professional development. Part I of the instrument was adapted from an instrument developed by Willbur (1986) which he used to study the influence of mentoring on the career success of business executives.

The response framework for Part I was developed by Warren et al. (1969), and is known as "The Certainty Method." This method requires respondents to make two decisions for each item: 1) a directional judgment (agree or disagree), and 2) a certainty judgement (from not very certain to very certain) about the
directional decision. If a respondent had no opinion regarding the item, he or she was instructed to circle both the agree and disagree response frame and leave the certainty frame blank. The response format was as follows:

A D 1 2 3 4 5

Slight Strong

According to Warren et al. (1969, p. 35), the certainty method "gives the respondent a chance to think twice about his (or her) response. This in essence means that the response format of this method helps the respondent to record his (or her) true feeling in terms of how certain he (or she) is of the answer given...."

The second part of the research instrument contained questions intended to provide descriptive information about the people who had served as mentors or sponsors to the respondents. Part III was designed to generate information about the respondents' career development. Most of the items in Part III were objective measures of commonly accepted indicators of career growth. Items in Part III were generated through a review of the literature and through consultation with three members of the profession being researched. Two items in Part III asked for subjective measures of the respondents' satisfaction with their current job and their career progress. These items
were included because, according to Crites (1969), objective achievement is not highly correlated with an individual’s feelings of success or failure.

It should be noted that the instrument did not include any measure of teaching performance. Because of the difficulty of collecting reliable information on the teaching performance of individuals, it was not deemed feasible to do so for this study. However, individuals were asked to report any awards they had received that were based on their teaching performance.

The final part of the instrument contained questions intended to provide descriptive information about the respondents.

Content and face validity of the instrument were determined through a panel of judges, three of whom were members of the profession being researched and were serving on the researcher’s committee. The research instrument and procedures proposed for use in this study were submitted to the Human Subjects Committee at Iowa State University. Following approval of the committee, the instrument was printed for distribution.

Data Collection and Analysis

The research instrument and a cover letter were mailed on April 15, 1988, to each person identified in the
accessible population. Individuals choosing not to participate in the study were asked to return the blank questionnaire in the self-addressed, stamped envelope that was included in the mailing. By May 9, 1982 questionnaires had been returned. On May 10, a follow-up letter and another copy of the instrument were sent to the nonrespondents. By June 15, 1988, a total of 237 (84.9%) instruments had been returned. Sixteen blank instruments were received, and one respondent did not meet the minimum criteria for inclusion in the study. In all, a usable return rate of 78.66% (220 instruments) was achieved. Possible nonresponse bias was checked by selecting a sample of eight nonrespondents and contacting them by telephone. Twelve items were randomly selected from the questionnaire for use with the nonrespondents. A t-test revealed no significant difference between the means of each item for the subjects who did and did not respond to the survey (Table 1).

A post hoc reliability coefficient was calculated for the mentoring scale (Part I) of the instrument. The test yielded a Cronbach's alpha of .88, indicating a high degree of correlation among the mentoring function items. High reliability coefficients assure the researcher that the same construct is being measured by all items in a scale. Van Dalen (1979) indicated that in most educational research, reliability coefficients greater than .70 are acceptable.
Table 1. T-values of selected variables between responding and nonresponding agricultural education professors

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<th></th>
<th>Nonrespondents</th>
<th></th>
<th>t-value</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Mean</td>
<td>S.D.</td>
<td>N</td>
<td>Mean</td>
<td>S.D.</td>
</tr>
<tr>
<td>Mentoring functions:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supported my efforts to</td>
<td>195</td>
<td>13.63</td>
<td>2.09</td>
<td>8</td>
<td>13.50</td>
<td>1.69</td>
</tr>
<tr>
<td>advance in my career</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Helped me realistically</td>
<td>192</td>
<td>11.40</td>
<td>2.84</td>
<td>8</td>
<td>11.63</td>
<td>2.00</td>
</tr>
<tr>
<td>assess my performance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Expressed pride in my</td>
<td>195</td>
<td>13.41</td>
<td>2.60</td>
<td>8</td>
<td>12.88</td>
<td>2.33</td>
</tr>
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<td>success</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Helped me develop a sense</td>
<td>193</td>
<td>12.90</td>
<td>2.38</td>
<td>8</td>
<td>13.63</td>
<td>2.13</td>
</tr>
<tr>
<td>of confidence in my own</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ability to produce results</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Demographic (mentor):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>About how much age</td>
<td>148</td>
<td>16.11</td>
<td>8.12</td>
<td>8</td>
<td>13.00</td>
<td>7.54</td>
</tr>
<tr>
<td>difference is there between</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>you and (your mentor)?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How influential in his/her</td>
<td>220</td>
<td>4.05</td>
<td>1.29</td>
<td>8</td>
<td>4.00</td>
<td>0.76</td>
</tr>
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</table>
Table 1. Continued

<table>
<thead>
<tr>
<th></th>
<th>Respondents</th>
<th>Nonrespondents</th>
<th>t-value</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Mean</td>
<td>S.D.</td>
<td>N</td>
</tr>
<tr>
<td>Career development (respondents);</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Books authored or coauthored</td>
<td>220</td>
<td>0.96</td>
<td>2.05</td>
<td>8</td>
</tr>
<tr>
<td>Satisfaction with current position</td>
<td>216</td>
<td>4.05</td>
<td>0.87</td>
<td>8</td>
</tr>
<tr>
<td>Demographic (respondents):</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>213</td>
<td>46.80</td>
<td>9.60</td>
<td>8</td>
</tr>
<tr>
<td>Student population of institution granting highest degree</td>
<td>220</td>
<td>28944.09</td>
<td>14177.40</td>
<td>8</td>
</tr>
</tbody>
</table>
Willbur (1986) reported a Cronbach's alpha of .96 on the version of the instrument used in his study.

All usable instruments were coded and entered into the university's mainframe computer. The data in Part I of the questionnaire were transformed from an 11-point continuum to a 16-point scale as recommended by Warren et al. (1969). The data transformation is possible because:

....the certainty method does not assume equal intervals between the response values. Instead, the certainty method of scoring assigns larger values to the end points of the continuum. Intuitively the certainty method assumes that there is a greater difference between the respondent who disagrees with an item with a certainty of 5 and a respondent who disagrees with a certainty of 4 than there is between two respondents, one of whom said disagree with a certainty of 1 and the other who said disagree with a certainty of 2. In other words, extreme values are given higher scores than an equal appearing interval scale would allow (Warren et al., 1969, p. 9).

The original response format, A D 1 2 3 4 5, is thus converted into an 11-point continuum with points assigned as indicated:

Continuum: D5 D4 D3 D2 D1 A/D A1 A2 A3 A4 A5

Points: 0 3 5 6 7 8 9 10 11 13 16

The precise theoretical foundation for the above transformation is couched in Wolins', 1963 (cited in Warren et al.) assumption that the normal distribution is divided into 11 intervals. "When a person chooses a point, he/she is indicating the probability for the mean of the normal
deviate that lies in the interval represented by the point selected..." (Warren et al., 1969, p. 10). Thus, the transformation is made by referring the numbers from 1 to 11 on the 11-point scale to a table of normalized ranks.

The Statistical Package for the Social Sciences X (SPSSX) was the statistical process used to analyze the data.

The data were obtained from the total population of university agricultural educators, there was theoretically no need to use inferential statistics in the data analysis. However, in certain cases, a grouped t-test and single classification (one-way) analysis of variance tests were used to enable the researcher to discuss the differences among the population. These statistics also provide inferences for a future population. Best (1981) pointed to the importance of generalizing to populations in other times, and such research procedures have been used by several researchers in agricultural education (Everett, 1981; Makin and Miller, 1987; Van Tilburg, 1986).

Frequencies, means and standard deviations were used to provide a description of the respondents and their mentors (Parts II, III, and IV of the questionnaire). Means and standard deviations were used to summarize items pertaining to mentoring functions (Part I). A composite mentoring
score for each respondent was generated from the information in Part I of the research instrument by summing the responses to the 27 mentoring function items. This was accomplished by using the recode and compute procedures of SPSSX.

Warren et al. (1969) indicated that individual responses to items that utilize the certainty method response frame may be summed when certain conditions are met. These include a high coefficient of reliability, independence of means and standard deviations of items, and positive and homogeneous inter-item correlations. These conditions for additivity appeared to be met in this study.

In the first part of the study, the composite mentoring score was treated as the dependent variable and selected demographic variables were treated as independent variables. Respondents were grouped according to current academic rank, age, gender, undergraduate, and graduate grade point averages. A one-way analysis of variance was used to test for differences among groups on all variables except gender. The Scheffé test was used to identify the groups that differed when a significant F-value was observed. A t-test was used to examine differences in mentoring scores between male and female respondents, although it was recognized that the large differences in group size may have affected the test outcome.
In the second part of the study, the composite mentoring score was treated as the independent variable. Respondents were grouped by their composite mentoring score and their performance on selected indicators of career development was compared. A one-way analysis of variance test was used to test for differences among the groups. The Scheffe test was used to identify differing groups when a significant F-value was observed. A Pearson product-moment correlation coefficient was used to examine the relationship between the composite mentoring score and selected indicators of career development. Alpha was set a priori at .05.

Research Questions

The following research questions were addressed in the study:

1. To what extent have the professional careers of university agricultural education faculty been influenced by a mentor?

2. What functions do mentors perform that benefit university agricultural education faculty?

3. Is there a significant difference in the extent of mentoring influence experienced by agricultural education faculty when they are grouped by academic rank, age, gender, undergraduate grade point average, and graduate grade point average?
4. Is there a significant difference in the performance of university agricultural education faculty on the following indicators of career development when they are grouped by extent of mentoring influence experienced (composite mentoring score):
   a. years to move from assistant to associate professor.
   b. years to move from associate to full professor.
   c. administrative positions held.
   d. national leadership positions held.
   e. national awards received.
   f. professional awards received at the state or local level.
   g. articles published.
   h. books authored or coauthored.
   i. master's students advised.
   j. doctoral students advised.
   k. grants received.
   l. satisfaction with current position.
   m. satisfaction with career progress.

5. Is there a significant relationship between mentoring influence experienced (as determined by composite mentoring score) and the following
indicators of career development:

a. years to move from assistant to associate professor.
b. years to move from associate to full professor.
c. administrative positions held.
d. national leadership positions held.
e. national awards received.
f. professional awards received at the state or local level.
g. articles published.
h. books authored or coauthored.
i. master’s students advised.
j. doctoral students advised.
k. grants received.
l. satisfaction with current position.
m. satisfaction with career progress.
CHAPTER IV. PRESENTATION OF DATA

The purpose of this chapter is to report the findings of the study. The study was intended to determine the extent to which the professional careers of university agricultural education professors have been influenced by mentors, and to examine the relationship between mentoring and professional career development.

Findings of the study will be presented in two general parts; the first describes the participants and their mentors, and examines professors' perceptions of the extent to which their professional careers have been influenced by mentoring relationships. The second part of this chapter presents information regarding the relationship between mentoring and selected indicators of career development.

Findings of the study are organized in the following sections: 1) university agricultural education faculty and their mentors, 2) influence and functions of mentors of university agricultural education faculty, and 3) mentoring and career development of university agricultural education faculty.

The findings reported in this chapter are based on a mail survey sent to all agricultural education faculty in the United States who were employed by four-year institutions and held an academic rank of at least assistant
professor. In all, 279 people were identified for inclusion in the study. Of the 279, 237 individuals responded. Sixteen people indicated that they did not wish to participate in the study, and one person was disqualified because he or she did not hold appropriate academic rank. Usable instruments were collected from 220 (78.85%) individuals. The number of respondents reported throughout this chapter does not always total 220 as not all individuals answered each question.

University Agricultural Education Faculty and Their Mentors

**Selected characteristics of university agricultural education faculty**

Finding reported in this subsection were generated from Part IV of the research instrument. Participants in the study were predominantly male (95.85 percent), and ranged in age from 28 to 68 years with a mean age of 45.31 years (Figure 1). Most participants held doctorate degrees (Figure 2) and the field of study for their highest degree was agricultural education (Figure 3). Full professors made up the largest group of respondents, with associate professors accounting for over one-third, and assistant professors slightly over one-fifth of the total group (Figure 4). Undergraduate grade point averages of the participants ranged from 2.00 to 3.95 with a mean of 2.75.
Figure 1. Distribution of respondents by age (N=213; mean=46.80; S.D.=9.60)
HIGHEST DEGREE HELD

Figure 2. Distribution of respondents by highest degree earned (N=219)
Figure 3. Distribution of respondents by field of study for highest degree earned (N=219)
Figure 4. Distribution of respondents by professorial rank (N=210)
Figure 5. Distribution of respondents by undergraduate grade point average (N=198; mean=3.06; S.D.=.43)
(Figure 5). The mean graduate grade point average (master's and doctorate combined) was 3.73 with a range of 3.00 to 4.00 (Figure 6).

Most faculty in agricultural education appeared to move through the academic ranks quite quickly. On the average, professors currently holding academic rank of associate or full professor took only 4.95 years to reach the associate professor rank (Figure 7), with a standard deviation of 2.65 years. The mean number of years to move to the rank of full professor from associate professor was 5.37 (Figure 8), with a standard deviation of 2.78. Full professors reported a mean of 9.25 years to reach their current rank from the time they entered the profession.

Most of the respondents indicated that their professional careers had been significantly influenced by one or more individuals. About nine of ten individuals reported that there had been five or less very influential people in their careers, although one individual reported having 28 "significant others" (Figure 9). In this study, these influential people are referred to as mentors.

**Selected characteristics of mentors of university agricultural education faculty**

This section provides a profile of persons serving as mentors to agricultural education faculty in the United States. These findings were generated from Part II of the
GRADUATE GRADE POINT AVE.

3.51 TO 3.75 (35.48%)

3.76 TO 3.90 (33.87%)

3.91 TO 4.00 (14.52%)

3.00 TO 3.50 (16.13%)

Figure 6. Distribution of respondents by graduate grade point average
(N=186; mean=3.73; S.D.=.19)
YEARS TO ASSOCIATE PROF.

1 TO 3 YEARS (32.61%)

4 TO 5 YEARS (35.50%)

OVER 7 YEARS (7.25%)

6 TO 7 YEARS (24.64%)

Figure 7. Distribution of associate and full professors by number of years to move from assistant to associate professor (N=138; mean=4.95; S.D.=2.65)
YEARS TO FULL PROFESSOR

Figure 8. Distribution of full professors by number of years to move from associate to full professor (N=87; mean=5.37; S.D.=2.78)
Figure 9. Distribution of respondents by number of mentors who were influential to respondents' career development (N=220)
The mentors described by university agricultural education faculty were predominantly male (97.57 percent). Over nine of ten mentors were Caucasian (Figure 10), and nearly 95 percent of the respondents indicated that their mentors were of a similar ethnic affiliation as themselves. Most mentors (80.69 percent) were reported as being of about equal social status to their protégés. Under one-fifth (18.81 percent) were thought to be of a higher social class, and only one mentor (.50 percent) was reported as being of a lower social class than his or her protégé. Age differences between mentors and respondents ranged from one year younger to 35 years older with the most common age difference being 20 years (Figure 11). Most mentors were university professors (Figure 12), and the majority (77.06 percent) held the rank of full professor at the time they were most influential to the protégé's career development. The predominant professional field of the mentors was agricultural education (91.36 percent). Of those mentors who were not university professors, the largest group (39.39 percent) was high school agriculture teachers.

About one-third of the respondents indicated that they had met their mentors during their graduate programs (Figure 13). Over one-fifth said that the meeting occurred during their first professional position and about ten percent said
Figure 10. Distribution of mentors by race as reported by respondents (N=206)
Figure 11. Age difference between respondents and their mentors (N=151)
Figure 12. Distribution of mentors by occupation as reported by respondents (N=220)
Figure 13. Career stage during which respondents met their mentors (N=206)
it was during a subsequent professional position. One-third indicated that they met their mentors at some other time, with many specifying undergraduate programs as that time.

When asked to identify the career stage at which mentors were most important to their professional development, nearly 42 percent of the respondents noted that it was during graduate school. Over one-fourth said it was during their first professional position, and over one-fifth said it was during a subsequent professional position (Figure 14).

Over three-fourths (79.23 percent) of the mentors held doctorate degrees, and another 17.39 percent held master's degrees. A bachelor's degree was the highest degree reported for 3 mentors (1.45 percent) and 4 mentors (1.93 percent) were reported as having some other level of education. Over one-half (57 percent) of the mentors received their highest degree from one of six institutions: The Ohio State University, Iowa State University, Cornell University, University of Illinois, The Pennsylvania State University, and Oklahoma State University. The frequency and percent of mentors from each university is shown in Table 2.

Most of the mentors were considered by their proteges to have considerable influence in their professional fields. On a scale of 1 to 5, with 5 representing a high level of
Figure 14. Career stage during which mentor was most important to respondents’ career development (N=206)
TABLE 2. Institutions from which mentors received highest degree

<table>
<thead>
<tr>
<th>Institution</th>
<th>N</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Ohio State University</td>
<td>25</td>
<td>13.16</td>
</tr>
<tr>
<td>Iowa State University</td>
<td>22</td>
<td>11.58</td>
</tr>
<tr>
<td>Cornell University</td>
<td>18</td>
<td>9.47</td>
</tr>
<tr>
<td>University of Illinois</td>
<td>18</td>
<td>9.47</td>
</tr>
<tr>
<td>The Pennsylvania State University</td>
<td>13</td>
<td>6.84</td>
</tr>
<tr>
<td>Oklahoma State University</td>
<td>12</td>
<td>6.32</td>
</tr>
<tr>
<td>University of Missouri</td>
<td>10</td>
<td>5.26</td>
</tr>
<tr>
<td>University of Wisconsin/Madison</td>
<td>7</td>
<td>3.68</td>
</tr>
<tr>
<td>Michigan State University</td>
<td>7</td>
<td>3.68</td>
</tr>
<tr>
<td>Purdue University</td>
<td>5</td>
<td>2.63</td>
</tr>
<tr>
<td>Colorado State University</td>
<td>4</td>
<td>2.11</td>
</tr>
<tr>
<td>Kansas State University</td>
<td>4</td>
<td>2.11</td>
</tr>
<tr>
<td>University of Minnesota</td>
<td>4</td>
<td>2.11</td>
</tr>
<tr>
<td>North Carolina State University</td>
<td>4</td>
<td>2.11</td>
</tr>
<tr>
<td>Other universities</td>
<td>27</td>
<td>19.47</td>
</tr>
<tr>
<td>Total</td>
<td>190</td>
<td>100.00</td>
</tr>
</tbody>
</table>

influence, over 85 percent of the respondents rated their mentor's influence to be a 4 or 5. The mean rating was 4.32 with a standard deviation of .76.

Summary of selected characteristics of university agricultural education faculty and their mentors

In many respects, mentors of university agricultural education professors were very similar to the professors themselves. The mentors and protégés were typically white males of a similar social class, employed as university professors, and holding doctoral degrees in agricultural education.
Mentors were typically between eight and twenty years older than their proteges and were considered by the respondents to have considerable influence in their professional field. Mentors were identified and provided the greatest professional support during the early stages of the protege's career, that is, during graduate school and the first professional position following graduate school.

Influence and Functions of Mentors of University Agricultural Education Faculty

This section represents the findings generated from Part I of the research instrument. Statistical analysis of the data was achieved through the SPSSX subprograms for frequencies and one-way analysis of variance. Research questions addressed in this section are listed with the findings.

Extent to which university agricultural faculty perceive their professional careers to have been influenced by a mentor

This subsection addresses the following research question: To what extent have the professional careers of university agricultural education faculty been influenced by mentors?

Twenty-seven individual mentoring functions were identified and included in the research instrument. Responses to each item were transformed to a scale of 0 to
16 with 16 representing strong agreement with the statement. The scores on each of the 27 items were summed to generate a composite mentoring score for each respondent. The composite mentoring score provided a measure of the overall extent to which each professor felt that his or her career had been influenced by a mentor. The possible range of scores was from 0 (0 X 27) to 432 (16 X 27). Actual scores ranged from 197 to 423 with a mean score of 325.81 and a standard deviation of 42.61.

Prior to the analysis of the data, it was determined that a score of 14 or higher on the transformed sixteen-point scale on each of the mentoring function items would indicate strong agreement with the statement. Scores between 14 and 11 on the transformed scale represented moderate agreement with the statement, and scores of 11 to 9 represented low agreement. Scores below 9 represented no opinion or disagreement with the statement.

The same scoring procedure was used with the composite mentoring scores, when all 27 items were summed. Individuals with composite mentoring scores of 378 or greater were considered to have experienced a very strong, positive mentoring influence in their professional career development. Those with scores of 298 to 377 experienced moderate levels of mentoring influence, and those with scores of 219
to 297 felt that their mentors had had low levels of influence on their professional careers. A score below 219 indicated a lack of a positive influence by a mentor on one's professional career; however, the scores of only three respondents fell in this category. Twelve respondents had indicated that they did not feel that their careers had been significantly influenced by a significant other; that is, they did not perceive themselves to have had a career mentor. As shown in Table 3, about 10 and one-half percent of the respondents reported having highly influential mentoring experiences during their professional careers. Most respondents reported mentoring experiences of moderate influence, and about one-fifth indicated that their mentoring experiences had low levels of influence on their professional careers.

**Comparison of composite mentoring scores when respondents were grouped by selected variables**

The following research question is addressed in this section: Is there a difference in the composite mentoring scores of university agricultural education faculty when grouped by selected variables? Part IV of the questionnaire provided the demographic data used to group respondents in this subsection.
Table 3. Composite mentoring scores

<table>
<thead>
<tr>
<th>Score</th>
<th>Extent of influence of mentor</th>
<th>N</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>No mentor</td>
<td>None</td>
<td>12</td>
<td>6.35</td>
</tr>
<tr>
<td>Less than 219</td>
<td>None</td>
<td>3</td>
<td>1.59</td>
</tr>
<tr>
<td>219 - 297</td>
<td>Low</td>
<td>38</td>
<td>20.10</td>
</tr>
<tr>
<td>298 - 377</td>
<td>Moderate</td>
<td>116</td>
<td>61.38</td>
</tr>
<tr>
<td>378 - 423</td>
<td>High</td>
<td>20</td>
<td>10.58</td>
</tr>
</tbody>
</table>
Respondents were grouped by selected demographic variables to compare their composite mentoring scores. One-way analysis of variance and a t-test were used to test for significant differences among/between groups. A summary of the comparisons among groups is presented in Table 4.

When grouped by current academic rank, no significant difference in the extent of mentoring influence (as evidenced by the composite mentoring score) was observed at the .05 level. Similarly, when the mentoring scores were compared among different age groups, no significant difference was observed. Groupings by graduate and undergraduate grade point averages also revealed no significant difference in composite mentoring scores. A t-test was used to examine the difference in mentoring scores between men and women, and no significant difference was observed.

**Mentoring functions**

This section presents findings pertaining to functions of mentors generated from Part I of the questionnaire. The research question addressed is: What functions do mentors perform that benefit the career development of university agricultural education faculty?

Data are described using means and standard deviations. Table 5 presents a summary of the responses to each
Table 4. Means, standard deviations, and F-values of the composite mentoring score by selected variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>Mean</th>
<th>S.D.</th>
<th>F-value</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rank:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assistant professor</td>
<td>35</td>
<td>330.97</td>
<td>38.264</td>
<td>1.40</td>
<td>.251</td>
</tr>
<tr>
<td>Associate professor</td>
<td>64</td>
<td>317.80</td>
<td>46.60</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full professor</td>
<td>70</td>
<td>327.41</td>
<td>39.36</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age:</td>
<td></td>
<td></td>
<td></td>
<td>.92</td>
<td>.964</td>
</tr>
<tr>
<td>28 - 35</td>
<td>22</td>
<td>325.68</td>
<td>42.94</td>
<td></td>
<td></td>
</tr>
<tr>
<td>36 - 45</td>
<td>67</td>
<td>323.28</td>
<td>43.29</td>
<td></td>
<td></td>
</tr>
<tr>
<td>46 - 55</td>
<td>49</td>
<td>324.94</td>
<td>46.15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>56 - 68</td>
<td>34</td>
<td>334.91</td>
<td>36.12</td>
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<tr>
<td>Undergraduate</td>
<td></td>
<td></td>
<td></td>
<td>1.55</td>
<td>.215</td>
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<tr>
<td>grade point average:</td>
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<td></td>
</tr>
<tr>
<td>2.00 - 2.62</td>
<td>27</td>
<td>335.07</td>
<td>44.32</td>
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<tr>
<td>2.63 - 3.49</td>
<td>102</td>
<td>321.53</td>
<td>42.99</td>
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</tr>
<tr>
<td>3.50 - 3.95</td>
<td>29</td>
<td>332.86</td>
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<td>Graduate grade</td>
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<td></td>
<td></td>
<td>1.43</td>
<td>.244</td>
</tr>
<tr>
<td>point average:</td>
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</tr>
<tr>
<td>3.00 - 3.54</td>
<td>23</td>
<td>313.48</td>
<td>35.87</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.55 - 3.91</td>
<td>107</td>
<td>326.95</td>
<td>42.67</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.92 - 4.00</td>
<td>19</td>
<td>334.32</td>
<td>44.27</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender^</td>
<td></td>
<td></td>
<td></td>
<td>-.95</td>
<td>.341</td>
</tr>
<tr>
<td>female</td>
<td>8</td>
<td>340.00</td>
<td>45.19</td>
<td></td>
<td></td>
</tr>
<tr>
<td>male</td>
<td>166</td>
<td>325.48</td>
<td>42.77</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

^A t-test was used to test for differences between men and women.
TABLE 5. Means and standard deviations of mentoring functions

<table>
<thead>
<tr>
<th>Function</th>
<th>N</th>
<th>Mean</th>
<th>S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Influenced my career in a positive way.</td>
<td>195</td>
<td>14.26</td>
<td>1.90</td>
</tr>
<tr>
<td>Supported my effort to advance in my career.</td>
<td>195</td>
<td>13.63</td>
<td>2.09</td>
</tr>
<tr>
<td>Took a personal interest in the development of my career.</td>
<td>194</td>
<td>13.57</td>
<td>2.12</td>
</tr>
<tr>
<td>Expressed pride in my success.</td>
<td>195</td>
<td>13.41</td>
<td>2.60</td>
</tr>
<tr>
<td>Recognized my potential as an effective educator.</td>
<td>195</td>
<td>13.40</td>
<td>1.98</td>
</tr>
<tr>
<td>Praised my efforts in the presence of others.</td>
<td>194</td>
<td>13.27</td>
<td>2.52</td>
</tr>
<tr>
<td>Been someone I could rely on for support during critical times.</td>
<td>194</td>
<td>13.06</td>
<td>2.70</td>
</tr>
<tr>
<td>Used his/her influence to assist my advancement by recommending me for promising opportunities.</td>
<td>192</td>
<td>13.01</td>
<td>2.96</td>
</tr>
<tr>
<td>Been a model professional after whom I have sought to pattern myself.</td>
<td>194</td>
<td>12.97</td>
<td>3.05</td>
</tr>
<tr>
<td>Helped me develop a sense of confidence in my own ability to produce results.</td>
<td>193</td>
<td>12.90</td>
<td>2.38</td>
</tr>
<tr>
<td>Passed on personal experiences to me.</td>
<td>194</td>
<td>12.83</td>
<td>2.83</td>
</tr>
<tr>
<td>Encouraged me to pursue long-range career goals.</td>
<td>195</td>
<td>12.82</td>
<td>2.87</td>
</tr>
</tbody>
</table>
### TABLE 5. Continued

<table>
<thead>
<tr>
<th>Function</th>
<th>N</th>
<th>Mean</th>
<th>S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provided guidance when I was unsure of how to tackle a problem.</td>
<td>193</td>
<td>12.39</td>
<td>2.55</td>
</tr>
<tr>
<td>Assisted me in learning the &quot;ropes&quot; of the profession.</td>
<td>193</td>
<td>12.31</td>
<td>2.93</td>
</tr>
<tr>
<td>Helped me to establish relationships with others who could assist in my development.</td>
<td>194</td>
<td>12.03</td>
<td>3.04</td>
</tr>
<tr>
<td>Helped me become committed to my career.</td>
<td>193</td>
<td>11.96</td>
<td>2.95</td>
</tr>
<tr>
<td>Assisted me in getting an important job done.</td>
<td>193</td>
<td>11.90</td>
<td>2.97</td>
</tr>
</tbody>
</table>
| Been hesitant to offer career guidance. 
<sup>a</sup>                                                             | 188 | 11.89 | 3.08  |
| Helped me set realistic performance goals.                               | 195 | 11.55 | 2.86  |
| Helped me realistically assess my performance.                           | 193 | 11.34 | 2.95  |
| Given me objective criticism.                                            | 194 | 11.34 | 2.80  |
| Helped me understand how I fit into the profession.                     | 194 | 11.08 | 3.08  |
| Been unwilling to discuss critical issues with me. 
<sup>a</sup>           | 189 | 10.97 | 4.79  |
| Cautioned me to avoid actions that might harm my career.                 | 194 | 10.67 | 3.66  |
In general, respondents agreed that their mentors had performed most of the functions described. Means on individual items ranged from 6.87 to 14.26 on a scale of zero to sixteen. The mean score on only one item (X=6.87) fell into the "disagree" side of the scale.
Summary of influence and functions of mentors of university agricultural education faculty

The majority of university agricultural education professors felt that their careers had been significantly influenced by a mentor. The intensity or extent of the mentor’s influence varied from very high to low. Only about ten percent of the respondents indicated that their mentors had been highly influential to their professional career development. An additional 61 percent reported moderate influence on their professional careers by a mentor, and 20 percent felt their mentors had had little influence. About eight percent of the respondents reported that their careers had not been influenced by a mentor.

The wide range in mentoring scores indicates that although most university agricultural education professors believe that their careers have been significantly influenced by another person or persons, only a few of them have benefited from a wide range of mentoring functions that would be typical of a "true" mentorship. Those relationships in which the mentor had moderate or little influence on the professional career of the protegé may more appropriately be described as role modeling or some other type of developmental relationship.
Respondents were grouped by current academic rank, age, gender, undergraduate, and graduate grade point averages, and their composite mentoring scores compared. No significant differences were observed in composite mentoring scores for any variable.

Twenty-seven mentoring functions were included in the study. Respondents were asked to indicate the degree to which they agreed or disagreed that their mentor had performed each function. Only 1 item received a mean rating of greater than 14 on a 16-point transformed scale. An additional 7 items had mean ratings of over 13, still representing a strong agreement with the function. Only 1 item had a mean rating that fell into the disagree side of the scale. The most important mentoring functions were: influenced my career in a positive way, supported my effort to advance in my career, took a personal interest in the development of my career, expressed pride in my success, recognized my potential as an effective educator, praised my efforts in the presence of others, been someone I could rely on for support during critical times, and used his/her influence to assist my advancement by recommending me for promising opportunities. The least important functions of mentors were: insisted I stand on my own at all times, helped me publish an article or book, assisted me by voluntarily taking on the role of teacher to improve my skills,
cautioned me to avoid actions that might harm my career, and been unwilling to discuss critical issues with me.

Mentoring and Career Development of University Agricultural Education Faculty

A description of the career development of university agricultural education professors is included in this section. Performance on selected indicators of career development was compared when respondents were grouped by composite mentoring scores, and the relationship between mentoring and career development was examined. Findings pertaining to the career development of respondents were generated from Part III of the research instrument.

Selected indicators of career development of university agricultural education faculty

Commonly accepted indicators of professional career development were identified and included in the study to provide measures of career advancement of university agricultural education faculty. Academic rank was used as a means to categorize faculty for the purpose of describing their career development.

As shown in Table 6, respondents reported holding from 1 to 4 administrative positions (department head/chair/leader, assistant or associate dean, dean, high school principal, etc.) during their professional careers. As would be expected, the number of administrative positions
Table 6. Administrative positions held by university agricultural education faculty

<table>
<thead>
<tr>
<th>Academic rank</th>
<th>None N/%</th>
<th>1 N/%</th>
<th>2 N/%</th>
<th>3-4 N/%</th>
<th>Mean</th>
<th>S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assistant professor</td>
<td>24 55.81</td>
<td>18 41.86</td>
<td>1 2.33</td>
<td>0 0.00</td>
<td>.47</td>
<td>.55</td>
</tr>
<tr>
<td>Associate professor</td>
<td>27 39.46</td>
<td>41 55.41</td>
<td>5 6.76</td>
<td>1 1.34</td>
<td>.73</td>
<td>.65</td>
</tr>
<tr>
<td>Full professor</td>
<td>25 26.88</td>
<td>57 61.28</td>
<td>8 8.60</td>
<td>3 3.23</td>
<td>.89</td>
<td>.73</td>
</tr>
</tbody>
</table>
held per respondent increased as their academic rank increased. Over 55 percent of the assistant professors and about 36 percent of the associate professors had never held an administrative position. Slightly over one-fourth of the full professors reported never having held an administrative position. (See Appendix C for additional information on all career development variables).

Fifty percent of university agricultural education professors holding the associate professor rank have held a national leadership position (AATEA officer, AVA officer, AIAEE officer, AATEA committee chairperson, NAERM chairperson, Journal of AATEA editor, Agricultural Education Magazine editor, etc.). As reported in Table 7, slightly under 40 percent of the assistant professors and nearly two-thirds of the full professors had held national leadership positions.

An interesting finding is shown in Table 8. Over 30 percent of the assistant professors reported having received a national award (AATEA Distinguished Service lecturer, AATEA Distinguished Service award, AATEA Young Member award, AATEA Journal author of the year, NAERM Outstanding Research award, etc.), while only about 24 percent of the associate professors said they had done so. Forty percent of the full professors had received recognition through a national award.
Table 7. National leadership positions held by university agricultural education faculty

<table>
<thead>
<tr>
<th>Academic rank</th>
<th>None</th>
<th>1</th>
<th>2</th>
<th>3-4</th>
<th>5-7</th>
<th>Mean</th>
<th>S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N/%</td>
<td>N/%</td>
<td>N/%</td>
<td>N/%</td>
<td>N/%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assistant professor</td>
<td>26</td>
<td>7</td>
<td>8</td>
<td>1</td>
<td>0</td>
<td>.67</td>
<td>.94</td>
</tr>
<tr>
<td></td>
<td>60.47</td>
<td>16.30</td>
<td>18.60</td>
<td>4.63</td>
<td>0.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Associate professor</td>
<td>37</td>
<td>23</td>
<td>6</td>
<td>7</td>
<td>1</td>
<td>.88</td>
<td>1.26</td>
</tr>
<tr>
<td></td>
<td>50.00</td>
<td>31.08</td>
<td>8.11</td>
<td>9.46</td>
<td>1.35</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full professor</td>
<td>33</td>
<td>21</td>
<td>16</td>
<td>16</td>
<td>7</td>
<td>1.54</td>
<td>1.63</td>
</tr>
<tr>
<td></td>
<td>35.48</td>
<td>22.58</td>
<td>17.20</td>
<td>17.20</td>
<td>7.54</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 8. National awards received by university agricultural education faculty

<table>
<thead>
<tr>
<th>Academic rank</th>
<th>None N/%</th>
<th>1 N/%</th>
<th>2 N/%</th>
<th>3 N/%</th>
<th>Mean</th>
<th>S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assistant professor</td>
<td>30</td>
<td>12</td>
<td>1</td>
<td>0</td>
<td>.33</td>
<td>.52</td>
</tr>
<tr>
<td>Associate professor</td>
<td>56</td>
<td>18</td>
<td>0</td>
<td>0</td>
<td>.24</td>
<td>.43</td>
</tr>
<tr>
<td>Full professor</td>
<td>56</td>
<td>30</td>
<td>5</td>
<td>2</td>
<td>.50</td>
<td>.70</td>
</tr>
</tbody>
</table>
At the state or local level, over 44 percent of the assistant professors reported having received recognition for their teaching, research, advising and/or service. Fifty percent of the associate professors and over two-thirds of the full professors had received professional awards at the state or local level (Table 9).

As shown in Table 10, most of the professors (85.71 percent) in agricultural education had published at least 1 journal article. One individual reported having published 95 articles. Journals common in agricultural education (Journal of AATEA, NACTA Journal Journal of Extension, The Agricultural Education Magazine, Journal of Vocational Education Research, Vocational Education Journal, etc.) accounted for most of the publications; however, publications in other refereed journals were included. About 14 percent of the assistant professors, 19 percent of the associate professors, and 11 percent of the full professors reported having never published an article. Over 10 articles had been published by about 12 percent, 30 percent and 35 percent of the assistant, associate and full professors, respectively. The mean number of articles published for the entire group was 10.24 per respondent; however, the median was 6.00 articles.

As reported in Table 11, nearly 50 percent of the full professors in agricultural education have authored or co-
Table 9. Professional awards received at the state and local level by university agricultural education faculty

<table>
<thead>
<tr>
<th>Academic rank</th>
<th>None N/%</th>
<th>1 N/%</th>
<th>2 N/%</th>
<th>3-4 N/%</th>
<th>5-9 N/%</th>
<th>Mean</th>
<th>S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assistant professor</td>
<td>24</td>
<td>11</td>
<td>4</td>
<td>3</td>
<td>1</td>
<td>.77</td>
<td>1.13</td>
</tr>
<tr>
<td></td>
<td>55.81</td>
<td>25.58</td>
<td>9.30</td>
<td>6.98</td>
<td>2.33</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Associate professor</td>
<td>37</td>
<td>20</td>
<td>11</td>
<td>6</td>
<td>0</td>
<td>.84</td>
<td>1.05</td>
</tr>
<tr>
<td></td>
<td>50.00</td>
<td>27.03</td>
<td>14.86</td>
<td>8.11</td>
<td>0.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full professor</td>
<td>30</td>
<td>22</td>
<td>18</td>
<td>19</td>
<td>4</td>
<td>1.60</td>
<td>1.70</td>
</tr>
<tr>
<td></td>
<td>32.26</td>
<td>23.66</td>
<td>19.35</td>
<td>20.43</td>
<td>4.30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Academic rank</td>
<td>None N/%</td>
<td>1-5 N/%</td>
<td>6-10 N/%</td>
<td>11-25 N/%</td>
<td>26-50 N/%</td>
<td>50-95 N/%</td>
<td>Mean</td>
</tr>
<tr>
<td>--------------------</td>
<td>----------</td>
<td>---------</td>
<td>----------</td>
<td>-----------</td>
<td>-----------</td>
<td>-----------</td>
<td>------</td>
</tr>
<tr>
<td>Assistant professor</td>
<td>6 13.95</td>
<td>24 55.82</td>
<td>8 18.60</td>
<td>5 11.63</td>
<td>0 0.00</td>
<td>0 0.00</td>
<td>4.35</td>
</tr>
<tr>
<td>Associate professor</td>
<td>14 18.92</td>
<td>24 32.43</td>
<td>14 18.92</td>
<td>15 20.27</td>
<td>7 9.46</td>
<td>0 0.00</td>
<td>9.34</td>
</tr>
<tr>
<td>Full professor</td>
<td>10 10.75</td>
<td>25 26.88</td>
<td>27 29.03</td>
<td>19 20.43</td>
<td>11 11.83</td>
<td>3 3.22</td>
<td>12.62</td>
</tr>
</tbody>
</table>

Table 10. Journal articles published
Table 11. Books authored or coauthored by university agricultural education faculty

<table>
<thead>
<tr>
<th>Academic rank</th>
<th>None</th>
<th>1</th>
<th>2</th>
<th>3-4</th>
<th>4-14</th>
<th>Mean</th>
<th>S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assistant professor</td>
<td>39</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>.14</td>
<td>.52</td>
</tr>
<tr>
<td></td>
<td>90.70</td>
<td>6.98</td>
<td>0.00</td>
<td>2.32</td>
<td>0.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Associate professor</td>
<td>51</td>
<td>9</td>
<td>7</td>
<td>7</td>
<td>0</td>
<td>.61</td>
<td>1.04</td>
</tr>
<tr>
<td></td>
<td>68.92</td>
<td>12.16</td>
<td>9.46</td>
<td>9.46</td>
<td>0.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full professor</td>
<td>47</td>
<td>16</td>
<td>16</td>
<td>5</td>
<td>9</td>
<td>1.53</td>
<td>2.75</td>
</tr>
<tr>
<td></td>
<td>50.54</td>
<td>17.20</td>
<td>17.20</td>
<td>5.38</td>
<td>9.68</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
authored a book or a chapter in a book. About 31 percent of
the associate professors and 9 percent of the assistant
professors had done likewise. One individual reported
having written 14 books or chapters in books during his or
her professional career.

Many professors in all ranks had never advised a
doctoral student. About one-fifth of the assistant
professors indicated that they have served, or are currently
serving as the major advisor for a doctoral student. Over
45 percent of the associate professors and about 53 percent
of the full professors had done likewise (Table 12).

There was a wide range in the number of master’s
students advised or currently being advised by agricultural
education professors. Two individuals reported having
served as the major advisor for 200 master’s students. As
reported in Table 13, slightly over three-fourths of the
assistant professors had been a major advisor to at least 1
master’s student while almost one-fourth had advised over 10
students. Nearly 60 percent of the full professors and 25
percent of the associate professors had been a major advisor
to over 20 master’s students.

Table 14 summarizes data regarding the number of grants
awarded to agricultural education professors. The percent-
age of professors in each rank who had never received a
grant was 12, 19, and 16 for assistant, associate and full
Table 12. Doctorate students advised by university agricultural education faculty

<table>
<thead>
<tr>
<th>Academic rank</th>
<th>Number of students advised</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>None</td>
<td>1-5</td>
<td>6-10</td>
<td>10-46</td>
<td>Mean</td>
<td>S.D.</td>
</tr>
<tr>
<td>Assistant professors</td>
<td>34 N/%</td>
<td>8 N/%</td>
<td>1 N/%</td>
<td>0 N/%</td>
<td>0.51</td>
<td>1.26</td>
</tr>
<tr>
<td>Associate professors</td>
<td>40 N/%</td>
<td>24 N/%</td>
<td>5 N/%</td>
<td>5 N/%</td>
<td>2.69</td>
<td>5.21</td>
</tr>
<tr>
<td>Full professors</td>
<td>44 N/%</td>
<td>18 N/%</td>
<td>11 N/%</td>
<td>20 N/%</td>
<td>6.28</td>
<td>9.60</td>
</tr>
</tbody>
</table>
Table 13. Master's students advised by university agricultural education faculty

<table>
<thead>
<tr>
<th>Academic rank</th>
<th>None</th>
<th>1-5</th>
<th>6-10</th>
<th>11-20</th>
<th>21-50</th>
<th>over 50</th>
<th>Mean</th>
<th>S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assistant professor</td>
<td>11 N/%</td>
<td>15 N/%</td>
<td>7 N/%</td>
<td>7 N/%</td>
<td>3 N/%</td>
<td>0 N/%</td>
<td>7.07</td>
<td>9.47</td>
</tr>
<tr>
<td>Associate Professor</td>
<td>14 N/%</td>
<td>10 N/%</td>
<td>12 N/%</td>
<td>21 N/%</td>
<td>13 N/%</td>
<td>4 N/%</td>
<td>17.11</td>
<td>20.45</td>
</tr>
<tr>
<td>Full Professor</td>
<td>11 N/%</td>
<td>4 N/%</td>
<td>6 N/%</td>
<td>6 N/%</td>
<td>32 N/%</td>
<td>22 N/%</td>
<td>41.41</td>
<td>48.58</td>
</tr>
</tbody>
</table>
Table 14. Grants received by university agricultural education faculty

<table>
<thead>
<tr>
<th>Academic rank</th>
<th>None N/%</th>
<th>1-3 N/%</th>
<th>4-6 N/%</th>
<th>7-12 N/%</th>
<th>over 12 N/%</th>
<th>Mean</th>
<th>S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assistant professor</td>
<td>11.63</td>
<td>51.16</td>
<td>13.95</td>
<td>20.93</td>
<td>2.33</td>
<td>3.47</td>
<td>3.35</td>
</tr>
<tr>
<td>Associate professor</td>
<td>18.92</td>
<td>27.03</td>
<td>20.26</td>
<td>27.03</td>
<td>6.76</td>
<td>5.45</td>
<td>6.29</td>
</tr>
<tr>
<td>Full professor</td>
<td>16.13</td>
<td>21.51</td>
<td>10.75</td>
<td>23.66</td>
<td>27.66</td>
<td>8.62</td>
<td>9.84</td>
</tr>
</tbody>
</table>
professors respectively. Over 6 grants had been awarded to 23, 34, and 51 percent of the assistant, associate, and full professors respectively. When all professors were considered, over 21 percent had received at least 1 grant of $100,000 or more.

In addition to the objective indicators of career development described above, two subjective measures were included in the study. Respondents were asked to indicate their satisfaction with their current position, and their satisfaction with their overall career progress. Table 15 indicates that agricultural education professors appear to be very satisfied with their current positions and their career progress. The level of satisfaction in both areas increases as professors move through the ranks. The mean responses on the satisfaction with current position item were 3.72, 3.99, and 4.22 for assistant professors, associate professors and full professors, respectively on a 5-point scale. Mean responses on the satisfaction with career progress item were 3.73, 4.00 and 4.37 for each rank respectively.

**Indicators of career development by composite mentoring score**

The following research question is addressed in this subsection: Is there a significant difference in the performance of university agricultural education professors
Table 15. Career satisfaction of university agricultural education faculty

<table>
<thead>
<tr>
<th>Variable</th>
<th>Assistant Professors</th>
<th>Associate Professors</th>
<th>Full Professors</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>X</td>
<td>S.D.</td>
<td>X</td>
</tr>
<tr>
<td>Satisfaction with current position</td>
<td>3.72</td>
<td>.98</td>
<td>3.99</td>
</tr>
<tr>
<td>Satisfaction with career progress</td>
<td>3.74</td>
<td>1.07</td>
<td>4.00</td>
</tr>
</tbody>
</table>

*Ratings were on a 5-point scale with 5 representing high satisfaction.*

on selected indicators of career development when grouped by composite mentoring score?

Associate and full professors were grouped by their composite mentoring scores to compare their career development. Four groups were formed: respondents whose professional careers were highly influenced by a mentor, respondents experiencing moderate levels of mentoring influence, respondents experiencing low levels of mentoring influence, and respondents indicating that their careers were not influenced by a mentor (see pages 82-83 for a description of how the groups were formed). A one-way analysis of variance test was used to determine if differences existed among the mentoring score groups on each career development variable.

As shown in Table 16, no significant differences were observed among the groups in any of the following variables:
Table 16. Means, standard deviations, and F-values of indicators of career development by composite mentoring score

<table>
<thead>
<tr>
<th>Indicator</th>
<th>High Mentoring</th>
<th>Moderate Mentoring</th>
<th>Low Mentoring</th>
<th>No Mentoring</th>
<th>F-Value</th>
<th>Prob</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean/S.D. n=12</td>
<td>Mean/S.D. n=90</td>
<td>Mean/S.D. n=31</td>
<td>Mean/S.D. n=11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Years to reach full professor</td>
<td>4.71</td>
<td>5.25</td>
<td>5.71</td>
<td>6.50</td>
<td>.30</td>
<td>.823</td>
</tr>
<tr>
<td></td>
<td>1.60</td>
<td>2.88</td>
<td>3.88</td>
<td>3.54</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Years to reach associate professor</td>
<td>6.50</td>
<td>4.62</td>
<td>5.23</td>
<td>5.10</td>
<td>1.57</td>
<td>.201</td>
</tr>
<tr>
<td></td>
<td>5.23</td>
<td>2.25</td>
<td>3.01</td>
<td>1.66</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Administrative positions held</td>
<td>.67</td>
<td>.86</td>
<td>.68</td>
<td>.73</td>
<td>.66</td>
<td>.576</td>
</tr>
<tr>
<td></td>
<td>.65</td>
<td>.73</td>
<td>.71</td>
<td>.65</td>
<td></td>
<td></td>
</tr>
<tr>
<td>National leadership positions held</td>
<td>.58</td>
<td>1.29</td>
<td>1.39</td>
<td>1.18</td>
<td>.88</td>
<td>.452</td>
</tr>
<tr>
<td></td>
<td>.26</td>
<td>1.49</td>
<td>1.76</td>
<td>1.54</td>
<td></td>
<td></td>
</tr>
<tr>
<td>National awards received</td>
<td>.25</td>
<td>.42</td>
<td>.42</td>
<td>.18</td>
<td>.73</td>
<td>.537</td>
</tr>
<tr>
<td></td>
<td>.45</td>
<td>.64</td>
<td>.67</td>
<td>.40</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Professional awards at state or local level</td>
<td>1.67</td>
<td>1.19</td>
<td>1.10</td>
<td>1.09</td>
<td>.60</td>
<td>.616</td>
</tr>
<tr>
<td></td>
<td>1.50</td>
<td>1.31</td>
<td>1.27</td>
<td>1.14</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 16. Continued

<table>
<thead>
<tr>
<th>Indicator</th>
<th>High Mentoring</th>
<th>Moderate Mentoring</th>
<th>Low Mentoring</th>
<th>No Mentoring</th>
<th>F-Value</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean/S.D.</td>
<td>Mean/S.D.</td>
<td>Mean/S.D.</td>
<td>Mean/S.D.</td>
<td>Mean/S.D.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Articles published</td>
<td>9.92 (10.27)</td>
<td>10.89 (13.07)</td>
<td>10.10 (10.72)</td>
<td>8.45 (10.08)</td>
<td>.15</td>
<td>.927</td>
</tr>
<tr>
<td>Books authored or coauthored</td>
<td>1.42 (1.31)</td>
<td>1.09 (2.21)</td>
<td>.97 (2.24)</td>
<td>.55 (1.04)</td>
<td>.36</td>
<td>.781</td>
</tr>
<tr>
<td>Doctoral students advised</td>
<td>6.08 (10.09)</td>
<td>4.52 (7.43)</td>
<td>5.13 (10.38)</td>
<td>1.82 (2.71)</td>
<td>.60</td>
<td>.614</td>
</tr>
<tr>
<td>Master's students advised</td>
<td>58.17 (55.61)</td>
<td>27.30 (31.61)</td>
<td>17.58 (25.24)</td>
<td>23.00 (24.80)</td>
<td>4.60**</td>
<td>.004</td>
</tr>
<tr>
<td>Grants received</td>
<td>10.25 (15.00)</td>
<td>7.51 (7.65)</td>
<td>5.39 (5.28)</td>
<td>5.82 (4.71)</td>
<td>1.30</td>
<td>.278</td>
</tr>
</tbody>
</table>

**Significant at .01.
years to reach full professor (from associate professor), years to reach associate professor (from assistant professor), administrative positions held, national leadership positions held, national awards received, professional awards received at the state or local level, articles published, books authored or coauthored, doctoral students advised, or grants received. A significant difference at the .05 level was observed among the mentoring score groups in the number of master's students advised. A Scheffé test revealed that differences existed among the low, moderate, and high mentoring score groups. Professors with higher mentoring scores advised more master's students.

No significant difference was observed among the mentoring score groups when respondents' satisfaction with their jobs was considered. Likewise, no difference was found in satisfaction with career progress among the mentoring score groups (Table 17). However, after the initial analysis, another one-way analysis of variance was run using only three mentoring score groups: those experiencing high, moderate, and low levels of mentoring influence on their professional careers. When the respondents who indicated that they did not have a mentor were not included in the comparison, a significant difference at the .05 level was observed in both career satisfaction variables (Table 17a).
Table 17. Means, standard deviations, and F-values of indicators of career satisfaction by composite mentoring score

<table>
<thead>
<tr>
<th>Indicator</th>
<th>High Mentoring</th>
<th>Moderate Mentoring</th>
<th>Low Mentoring</th>
<th>No Mentoring</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean/S.D. n=12</td>
<td>Mean/S.D. n=90</td>
<td>Mean/S.D. n=31</td>
<td>Mean/S.D. n=11</td>
</tr>
<tr>
<td>Satisfaction with current position</td>
<td>4.42 1.44</td>
<td>4.13 .88</td>
<td>3.87 .96</td>
<td>4.00 1.18</td>
</tr>
<tr>
<td>Satisfaction with career progress</td>
<td>4.25 1.48</td>
<td>4.28 .73</td>
<td>3.84 1.04</td>
<td>3.91 1.14</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 17a. Means, standard deviations, and F-values of indicators of career satisfaction by high, moderate, and low mentoring score

<table>
<thead>
<tr>
<th>Indicator</th>
<th>High Mentoring</th>
<th>Moderate Mentoring</th>
<th>Low Mentoring</th>
<th>F-Value</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Satisfaction with current position</td>
<td>4.42 (1.44)</td>
<td>4.13 (.88)</td>
<td>4.00 (1.18)</td>
<td>6.64</td>
<td>.002**</td>
</tr>
<tr>
<td>Satisfaction with career progress</td>
<td>4.25 (1.48)</td>
<td>4.28 (.73)</td>
<td>3.91 (1.14)</td>
<td>5.23</td>
<td>.007**</td>
</tr>
</tbody>
</table>

**Significant at .01.
Relationship between mentoring and selected indicators of career development

This subsection was concerned with the research question: Is there a significant relationship between mentoring (as determined by the composite mentoring score) and selected indicators of career development?

A Pearson product-moment correlation coefficient was computed to determine the magnitude of relationships between respondents' composite mentoring score and selected indicators of career development. A summary of the correlations is found in Table 18.

No significant relationship was observed at the .05 level between mentoring influence and the following variables: years to reach associate professor (from assistant professor), years to reach full professor (from associate professor), administrative positions held, national leadership positions held, national awards received, professional awards received at the state or local level, articles published, books authored or coauthored, or doctoral students advised.

A significant relationship at the .05 level was observed between mentoring influence and number of master's students advised. A significant relationship between mentoring and number of grants received was also observed. In the cases of both variables, however, although the relationships were statistically significant, the variance
<table>
<thead>
<tr>
<th>Indicator of Career Development</th>
<th>Coefficient</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Years to reach associate professor</td>
<td>.02</td>
<td>.408</td>
</tr>
<tr>
<td>Years to reach full professor(^a)</td>
<td>-.19</td>
<td>.069</td>
</tr>
<tr>
<td>Administrative positions held</td>
<td>.12</td>
<td>.080</td>
</tr>
<tr>
<td>National leadership positions held</td>
<td>.03</td>
<td>.382</td>
</tr>
<tr>
<td>National awards received</td>
<td>.03</td>
<td>.382</td>
</tr>
<tr>
<td>Professional awards from state or local level</td>
<td>.09</td>
<td>.162</td>
</tr>
<tr>
<td>Journal articles published</td>
<td>.12</td>
<td>.080</td>
</tr>
<tr>
<td>Books authored or coauthored</td>
<td>.02</td>
<td>.408</td>
</tr>
<tr>
<td>Grants received</td>
<td>.20**</td>
<td>.009</td>
</tr>
<tr>
<td>Doctoral students advised</td>
<td>.07</td>
<td>.221</td>
</tr>
<tr>
<td>Master's students advised</td>
<td>.20**</td>
<td>.009</td>
</tr>
</tbody>
</table>

\(^a\)This correlation was computed for full professors only, using the number of years to move from associate to full professor.

**Significant at .01.
in the career development variable that is explained by the mentoring score is small (r square=4.1 percent and 4.2 percent respectively), thus, the practical significance is questionable.

Pearson product-moment correlation coefficients were computed between the composite mentoring score and the indicators of career satisfaction. As shown in Table 19, significant relationships were observed at the .05 level in both cases. The small correlation coefficients indicate that a small percentage of the variance in the career satisfaction variables is explained by the mentoring score (8.2 percent and 11.4 percent respectively).

Table 19. Pearson product-moment correlations between mentoring and indicators of career satisfaction

<table>
<thead>
<tr>
<th>Indicator of career satisfaction</th>
<th>Coefficient</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Satisfaction with current position</td>
<td>.286**</td>
<td>.001</td>
</tr>
<tr>
<td>Satisfaction with career progress</td>
<td>.337**</td>
<td>.001</td>
</tr>
</tbody>
</table>

**Significant at .01.

Summary of mentoring and career development of university agricultural education faculty

The performance of university agricultural education professors on selected indicators of career development was
compared when respondents were grouped by composite mentoring score. No significant difference was found among the groups experiencing high, moderate, low, and no levels of mentoring influence in their professional careers, when the following indicators of career development were considered: years to reach full professor from associate professor, years to reach associate professor from assistant professor, administrative positions held, national leadership positions held, national awards received, professional awards received at the state or local level, articles published, books authored or coauthored, doctoral students advised, and grants received.

A significant difference among the mentoring score groups was observed in the number of master’s students advised. A Scheffé test revealed that differences existed between groups experiencing high, moderate, and low levels of mentoring influence. Respondents experiencing higher levels of mentoring influence reported having advised more graduate students.

No significant differences among the mentoring score groups existed when the respondents' satisfaction with their current positions and satisfaction with their career progress were considered.

When the composite mentoring score was correlated with the indicators of career development, significant positive
relationships were observed between mentoring and number of master’s students advised, and mentoring and number of grants received. The small correlation coefficients resulted in questionable practical significance of the relationship between the variables.

Positive significant relationships were observed between mentoring influence and satisfaction with one’s current position, and mentoring influence and satisfaction with one’s career progress. Although the correlation coefficients were small, the practical significance of such a finding should not be dismissed.

No significant difference was observed between mentoring influence and the following career development variables: years to reach full professor from associate professor, years to reach associate professor from assistant professor, administrative positions held, national leadership positions held, national awards received, professional awards received at the state or local level, articles published, books authored or coauthored, grants received, and doctoral students advised.
CHAPTER V. DISCUSSION

This chapter has been divided into 4 sections which address the study's objectives. Section one presents a general description of university agricultural education professors and those persons who served as their mentors. The second section contains a discussion regarding the extent to which the professional careers of university agricultural education faculty have been influenced by mentors, and the functions provided by those mentors. In the third section, the career development of agricultural education professors is discussed and compared by extent of mentoring influence experienced. The fourth section presents a discussion of the relationship between mentoring influence and performance of university agricultural education faculty on selected indicators of career development.

Discussion

The purpose of this study was to determine the extent to which the professional careers of university agricultural education professors have been influenced by mentors, and to examine the relationship between mentoring influence and career development. The study's objectives were to:

1. Determine the extent to which the professional career development of university agricultural
education professors has been influenced by a mentor or mentors.

2. Identify functions of persons serving as mentors to university agricultural education professors.

3. Compare the extent of mentoring influence experienced by university agricultural education professors when they are grouped by current academic rank, age, gender, undergraduate grade point average, and graduate grade point average.

4. Identify characteristics of persons serving as mentors to university agricultural education professors.

5. Determine the performance of university agricultural education faculty on selected indicators of career development.

6. Compare the career development of university agricultural education professors when they are grouped by extent of mentoring influence experienced.

7. Determine the relationship between mentoring influence and selected indicators of career development.
Agricultural education professors and their mentors

Analysis of the data revealed that agricultural education professors are predominantly white males holding doctorate degrees in agricultural education. There was a considerable range in the age of university agricultural education professors, from 28 to 68 years with a mean age of slightly over 45 years. Academic rank of agricultural education professors tended slightly to the higher side with 44.28 percent holding that of full professor. Associate professors made up 35.24 percent and the remaining one-fifth (20.48 percent) held an assistant professor rank. These data indicate that agricultural education is an aging professoriate, as Jones (1985) reported an academic rank break-down of 29 percent assistant professors, 30 percent associate professors and 40 percent full professors. The fact that fewer opportunities seem to exist for new faculty to enter the profession points to the importance of developing effective professional development programs for those who remain.

Associate and full professors in agricultural education appear to move through the academic ranks quite quickly. The mean number of years taken by associate and full professors to reach the associate professor rank from that of assistant professor was slightly under 5. Full
professors moved from the associate rank in about five and one-fourth years. It is possible that the apparent rapid movement through the academic ranks may be related to the fact that most agricultural education professors have had teaching experience prior to entering academe. Jones (1985) reported that 96 percent of agricultural education professors have had some teaching experience at the high school level and the mean number of years taught was 6.34. Prior teaching experience may enable agricultural education professors to enter positions in higher education with refined teaching techniques and greater confidence in their teaching abilities, thus enabling them to make the adjustment to university teaching quickly. Early adjustment to teaching may result in greater teaching excellence and more time to devote to research, service, and other professional activities.

Undergraduate grade point averages of agricultural education professors ranged from 2.00 to 3.95 on a four point scale, with a mean of 3.06. Graduate grade point averages ranged from 3.00 to 4.00 with a mean of 3.72.

Nearly all agricultural education professors (94.55 percent) felt that their professional career development had been significantly influenced by one or more people. The word mentor was used to describe these people. Since, in this study, the definition of mentor was very broad, the
prevalence of mentoring among agricultural education faculty was not surprising. Other studies which have used broad definitions of the word mentor also reported fairly high levels of mentoring among respondents. (Rawles, 1981; Queralt, 1981; Reohr, 1981). In contrast, researchers who have limited the definition of mentor to specific types of relationships have reported rare incidences of mentoring among subjects (Levinson, 1978; Vaillant, 1977). It is important to note that it was assumed that the extent of mentoring influence reported by university agricultural education professors was indicative of the overall comprehensiveness of their mentoring relationships.

The number of mentors reported by agricultural education professors ranged from one to 28. According to Levinson (1978), people rarely have more than one or two true mentors during their lifetime; however, in the context of this exploratory study, a greater number of reported mentors would be expected.

Research in human behavior has shown that people tend to gravitate toward others who are similar to themselves. Mentoring research has supported this theory, indicating that mentors tend to chose proteges who are socially similar to themselves (Levinson, 1978; Hennig and Jardim, 1977; Kanter, 1977). Data pertaining to the mentors of agricul-
tural education professors were collected in an effort to determine whether this theory could be supported in agricultural education.

Mentors of agricultural education professors appeared to be very similar to their protégés. Like their protégés, mentors tended to be white males holding doctorate degrees in agricultural education. Not surprisingly, most mentors (84.55 percent) were college professors. Professors reported that their mentors were of a similar social class and ethnic affiliation. Analysis of the data revealed that only one of the women professors reported having a woman mentor. This finding may be expected, however, considering the rarity of women professors in agricultural education who may serve as mentors to other women.

Timing of the mentoring experience is considered to be important. Phillips (1977) suggested that appropriate timing of a mentorship is essential to its success. Good timing results in a combined readiness on the part of one individual to be a mentor and on the part of the other to be a protégé. Most agricultural education professors indicated that they met their mentors during graduate school (32.52 percent) or during their first professional position following graduate school (21.84 percent). Similarly, the stage during which the mentors were reported to have been most important to the professional growth of the protégé was
during graduate school (41.26 percent) or during the first professional position following graduate school (27.18 percent).

These findings are compatible with mentoring theory which indicates that it is during the early part of one's career when mentoring is most useful to career growth (Reohr, 1981). Levinson (1978) suggested that it is more a matter of age readiness than career readiness, indicating that the most significant mentoring occurs before protegés reach the age of forty.

Age differences between mentors and protegés in the study ranged from zero to 35 years. The mean age difference was 16.11 years. Levinson (1978) reported that mentors typically are about one-half generation (eight to fifteen years) older than their protegés. Younger mentors are often viewed as peers and older mentors may take on parental roles. About two of five agricultural education professors indicated that their mentors were eight to fifteen years older. However, over 62 percent of the respondents indicated that their mentors were between eight and twenty years older.

Mentors are often selected for their accomplishments in their professional fields. They typically are considered to have a significant degree of influence in their fields and
are likely to have graduated from prestigious institutions. Nearly one-half of the mentors described in the study received their highest degree from one of six institutions: The Ohio State University, Iowa State University, Cornell University, University of Illinois, The Pennsylvania State University and Oklahoma State University.

Agricultural education professors felt that their mentors were very influential in the field of agricultural education. A mean level of influence of 4.32 was reported on a five-point scale.

**Extent and functions of mentoring relationships of agricultural education professors**

The extent of mentoring influence on professional career development experienced by agricultural education professors was determined by their responses to twenty-seven mentoring function items. Scores for each item were summed to generate a composite mentoring score which provided an overall measure of each individual's perception of their mentoring experiences. Transformed scores for each item ranged from 0 to 16. The highest possible composite mentoring score was 432 which indicated a very positive mentoring experience. High composite scores indicated cases where agricultural education professors believed their mentors had
performed many of the functions described. The lowest possible mentoring score was 0, indicating a strongly negative response to each mentoring function.

Actual composite mentoring scores ranged from 197 to 423. Only about 11 percent of agricultural education professors had composite mentoring scores of 378 or higher, indicating their professional careers had been highly influenced by a mentor. It is likely that these individuals have experienced more comprehensive mentoring than their colleagues reporting lower composite scores. The extensive-ness and intensiveness of the mentoring relationships described by these individuals may be similar to the comprehensive types of mentoring described by the subjects in Levinson's (1978) research. As the composite mentoring scores decrease, it is probable that the intensity and comprehensiveness of the relationships also decline. Relationships described by lower composite mentoring scores may resemble those described by Kram (1985) as role-models, or by Shapiro et al. (1978) as peer pals or guides. When the composite mentoring score was used to provide a measure of the overall extent of the relationship, it was evident that more intense, comprehensive mentoring relationships were relatively rare.

Twenty-seven mentoring functions were identified for inclusion on the research instrument. Eleven of the items
received a mean rating of 12.82 or higher on a transformed scale of 0 to 16. The type of support provided by each function can be discussed according to Kram's (1985) categorization of mentoring functions into "career" functions or "psychosocial" functions.

Career functions are "those aspects of a relationship that enhance advancement in an organization" (Kram, 1985 p. 24). Psychosocial functions are "those aspects of a relationship that enhance an individual's sense of competence, identity and effectiveness in a professional role" (Kram, 1985, p. 32). Five of the eleven mentoring functions with the highest mean responses may be considered career functions. These items are: 1) influenced by career in a positive way, 2) used his/her influence to assist my advancement by recommending me for promising opportunities, 3) been a model professional after whom I have sought to pattern myself, 4) recognized my potential as an effective educator, and 5) passed on personal experience to me. Each of these functions is possible due to the mentor's position, experience and/or professional influence; characteristics common to career functions.

The remaining six of the eleven highest scoring mentoring functions may be considered as meeting psychosocial needs according to Kram's (1985) model. These items
are: 1) took a personal interest in the development of my career, 2) supported my efforts to advance in my career, 3) encouraged me to pursue long-range career goals, 4) expressed pride in my success, 5) been someone I could rely on for support during critical times, and 6) helped me develop a sense of confidence in my own ability to produce results. These six functions are possible because of the quality of the relationship between the mentor and protégé. An emotional bond must accompany a professional acquaintance in order for these functions to be fulfilled.

Of the 16 lowest scoring items in the mentoring function scale of the questionnaire, all but 1 appeared to be a career function. The single psychosocial function among the low-scoring items was: praised my efforts in the presence of others. Apparently, professors in agricultural education perceive both types of mentoring functions to be important to their overall professional growth. It would seem that the mentoring relationships of agricultural education professors go beyond professional role models. The quality of the relationship appears to be important to the extent that it fosters an environment in which trust is established and friendship developed.

Selected demographic variables were used to group agricultural education professors in order to compare their composite mentoring scores. Mentoring theory proposes that
mentoring is most important to young people beginning their careers. Agricultural education professors were grouped by academic rank and by age to determine if the younger, less experienced professors reported higher levels of mentoring influence on their professional career development. It was believed that those professors who perceived themselves to currently be benefiting from a mentoring relationship would be more likely to have a higher composite mentoring score than those professors whose mentoring occurred in the past.

When their composite mentoring scores were compared across academic ranks, no significant difference among the groups was observed. Similarly, no difference among age groups was observed. It is possible that the research instrument was incapable of detecting such differences because respondents were not asked to identify the specific timing of the relationship described. However, respondents were asked to indicate the career stage during which their mentor was most important to their professional career growth. Respondents were grouped by career stage during which their mentor was most important, and their composite mentoring scores compared. No significant difference in composite mentoring score was observed.
Although these findings are surprising, it is possible that the professional socialization of future agricultural education professors that occurs during graduate school fulfills some of the socializing functions thought to take place during early career stages with the help of a mentor. The support of a mentor appears to be important throughout the professional career of agricultural education professors. It is also possible that differences that may actually have existed among groups were not detected due to the way in which the instrument was constructed.

Male and female agricultural education professors were compared with regard to their composite mentoring scores and no significant difference was observed. Shelton (1982) and Phillips (1977), among others, have indicated that mentoring among professional women is less common than among men. The findings of this study do not support that position; however, the extreme difference in the sizes of the groups may have affected the test outcome.

Mentoring theorists have speculated that in some cases, a person may receive mentoring because of his or her outstanding academic performance. Individuals with high grade point averages may be selected by professors for mentoring due to their potential for achieving. To examine the validity of this theory among agricultural education professors, they were grouped by grade point averages and their
mentoring scores compared. No significant difference in mentoring scores was observed when respondents were grouped by graduate grade point averages or by undergraduate grade point averages. Apparently, academic achievement as evidenced by grade point averages is not a factor in determining whether one receives mentoring in agricultural education.

**Career development of agricultural education professors**

The study was concerned with the career development of agricultural education professors. This section presents descriptive data pertaining to professors’ career development. Typical indicators of career growth or development were selected for inclusion in the study and comparisons of performance on those indicators were made using the composite mentoring score as a categorizing variable.

Most university agricultural education faculty holding the rank of full professor (73.12 percent) had held one or more administrative positions during their professional career. About 60 percent of the associate professors and 45 percent of the assistant professors had done likewise.

Nearly 65 percent of the full professors had held a leadership position at the national level, while 50 percent and 40 percent of the associate and assistant professors,
respectively, had held national leadership positions. It would be expected that professors in higher ranks would be more likely to have held more national leadership positions simply because they have had more time to achieve such accomplishments. However, these findings are also compatible with adult development theory. As people mature in their careers, they seek new challenges such as those offered in administration. They also have well-defined philosophies and goals, and are interested in making a contribution to their profession. Serving in a national leadership position offers an opportunity for professors to have an influence on their profession and to receive recognition for their contributions.

Professional awards at the national level had been received by 40 percent, 25 percent and 30 percent of the full, associate and assistant professors respectively. About 68 percent, 50 percent and 45 percent of the full, associate and assistant professors, respectively, had received one or more awards at the state or local level. It was interesting to note that more of the assistant professors had received national awards than had the associate professors. The relatively high percentages of professors having received recognition at the state and local levels is indicative of high quality professional performance among university agricultural education faculty.
Most professors of all ranks had published at least one journal article (86 percent). Associate professors contained the largest group of faculty that had not published any articles (18.92 percent). About 11 percent of the full professors and 14 percent of the assistant professors had yet to publish. Given the importance of publishing activity to academic performance, it is surprising that so many agricultural education professors have not published an article. It is expected that professors in higher ranks would have more publications as they likely have had more opportunity to publish, through contacts with colleagues and graduate students. Finkelstein (1984) indicated that publishing early in one’s career is important for continued publishing activity.

Books had been authored or coauthored by about 50 percent of the full professors, 31 percent of the associate professors and 9 percent of the assistant professors. Again, faculty in higher ranks would be expected to have had more activity in book publications due to their more extensive experience in the profession and greater number of contacts from whom to generate information or with whom to write.

There was a very wide range in the number of students for whom agricultural education faculty had served as the
major advisor. Nearly one-fourth of the full professors had been the major advisor to over 50 master’s students, while 25 percent of the assistant professors had yet to serve in the major advisor role. About 80 percent of the associate professors and 89 percent of the full professors had acted as major advisor to 1 or more master’s students.

Many fewer professors had served as the major advisor to a doctoral student, which would be expected because many agricultural education departments do not offer doctorate degrees. The percentage of assistant, associate, and full professors who had advised one or more doctoral students was 80, 45, and 53 percent, respectively.

One or more grants had been received by most professors in all ranks. About 88 percent, 81 percent, and 84 percent of the assistant, associate and full professors had received one or more grants during their professional career. It is interesting that a higher percentage of the assistant professors had received at least one grant than had the associate or full professors. It is possible that new professors enter the profession with the expectation that pursuing and receiving grants is part of their job.

While nearly all professors reported being satisfied with their current jobs and with their career progress, the mean response to each question increased as academic rank increased. On a scale of 1 to 5, the mean level of satis-
faction with one's current position was 3.72 for the assistant professors. For associate professors, the mean was 3.99, and for full professors it was 4.22 with standard deviations of .98, .87, and .78 respectively. Similarly, the mean level of satisfaction with one's career progress increased from 3.74 for assistant professors to 4.00 for associate professors, and was 4.37 for full professors (standard deviations were 1.07, .85, and .75 respectively). Increasing levels of satisfaction with one's career would be expected as academic rank increased. As professors mature in their careers, they gain feelings of competence and success. If such feelings are not developed, professors most likely leave the profession to pursue other interests.

Associate and full professors were grouped by their composite mentoring score, and their performance on the career development indicators was compared. Assistant professors were excluded from the data analysis for this subsection. It was expected that those professors whose careers had been highly influenced by a mentor would have performed at a higher level on the career development variables than those who reported low levels of mentoring influence or no mentoring. Queralt (1981) concluded that mentorships were important to the career development of academicians. Interestingly, no differences were found
among the mentoring score groups on the following objective career development measures: administrative positions held, national leadership positions held, national awards received, professional awards received at the state or local level, articles published, books authored or coauthored, doctoral students advised, or grants received. Apparently, other variables, such as the expectations of the department and/or institution by which one is employed, and the individual’s own motivation to achieve, have more influence on career performance than does one’s mentoring experiences.

A significant difference was observed among the mentoring score groups when the number of master’s students advised was considered. It is possible that the people who experienced intense mentoring relationships were interested in helping to provide such experiences for others. The attitude of such people may, in itself, attract students to them as major professors. One would question why no differences were found among the mentoring score groups when the number of doctoral students advised was considered. It is possible that by the doctoral level, students are more secure about their ability to complete the program and are more interested in achieving specific experiences regardless of the personal characteristics and attitudes of the professor with whom they work.
Consideration of the respondents' satisfaction with their current positions and satisfaction with their career progress when they were grouped by mentoring score revealed no significant differences among the groups. It is interesting to note, however, that when the respondents reporting no mentoring experience were dropped from the one-way analysis of variance, a significant difference in the three composite mentoring groups on both variables was observed. It is possible that when four groups were used, the small number of respondents in three of the groups affected the test outcome.

Relationships between indicators of career development and mentoring

It was expected that a relationship existed between indicators of career development and the composite mentoring scores of associate and full professors. However, no significant relationships were observed among the following objective career development variables and the composite mentoring score: years to reach the rank of full professor (from associate professor), years to reach associate professor (from assistant professor), administrative positions held, national leadership positions held, national awards received, professional awards received at the state or local level, articles published, books authored or coauthored, and doctoral students advised.
A positive correlation between mentoring and the number of master's students advised was observed, as was a relationship between mentoring and the number of grants received. Although both relationships were statistically significant, the small correlation coefficient in both cases ($r=0.20$) is too small to be of practical significance.

A positive relationship was observed between the composite mentoring score and the two subjective measures of career satisfaction. In both cases, however, although the relationships were highly statistically significant, the low correlation coefficients make the practical relationships questionable. When the enormity of the task at hand is considered; that is, trying to determine what influences an individual's satisfaction with their career, many factors are likely to contribute. If a single factor, in this case, the presence of a strong mentoring relationship, can explain even a small percentage of the variance in career satisfaction, it should not be disregarded. It would appear that mentoring is a factor that does contribute to one's satisfaction with one's job, and that new professors could benefit from such relationships.
CHAPTER VI. SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

This chapter contains a summary of the study and conclusions and recommendations based on the study's findings. The general purpose of the study was to determine the extent to which the professional careers of university agricultural education faculty have been influenced by a mentor, and to examine the relationship between mentoring and selected indicators of career development.

Summary of the Study

Making the most of available human resources has become a top priority in institutions nationwide, including institutions of higher education. Maximizing the potential of university faculty is essential for long-term effectiveness of any university. Maintaining vitality and enthusiasm is important to the sustained productivity and effectiveness of university faculty. The purpose of this study was to examine the influence of mentoring on the career development of university faculty in agricultural education.

The study utilized a descriptive research design and was exploratory in nature. The target population was all agricultural education professors employed in 4-year institutions throughout the United States, and holding a minimum academic rank of assistant professor. A total of 279 individuals were identified for inclusion in the study. A mail
questionnaire was sent to all 279 university agricultural education faculty in the United States. Of the 279 individuals in the accessible population, 237 responded, and usable instruments were returned by 220 individuals. Data were analyzed using the SPSSX subprograms of frequencies, Pearson correlations, one-way analysis of variance, and t-tests. Inferential statistics were used to enable the researcher to discuss differences among groups.

University agricultural education professors in the study were typically white males, holding doctorate degrees in agricultural education. Respondents ranged in age from 28 to 68 years. Over 42 percent of the respondents were full professors, about one-third were associate professors, and the remaining one-fifth held the rank of assistant professor. The mean undergraduate grade point average of agricultural education professors was 2.75 and the mean graduate grade point average was 3.73. Professors currently holding associate or full professor rank took 4.71 years to move from assistant to associate professors, and full professors took an additional 5.37 years to reach the full professor rank. Most university agricultural education professors felt that their professional lives had been positively influenced by one or more people who were referred to as mentors throughout the study.
Those persons identified as mentors of university agricultural education professors were similar to the professors themselves: white males, college professors with doctorate degrees in agricultural education. Most mentors were from ten to twenty years older than their protégés and were described as being of a similar ethnic affiliation and social class. Mentors typically met their protégés during the protégé's graduate program or their first professional position following graduate school. Graduate school was identified by the largest group of respondents as being the career stage during which the mentor was most influential to the protégé's professional career development. Mentors were largely considered to have considerable influence in their professional fields.

Twenty-seven mentoring functions were identified for inclusion in the study. Responses to the items were scored on a sixteen-point transformed scale, and means ranged from 6.87 to 14.26. The mean responses to the twenty-seven mentoring function items were summed for each individual to generate a composite mentoring score which indicated the respondents' overall perception of the extent to which their career had been influenced by a mentor. Composite mentoring scores ranged from 197 to 423. About 11 percent of the respondents had composite mentoring scores of 378 or higher, indicating high levels of mentoring. Moderate mentoring
experiences were identified for slightly over 65 percent of the respondents, and over one-fifth had low mentoring scores. Only about six percent of agricultural education professors reported a lack of career mentoring.

The composite mentoring scores of respondents were compared when respondents were grouped by current academic rank, age, gender, undergraduate and graduate grade point averages, and no significant differences were observed.

Information was collected regarding the respondents' performance on commonly accepted indicators of professional career development, and reported by academic rank. Assistant professors reported having held a mean of .47 administrative positions thus far in their careers. For associate and full professors, the mean number of administrative positions held was .73 and .89 respectively. The range of administrative positions held was from zero to four.

Nearly one-half of university agricultural education professors said they had held one or more national leadership positions. Mean numbers of positions held for each rank were .67, .88, and 1.54 for assistant, associate, and full professors respectively.

Nearly one-third of the respondents had received recognition through a national award. The respective mean number of administrative positions for assistant, associate, and
full professors was .33, .24, and .50.

Over 55 percent of the respondents had received a professional award for teaching, research, advising or service at the state or local level. Assistant, associate, and full professors had received .77, .84, and 1.60 professional awards respectively.

The number of journal articles published by university agricultural education professors ranged from zero to 95 with respective means as follows: 4.35, 9.34, and 12.62 for assistant, associate, and full professors.

About 35 percent of the respondents had authored or co-authored a book or a chapter in one or more books. Assistant, associate, and full professors had authored or coauthored .14, .61, and 1.53 books respectively.

About 44 percent of the respondents had served as a major advisor for one or more doctoral students. Respective mean number of doctoral students advised by assistant, associate, and full professors was 1.26, 5.21, and 9.60.

As would be expected, the number of master’s students advised by professors in each rank was considerably higher. Only about 17 percent of the respondents had never advised a master’s student. The mean number of master’s students advised by assistant, associate, and full professors was 9.47, 20.45, and 48.58 respectively.
One or more grants of varying dollar amounts had been received by most professors in the study (86 percent). The mean number of grants received ranged from 3.35 for assistant professors to 9.84 for full professors. Associate professors had received a mean of 6.29 grants.

Composite mentoring scores were used to group respondents to compare their performance on selected indicators of career development. No significant differences were found among the mentoring score groups when the following variables were considered: years to reach full professor (from associate professor), years to reach associate professor (from assistant professor), administrative positions held, national leadership positions held, national awards received, professional awards received at the state or local level, articles published, books authored or coauthored, doctoral students advised, or grants received. A significant difference was observed among the mentoring score groups in the number of master's students advised.

Similarly, no significant difference among the mentoring score groups was observed in respondents' satisfaction with their current positions or in their satisfaction with their general career progress.

The indicators of career development were correlated with the composite mentoring scores of respondents to determine the extent of the relationship. At the .05 level,
significant relationships existed between mentoring score and the number of grants received, and the number of master's students advised. Significant relationships also were observed between mentoring score and satisfaction with one's current position and satisfaction with career progress.

Conclusions

The following conclusions were based on the findings of the study:

Most university agricultural education professors perceive their professional careers to have been significantly influenced by another person or persons. The word mentor was used to describe these significant others in this study. The extent of mentoring influence on the professional development of agricultural education faculty varies widely, and only a few individuals appear to have experienced intensive, comprehensive relationships that are typical of "true" mentorships. The majority of agricultural education faculty have experienced relationships that may more appropriately be described as role modeling, counseling, guiding, etc.

Mentors of agricultural education professors provide many functions for their protégés. Protégés consider functions pertaining to both career development and
psychosocial development to be important.

The extent of mentoring influence on the professional career development of university agricultural education faculty does not differ among faculty of different academic rank, age, gender or grade point average. It appears that the opportunity to be mentored exists among all faculty. However, in this study it was not possible to determine whether professors were describing current mentoring relationships or those that had occurred at some time in the past. It is possible that younger professors were currently experiencing mentoring while older professors had experienced their mentorships at some earlier time. Some older faculty were likely to have been currently serving as a mentor.

Mentors of university agricultural education faculty appear to fit the theoretical mentoring model in many respects. They are similar to their protegés in race, social class, education and professional field. They are about one-half generation older than their protegés, and are considered by their protegés to be highly influential in their professional fields. They were most important to the protegé early in his or her professional career.

The performance of university agricultural education faculty on selected indicators of career development
improves as professors move through the academic ranks. It appears, however, that although most professors are experiencing professional growth and development, such development takes place according to an individual rather than an institutional timeline. That is, there is not an apparent standard of performance that holds true for professors in each academic rank; rather there is a wide range of performance on career development indicators within each rank.

The performance of university agricultural professors on most indicators of career development does not differ among individuals experiencing different levels of mentoring influence. It appears that other factors determine one's professional performance on selected variables. Such other factors might include the level of motivation of the individual and the expectations of the department and/or institution by which the individual is employed. It is possible that one's mentoring experience may have an influence on other aspects of one's professional development such as the development of educational philosophy and attitude regarding the profession and the work one does.

Mentoring influence is not related to the performance of university agricultural education professors on most objective indicators of career development. It is, however, related to the individuals feelings regarding his or her satisfaction with his or her career. People experiencing
higher levels of mentoring influence appear to feel more satisfied with their current jobs and with their general career progress or growth. It is possible that the emotional support gained through a mentoring relationship provides agricultural education professors with the security of knowing they have a person to whom they can turn for advice or assistance. Such support may result in confidence regarding one’s competence and performance.

Recommendations

The following recommendations are made to the agricultural education profession:

Agricultural education faculty are influential in the career development process of younger professors and graduate students. All faculty should keep in mind the potential impact of their behavior and attitudes on the profession. Efforts should be made by each individual to develop and maintain realistic but positive attitudes regarding the profession, and high professional standards should be upheld.

Agricultural education professors benefit from a variety of functions performed by their mentors. Many of these functions pertain directly to the professional growth of the protegé; however, functions that benefit the psychosocial development of the protegé are also considered to be
important. Agricultural education professors who find themselves in mentoring roles should recognize the importance of the quality of the mentoring relationship, and strive to develop those aspects of the relationship that benefit both and professional and personal lives of their proteges.

Recommendations for Further Research

A similar study should be conducted with a small sample of professionals in agricultural education. A case study approach could be utilized to generate in-depth information pertaining to the role of mentoring in the career development process of agricultural education professors. Such a study would help define the precise role of mentors and would assist in the development of a specific definition of mentoring among university agricultural education faculty.

The relationship between career development and mentoring should be explored among professors in other academic disciplines to determine whether there is a universal mentoring role among academicians. A more specific definition of mentoring would be necessary to help ensure understanding of the types of relationships being considered.

The importance of the basic aspects of a mentorship—its timing, the nature of the personal relationship between the mentor and protege, and the specific type of assistance
offered—should be further explored among university faculty in agricultural education.

The relationship between mentoring and teaching performance should be explored.

Research should be conducted pertaining to the benefits of serving as a mentor to other agricultural education faculty.
LITERATURE CITED


Everett, Susan S. 1981. The importance and implementation of management functions and activities in agricultural teacher education programs. Doctoral dissertation, Library, Iowa State University, Ames.


ACKNOWLEDGEMENTS

Sincere thanks are extended to Dr. David L. Williams, my major professor, for providing an experience through which I learned much, not only about academics, but about myself as well. Dr. Williams’ encouragement, direction and unrelenting belief in me were greatly appreciated.

To the following individuals who served on my graduate committee, much gratitude is expressed:

Dr. Robert A. Martin, for always finding time in his very busy schedule to listen and share his thoughts.

Dr. W. Wade Miller, for his enjoyable sense of humor and his steadfast grasp on reality.

Dr. Anton J. Netusil, for making me think.

Dr. D. Michael Warren, for providing a different and important perspective on agricultural education.

Special thanks to my fellow graduate students who provided a most important dimension of my graduate experience—that of friendship. The laughs, frustrations, and late-night conversations we shared will long be remembered.

To my husband and best friend, Blair, I am especially grateful. His support, love, and encouragement during the good times and the hard times made all the difference.

Finally, thanks to my son, Klint, whose arrival provided the motivation necessary to help me successfully achieve this important goal.
APPENDIX A.

COVER LETTER AND DATA COLLECTION INSTRUMENT
Dear Faculty Member;

Many institutions of higher education are paying close attention to the development of their human resources. Current conditions of limited resources have resulted in an increased desire by administrators to maximize the contribution of existing faculty members. Educators who progress in their careers are more likely to maintain their vitality and enthusiasm.

Most people can think of at least one person who has significantly influenced their professional career. We are conducting a national study to examine the impact of "significant others" on the professional career development of agricultural education personnel. We are asking all agricultural education faculty members to participate.

Your responses will be held in strict confidence and used for statistical purposes only. The code number assigned to your questionnaire will be used only to identify those who have not responded to the survey so that we may send a follow-up letter. All instruments will be destroyed after the data are analyzed. Your participation in the study is voluntary. If you choose not to participate, please return the blank questionnaire in the addressed, stamped envelope.

We encourage you to take a few minutes from your busy schedule to complete and return the enclosed questionnaire. Your input will help us better understand the process of career development among agricultural educators.

Thank you for your assistance.

Sincerely,

Kresha Eastman
Graduate Assistant

Dr. David L. Williams
Professor & Head
PROFESSIONAL CAREER DEVELOPMENT QUESTIONNAIRE
FOR AGRICULTURAL EDUCATION FACULTY

PART 1: Please respond to the following statements in the spaces provided.

1. As you reflect on your professional career, are there people who stand out as having been significantly important to your professional development by taking on the role of informal teacher, guide or advocate?

   ___Yes. Please indicate the number of people who have influenced your professional career development by serving as informal teachers, guides or advocates. ____________________________

   ___No. PLEASE SKIP QUESTIONS IN PARTS 1 AND 2. GO DIRECTLY TO PART 3.

Below are statements concerning the role of "significant others" in your professional career development. For each item, please make two responses. First, indicate whether you agree or disagree with the item by circling "A" if you agree, or "D" if you disagree. Secondly, indicate the extent of your agreement or disagreement by circling the number on the one-to-five scale which best represents the strength of your feeling. The one (1) represents slight agreement/disagreement and the five (5) represents strong agreement/disagreement. If you neither agree nor disagree, draw a circle around both the "A" and "D" and do not complete the scale.

Please think about the person who has most influenced you in your professional career development and respond to the following statements. (The person you identify does not have to currently be living.)

During my professional career there has been at least one person who has been significantly important to my career development. He/she has:

Example: served as a role model. Slight Strong
          A D 1 2 3 4 5

2. taken a personal interest in the development of my career. A D 1 2 3 4 5
3. supported my efforts to advance in my career. A D 1 2 3 4 5
4. influenced my career in a positive way. A D 1 2 3 4 5
5. praised my efforts in the presence of others. A D 1 2 3 4 5

PLEASE COMPLETE THE BACK SIDE OF THIS PAGE
6. used his/her influence to assist my advancement by recommending me for promising opportunities.  
   Slight: A, D; Strong: 1, 2, 3, 4, 5

7. been a model professional after whom I have sought to pattern myself.  
   Slight: A, D; Strong: 1, 2, 3, 4, 5

8. been unwilling to discuss critical issues with me.  
   Slight: A, D; Strong: 1, 2, 3, 4, 5

9. assisted me by voluntarily taking on the role of teacher to improve my skills.  
   Slight: A, D; Strong: 1, 2, 3, 4, 5

10. encouraged me to pursue long-range career goals.  
    Slight: A, D; Strong: 1, 2, 3, 4, 5

11. helped me set realistic performance goals.  
    Slight: A, D; Strong: 1, 2, 3, 4, 5

12. helped me realistically assess my performance.  
    Slight: A, D; Strong: 1, 2, 3, 4, 5

13. cautioned me to avoid actions that might harm my career.  
    Slight: A, D; Strong: 1, 2, 3, 4, 5

14. expressed pride in my success.  
    Slight: A, D; Strong: 1, 2, 3, 4, 5

15. been someone I could rely on for support during critical times.  
    Slight: A, D; Strong: 1, 2, 3, 4, 5

16. been hesitant to offer career guidance.  
    Slight: A, D; Strong: 1, 2, 3, 4, 5

17. given me objective criticism.  
    Slight: A, D; Strong: 1, 2, 3, 4, 5

18. recognized my potential as an effective educator.  
    Slight: A, D; Strong: 1, 2, 3, 4, 5

19. assisted me in learning the "ropes" of the profession.  
    Slight: A, D; Strong: 1, 2, 3, 4, 5

20. helped me to establish relationships with others who could assist in my development.  
    Slight: A, D; Strong: 1, 2, 3, 4, 5

21. helped me understand how I fit into the profession.  
    Slight: A, D; Strong: 1, 2, 3, 4, 5

22. helped me become committed to my career.  
    Slight: A, D; Strong: 1, 2, 3, 4, 5

23. helped me publish an article or book.  
    Slight: A, D; Strong: 1, 2, 3, 4, 5
24. passed on personal experiences to me.  
25. provided guidance when I was unsure of how to tackle a problem.  
26. helped me develop a sense of confidence in my own ability to produce results.  
27. insisted I stand on my own at all times.  
28. assisted me in getting an important job done.  

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**PART 2:** Please think about the person who has most influenced you in your professional career development and answer the following questions with him/her in mind.  

29. What is this person's gender? Male___ Female___  
30. What is this person's race?  
   White___  
   Black___  
   Asian or Pacific Islander___  
   American Indian___  
   Other (specify)_________________________  

31. Would you consider this person's ethnic affiliation to be similar or different from yours? Similar___ Different___  
32. Is this person's academic field agricultural education? Yes___ No___ (please specify)__________________________________________  
33. How would you describe this person's social class?  
   Higher than mine___  
   About equal to mine___  
   Lower than mine___  
   Don't know___  
34. About how much age difference is there between you and this person? __________ (please circle older or younger)  
35. If the person you identified is a college professor, what was his/her academic rank at the time he/she was most influential to you?  
   Assistant professor___  
   Associate professor___  
   Full professor___  
   Don't know___  

If the person is not a college professor, please indicate his/her occupation. ________________________________

PLEASE COMPLETE THE BACK SIDE OF THIS PAGE
36. How influential in his/her profession would you consider this person to be?
   Has little influence
   Very influential
   1 2 3 4 5

37. When you met this person, at what point in your career were you?
   In graduate school
   In my first professional position
   In a subsequent professional position
   Other (please specify)

38. At what stage in your professional career progress was this person most important to your career growth?
   In graduate school
   In my first professional position
   In a subsequent professional position
   Other (please specify)

39. What is the highest degree held by this person?
   Bachelors
   Masters
   Doctorate
   Other (please specify)
   Don't know

40. From what institution did this person graduate with his/her highest degree?
   _______________________________
   Don't know

PART 3: Please answer the following questions as they pertain to you.

41. What is your current academic rank?
   Assistant professor
   Associate professor
   Full professor
   Other

42. How many years were you (or have you been) in each academic rank?
   Assistant professor
   Associate professor
   Full professor

43. Do you currently or have you ever held any administrative positions? No Yes (please specify below)
   Department or unit head/chair/leader
   Assistant Dean
   Associate Dean
   Dean
   Other (e.g. high school principal)
44. Indicate on the following list, any national leadership positions you have held.
   AATEA officer (please specify)
   AVA officer (please specify)
   AIAEE officer (please specify)
   AATEA Committee chairperson (please specify)
   NAERM chairperson
   Journal of AATEA editor
   Agricultural Education Magazine editor
   Other

45. Indicate any national professional awards received.
   AATEA Distinguished lecturer
   AATEA Distinguished service award
   AATEA Young member award
   AATEA Journal author of the year
   NAERM Outstanding research
   Other

46. Indicate any outstanding teaching, advising, research or service awards you have received in your professional career.

47. How many articles in the following journals have you authored or co-authored?
   Journal of AATEA
   NACTA Journal
   Journal of Extension
   The Agricultural Education Magazine
   Journal of Vocational Education Research
   Vocational Education Journal
   Other

48. How many books have you authored or co-authored?

49. For how many students have you served as the major professor?
   Doctorate
   Masters

50. How many competitive grants in each of the following categories have you received?
   Less than $25,000
   $25,001 to $50,000
   $50,001 to $99,999
   Over $100,000

51. In general, how satisfied are you with your current job?
   Very dissatisfied
   1 2 3 4 5
   Very satisfied

52. In general, how satisfied are you with your career progress?
   Very dissatisfied
   1 2 3 4 5
   Very satisfied

PLEASE COMPLETE THE BACK SIDE OF THIS PAGE
PART 4: Please answer the following questions as they pertain to you.

53. What is your gender? Male_____ Female_____ 

54. What is your current age? ________years 

55. What is the highest degree you have earned? 
   Bachelors_____ 
   Masters_____ 
   Doctorate_____ 

56. What was your major field of study for the highest earned degree? 
   ______________________________________________________

57. At the time you graduated with your highest degree, what was the student population of the institution granting the degree? 
   ______________________________________________________

58. What is the student population of the institution by which you are currently employed? 
   ______________________________________________________

59. What was your cumulative grade point average at the time you earned each degree? 
   Bachelors_____ 
   Masters_____ 
   Doctorate_____ 

60. How many agricultural educators (college or university level) currently in the profession do you think would identify you as someone who significantly influenced their professional career development? ________________________________

Please use the space below to make comments regarding those people who have made a major impact on your professional career development.
APPENDIX B.

FOLLOW-UP LETTER
May 10, 1988

Dear Faculty Member;

About three weeks ago you received a request to complete a questionnaire concerning the importance of developmental relationships to the career growth of agricultural educators. This second mailing represents a follow-up that again requests your help in completing and returning the questionnaire.

We realize you are very busy; however, your response is important to the results of this study. By responding, you will be helping the agricultural education profession better understand factors that enhance the career development of its members.

The information you provide will be kept strictly confidential and the reporting of results will be limited to group summary form. All instruments will be destroyed after the data are analyzed. If you choose not to participate, please return the blank questionnaire in the addressed, stamped envelope. This will indicate that you do not want to be in the study and that no further follow-up attempts will be made.

If you have recently completed and returned the questionnaire, please disregard this request.

Thank you for taking time to assist us.

Sincerely,

Kresha Eastman
Graduate Assistant

David L. Williams
Professor and Head
APPENDIX C.
RESPONSES OF ASSISTANT, ASSOCIATE, AND FULL PROFESSORS
TO INDIVIDUAL CAREER DEVELOPMENT ITEMS
Table 20. Selected indicators of career development of university agricultural education faculty

<table>
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<th>Associate Professor N=74</th>
<th>Full Professor N=93</th>
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<td>National leadership positions</td>
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<tr>
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Table 20. Continued

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<th>Associate Professor</th>
<th>Full Professor</th>
</tr>
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<tbody>
<tr>
<td>N=43</td>
<td>n=43</td>
<td>N=74</td>
<td>N=93</td>
</tr>
</tbody>
</table>

National awards received:
- AATEA Distinguished Lecturer: 0 (0.00%), 0 (0.00%), 5 (5.38%)
- AATEA Young Member Award: 0 (0.00%), 1 (1.35%), 2 (2.15%)
- AATEA Jour. Article of the Year: 1 (2.32%), 3 (4.05%), 6 (6.45%)
- AATEA Outstanding Research Paper: 3 (6.98%), 0 (0.00%), 1 (1.08%)
- Other National Award: 10 (23.26%), 14 (18.92%), 25 (26.88%)

Professional awards received at state or local level (1 or more):
- Teaching: 8 (18.60%), 27 (36.49%), 34 (36.56%)
- Advising: 0 (0.00%), 6 (8.11%), 5 (5.38%)
- Research: 0 (0.00%), 2 (2.70%), 6 (6.45%)
- Service: 4 (9.30%), 6 (8.11%), 26 (27.96%)
- Other: 15 (34.88%), 10 (13.51%), 26 (27.96%)

Journal articles published:
- Journal of AATEA:
  - 1 to 3: 19 (44.19%), 28 (37.83%), 21 (22.58%)
  - 4 to 8: 2 (4.65%), 10 (13.51%), 12 (12.90%)
  - 9 to 15: 0 (0.00%), 2 (2.70%), 4 (4.30%)
  - Over 15: 0 (0.00%), 0 (0.00%), 1 (1.08%)
- Journal of NACTA:
  - 1 to 3: 10 (23.26%), 14 (18.92%), 22 (23.66%)
  - Over 3: 0 (0.00%), 0 (0.00%), 6 (6.45%)
- Journal of Extension:
  - 1 to 3: 3 (6.98%), 6 (8.11%), 9 (9.68%)
  - Over 3: 0 (0.00%), 2 (2.70%), 0 (0.00%)
<table>
<thead>
<tr>
<th>Indicator</th>
<th>Assistant Professor</th>
<th>Associate Professor</th>
<th>Full Professor</th>
</tr>
</thead>
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<td>1 1.08</td>
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APPENDIX D.

HUMAN SUBJECTS RESEARCH APPROVAL FORM
INFORMATION ON THE USE OF HUMAN SUBJECTS IN RESEARCH
IOWA STATE UNIVERSITY
(Please follow the accompanying instructions for completing this form.)

1. Title of project (please type): An Analysis of the Role of Mentoring on Professional Development of University Agricultural Educators.

2. I agree to provide the proper surveillance of this project to insure that the rights and welfare of the human subjects are properly protected. Additions to or changes in procedures affecting the subjects after the project has been approved will be submitted to the committee for review.

Kresha Eastman
Typed Name of Principal Investigator

3. Signatures of others (if any) Date Relationship to Principal Investigator

4. ATTACH an additional page(s) (A) describing your proposed research and (B) the subjects to be used, (C) indicating any risks or discomforts to the subjects, and (D) covering any topics checked below. CHECK all boxes applicable.

- Medical clearance necessary before subjects can participate
- Samples (blood, tissue, etc.) from subjects
- Administration of substances (foods, drugs, etc.) to subjects
- Physical exercise or conditioning for subjects
- Deception of subjects
- Subjects under 14 years of age and/or Subjects 14-17 years of age
- Subjects in institutions
- Research must be approved by another institution or agency

5. ATTACH an example of the material to be used to obtain informed consent and CHECK which type will be used.

- Signed informed consent will be obtained.
- Modified informed consent will be obtained.

6. Anticipated date on which subjects will be first contacted: April 20 1988
Anticipated date for last contact with subjects: May 20 1988

7. If Applicable: Anticipated date on which audio or visual tapes will be erased and/or identifiers will be removed from completed survey instruments: Sept. 15 1988

8. Signature of Head or Chairperson Date Department or Administrative Unit

9. Decision of the University Committee on the Use of Human Subjects in Research:
- Project Approved
- Project not approved
- No action required

George G. Karas
Name of Committee Chairperson Date Signature of Committee Chairperson