



Mentoring and Undergraduate Academic Success: A Literature Review

Author(s): Maryann Jacobi

Source: *Review of Educational Research*, Vol. 61, No. 4 (Winter, 1991), pp. 505-532

Published by: [American Educational Research Association](#)

Stable URL: <http://www.jstor.org/stable/1170575>

Accessed: 28/03/2014 11:12

Your use of the JSTOR archive indicates your acceptance of the Terms & Conditions of Use, available at
<http://www.jstor.org/page/info/about/policies/terms.jsp>

JSTOR is a not-for-profit service that helps scholars, researchers, and students discover, use, and build upon a wide range of content in a trusted digital archive. We use information technology and tools to increase productivity and facilitate new forms of scholarship. For more information about JSTOR, please contact support@jstor.org.



American Educational Research Association is collaborating with JSTOR to digitize, preserve and extend access to *Review of Educational Research*.

<http://www.jstor.org>

Mentoring and Undergraduate Academic Success: A Literature Review

Maryann Jacobi

University of California—Los Angeles

Despite a growing body of research about mentoring, definitional, theoretical, and methodological deficiencies reduce the usefulness of existing research. This article provides a critical review of the literature on mentoring, with an emphasis on the links between mentoring and undergraduate academic success. The first section describes a variety of ways in which mentoring has been defined within higher education, management, and psychology. Issues related to developing a standard operational definition of mentoring within higher education are discussed. The second section provides a critical review of empirical research about mentoring and undergraduate education. The third section describes four different theoretical perspectives that could be used in future research about mentoring. Finally, future directions for research, including methodological issues and substantive concerns, are addressed.

Whereas mentoring has long been associated with the apprentice model of graduate education, it is increasingly looked to today as a retention and enrichment strategy for undergraduate education. Dozens of colleges have implemented mentoring programs (e.g., American Association of State Colleges and Universities, 1985; Johnson, 1989). A growing literature attests to the importance of mentors in undergraduate education (e.g., Hughes, 1988; Lester & Johnson, 1981; Moore & Amey, 1988; Moses, 1989; Pounds, 1987; Rowe, 1989). The professional literature, the popular press, and students themselves seem to agree that mentoring is a critical component of effective undergraduate education.

A closer look at the concept of mentoring, however, reveals some troubling issues. Of major concern is the absence of a widely accepted operational definition of mentoring. The literature offers numerous definitions, some of which conflict, so that empirical research about mentoring subsumes several distinct kinds of interpersonal relationships. Further, descriptions of mentoring programs are so diverse that one wonders if they have anything at all in common beyond a sincere desire to help students succeed. The result of this definitional vagueness is a continued lack of clarity about the antecedents, outcomes, characteristics, and mediators of mentoring relationships despite a growing body of empirical research.

A second area of concern is the link between mentoring and academic success. Simply put, does mentoring help students succeed in college? If so, how? Both theoretical and empirical answers to these questions are lacking.

This article provides a critical review of the literature on mentoring, with an emphasis on the links between mentoring and undergraduate academic success. The first section describes different definitions of mentoring, including areas where the literature both converges and diverges. The second section reviews existing empirical research about the effects of mentoring on academic success and discusses methodological issues that must be considered in future research about mentoring. The third section describes a variety of theoretical models that could be used to explain

the link between mentoring and undergraduate academic success. The final section of the article proposes directions for future research and cautions both researchers and practitioners against looking to mentoring as a quick fix for what ails undergraduate education today.

While the concept of mentoring has been traced back to the Greek myth of Odysseus, this article focuses on research conducted from the mid-1970s through the present. During this time, mentoring has received increasing attention in at least three fields: education, management, and psychology.

Within the field of management, the publications of Kanter's book, *Men and Women of the Corporation* (1977), and Roche's (1979) article in *Harvard Business Review*, describing a survey of over 1,000 high-ranking business leaders, are generally credited as early pioneers in this area. Both analyses underscored the association between having a sponsor, or mentor, and achieving success in business.

At about the same time, Levinson, Carrow, Klein, Levinson, and McKee (1978) published *Seasons of a Man's Life*, a widely read book about adult development that placed mentoring within the framework of development psychology. And, in the field of education, analyses by Astin (1977), Pascarella and associates (e.g., Pascarella, 1980; Pascarella, Terenzini, & Hibel, 1978), and Wilson, Gaff, Dienst, Wood, and Baurly (1975) underscored the impact of faculty-student relations on educational experiences and outcomes.

These early efforts provided the foundation for a substantial body of research on mentoring. A review of references to the keyword *mentor* within the ERIC database indicates a growing increase in attention to this topic. Over the past 10 years, the number of publications included in the ERIC database that include *mentor* as a keyword has risen steadily from only 10 references in 1978 to 95 references in 1988. Between January 1983 and December 1989, 492 references appear in response to this keyword, compared to only 111 between 1976 and 1982.

This article does not attempt an exhaustive review of all the literature stemming from these roots but rather focuses on research that is noteworthy because of its relevance to undergraduate academic success, theoretical foundation, or methodological approach. (For a more comprehensive set of references, readers are referred to Gray & Gray, 1986, who compiled an annotated bibliography which, although now somewhat outdated, remains a useful reference.)

Definitions of Mentoring

Although many researchers have attempted to provide concise definitions of *mentoring* or *mentors*, definitional diversity continues to characterize the literature. Table 1 reproduces 15 different definitions of mentoring derived from education, management, and psychology. A review of these varying definitions supports Merriam's (1983) contention that:

The phenomenon of mentoring is not clearly conceptualized, leading to confusion as to just what is being measured or offered as an ingredient in success. Mentoring appears to mean one thing to developmental psychologists, another thing to business people, and a third thing to those in academic settings. (p. 169)

Wrightsmen (1981) also noted the diversity of definitions of mentoring within the psychological research literature and discussed the problems that result from this lack of consensus.

TABLE 1

Some definitions of mentoring from three different fields

Definitions from field of higher education

Blackwell (1989)

"Mentoring . . . is a process by which persons of superior rank, special achievements, and prestige instruct, counsel, guide, and facilitate the intellectual and/or career development of persons identified as proteges" (p. 9).

Lester & Johnson (1981)

"Mentoring as a function of educational institutions can be defined as a one-to-one learning relationship between an older person and a younger person that is based on modeling behavior and extended dialogue between them" (p. 119).

Moore & Amey (1988)

"By our definition, mentoring is a form of professional socialization whereby a more experienced (usually older) individual acts as a guide, role model, teacher and patron of a less experienced (often younger) protege. The aim of the relationship is the further development and refinement of the protege's skills, abilities, and understanding" (p. 45).

Moses (1989)

"Ideally, a professor takes an undergraduate or graduate student under his or her wing, helps the student set goals and develop skills, and facilitates the student's successful entry into academic and professional circles" (p. 9).

Schmidt & Wolfe (1980)

"Mentors are colleagues and supervisors who actively provide guidance, support, and opportunities for the protege. The functions of a mentor consist of acting as a role model, a consultant/advisor, and a sponsor" (p. 45).

Shandley (1989)

"First, it is an intentional process of interaction between at least two individuals. . . . Second, mentoring is a nurturing process that fosters the growth and development of the protege. . . . Third, mentoring is an insightful process in which the wisdom of the mentor is acquired and applied by the protege. . . . Fourth, mentoring is a supportive, often protective process. The mentor can serve as an important guide or reality checker in introducing the protege to the environment he or she is preparing for. Finally . . . an essential component of serving as a mentor is role modeling" (p. 60).

Definitions from field of management/organizational behavior

Fagenson (1989)

(A mentor is) "someone in a position of power who looks out for you, or gives you advice, or brings your accomplishments to the attention of other people who have power in the company" (p. 312).

Kogler-Hill et al. (1989)

(Mentoring is) "the process of an older, more experienced member of the organization assuming a paternal, guiding role with a less experienced protege" (p. 356).

Kram (1985)

"Derived from Greek mythology, the name implies a relationship between a young adult and an older, more experienced adult that helps the younger individual learn to navigate in the adult world and the world of work. A mentor supports, guides, and counsels the young adult as he or she accomplishes this important task" (p. 2).

Olian et al. (1988)

(A mentor is) "a senior member of the profession or organization who shares values, provides emotional support, career counseling, information and advice, professional and organizational sponsorship, and facilitates access to key organizational and professional networks" (p. 16).

(continued on p. 508)

TABLE 1 (Continued)

Phillips-Jones (1982)

"Mentors are influential people who significantly help you reach your major life goals" (p. 21).

Roche (1978)

(Mentoring is) "a relationship with a person who took a personal interest in your career and who guided or sponsored you" (p. 15).

Zey (1984)

"A mentor is a person who oversees the career and development of another person, usually a junior, through teaching, counseling, providing psychological support, protecting, and at times promoting or sponsoring" (p. 7).

Definitions from field of psychology

Levinson et al. (1978)

"The mentor relationship is one of the most complex, and developmentally important, a man can have in early adulthood. . . . No word currently in use is adequate to convey the nature of the relationship we have in mind here. Words such as 'counselor' or 'guru' suggest the more subtle meanings, but they have other connotations that would be misleading. The term 'mentor' is generally used in a much narrower sense, to mean teacher, adviser, or sponsor. As we use the term, it means all these things, and more. . . . Mentoring is defined not in terms of formal roles but in terms of the character of the relationship and the functions it serves" (pp. 97-98).

Speizer (1981)

"The terms 'mentor' and 'sponsor' are often used interchangeably to indicate older people in an organization or profession who take younger colleagues under their wings and encourage and support their career progress until they reach mid-life" (p. 708).

With respect to communication between researchers . . . there is a false sense of consensus, because at a superficial level everyone 'knows' what mentoring is. But closer examination indicates wide variation in operational definitions, leading to conclusions that are limited to the use of particular procedures. . . . The result is that the concept is devalued, because everyone is using it loosely, without precision, and it may become a short-term fad. (pp. 3-4)

A decade has passed since Wrightsman (1981) noted these problems, and it is now difficult to argue that mentoring represents a "short-term fad." Yet as Table 1 indicates, variation in operational definitions continues to plague mentoring research and has almost certainly devalued the concept for application in "hard" research. This article attempts to identify the basic elements of a definition of mentoring and, in so doing, provides a foundation for more rigorous research.

Mentoring Functions and Roles

Most researchers have defined mentoring in terms of the functions provided by a mentor or the roles played by a mentor in relation to a protégé. Table 2 provides an overview of 15 functions or roles that have been ascribed to mentors. The authors selected for inclusion in this table satisfy three criteria: (a) They attempt to provide generic descriptions of mentoring rather than descriptions geared to a particular population or setting; (b) their definitions are original, based on their own observations, interviews, or survey data; (c) their descriptions are relatively detailed, includ-

TABLE 2
Mentoring functions

Functions	Blackwell, 1989	Burke, 1984	Nieva & Gutek, 1981	Kanter, 1977	Kram, 1985	Levinson et al., 1978	Phillips- Jones, 1982	Zey, 1984
Acceptance/support/encouragement	X				X	X	X	X
Advice/guidance	X		X		X	X	X	X
Bypass bureaucracy/access to resources			X	X				X
Challenge/opportunity/"plum assignments"	X	X			X		X	
Clarify values/clarify goals		X		X	X			
Coaching	X	X		X	X			
Information	X		X	X				
Protection	X				X			
Role model	X		X	X	X	X	X	X
Social status/reflected credit	X		X					
Socialization/"host and guide"	X	X		X	X	X	X	X
Sponsorship/advocacy	X				X	X		X
Stimulate acquisition of knowledge	X							
Training/instruction	X		X	X		X	X	X
Visibility/exposure				X	X		X	X

ing at least three distinct functions or roles. In addition, these authors are cited frequently in articles and reports about mentoring. It is noteworthy that Blackwell (1987), in an independent review of the literature, also identified 15 mentoring functions.

Note that many of these functions or roles in themselves require additional clarification. Efforts to define each function in a manner that would gain wide acceptance among researchers and practitioners, however, are beyond the scope of this analysis. Rather, these functions are displayed because they serve a generative purpose (Gergen, 1978). That is, they stimulate thinking about the range of behaviors that characterize mentor-protégé relations, and they raise questions about the relative frequency and effectiveness of these behaviors within higher education environments.

A number of researchers (Kram, 1985; Noe, 1988a; Olian, Carroll, Giannantonia, & Feren, 1988; Schockett & Haring-Hidore, 1985) has grouped the mentoring functions listed in Table 2 into two broad categories. For example, Kram's (1985) content analysis of in-depth interviews with both protégés and mentors in a large business organization differentiated *career-* from *psychosocial-*mentoring components. A quantitative analysis of survey responses from business managers collected by Olian et al. (1988) suggested two categories, labeled *instrumental* and *intrinsic*. Noe's (1988a) factor analysis of data provided by school teachers and administrators also yielded two factors, labeled *career function* and *psychosocial function*. Finally, a factor analysis of survey responses provided by college students again indicated both a psychosocial and a vocational function (Schockett & Haring-Hidore, 1985). Olian et al. (1988) describe these two broad categories as follows:

Based on the Kram, Noe, and Olian et al. findings, it appears that proteges who have close contacts with a mentor see two primary dimensions to the benefits obtained from the relationship: job and career benefits through information and external brokering provided by the mentor, and psychological benefits from the emotional support and friendship obtained within the relationship. (p. 19)

The analyses reviewed by Olian et al. (1988) differ in some minor ways. Of particular relevance to this discussion is the role model function of mentors. Whereas Kram characterized role modeling as a psychosocial function, Olian's (1988) analysis did not support this approach. Burke's (1984) exploratory factor analysis of survey responses provided by 80 managers in a professional development course yielded three distinct factors: a career development function, a psychosocial function, and a role model function. Thus, in the absence of convergent results, it may be appropriate to consider role modeling as a discrete third component of mentoring.

In summary, mentoring provides any, or all, of 15 diverse functions. These functions reflect three components of the mentoring relationship: (a) emotional and psychological support, (b) direct assistance with career and professional development, and (c) role modeling.

Characteristics of Mentor-Protégé Relationships

This review of the literature on mentoring reveals considerable disagreement about the characteristics of the mentor in relation to the protégé. With regard to age, Levinson et al. (1978), for example, describe the mentor as typically 8–15 years older than the protégé (with a larger age gap occasionally found). Others, however, are much less specific about the age difference (e.g., Kram, 1985; Zey, 1984), and still

others suggest that mentors could be any age so long as they are in a position to fulfill the mentoring roles and functions (e.g., Phillips-Jones, 1982). Within higher education, a growing interest in using undergraduate students as peer mentors also seems to discount the importance of age differences between mentors and protégés (e.g., Ender, 1984; Rice & Brown, 1990).

There is also disagreement about the duration of the mentoring relationship. Whereas Levinson et al. (1978) describe the typical mentoring relationship as lasting from 2–10 years, others suggest that a mentoring relationship can be as brief as a single encounter (e.g., Phillips-Jones, 1982). Some of the recent higher education literature describes mentoring programs serving students during their first year in college, implying that such relationships last about 1 year (cf., Johnson, 1989).

A related issue is the level of intimacy or intensity characterizing the mentoring relationship. Some have described mentoring as the highest end on a continuum of helping relationships (e.g., DeCoster & Brown, 1982; Hunt & Michael, 1983; Kram, 1985). Shapiro, Haseltine, and Rowe (1978), for example, describe a continuum with points: peer pals, guides, sponsors, and mentors. On this rough scale, mentors represent “the most intense and paternalistic” (p. 55) type of relationship. Similarly, Clawson (1980) distinguishes between mentor-protégé relationships and quasi-mentor-protégé relationships on the basis of both the degree of mutuality in the relationship and the comprehensiveness of the mentor’s influence on the protégé. The true mentor relationship, from this perspective, represents the highest levels of these dimensions.

Other discussions, however, do not identify mentoring as one point on a continuum of relational intensity (or related characteristics). From this alternative perspective, mentoring is distinguished from other types of relationships by the roles or functions played by the mentor in relation to the protégé, not by the level of intimacy and intensity (Phillips-Jones, 1982; Zey, 1984).

The literature also is divided about the importance of gender or ethnic similarity between mentors and protégés. The management-based literature tends to focus on cross-gender relationships while the educational literature focuses on both cross-gender and cross-race relationships. While none of the literature reviewed for this article flatly declares cross-sex or cross-race pairs to be completely unworkable, the problems of establishing and maintaining such relationships are described on a continuum ranging from mild to severe. For example, Roche (1979) found that all the women in his sample had mentors and that women reported having more mentors on average than did men. In contrast, Kanter (1977) and Nieva and Gutek (1981) discuss the difficulty women experience in identifying and establishing mentor relationships, and Noe (1988b) reviews literature suggesting that women are less likely than men to have mentors. Representing yet another point of view, Burke (1984) found no sex differences in the prevalence of mentoring among managers participating in his research.

The higher education literature is divided about the importance of matching students with mentors of the same gender or ethnicity. While much of the descriptive and theoretical literature about mentoring for students of color emphasizes that cross-race or cross-gender relationships can be effective (e.g., Moses, 1989; Pounds, 1987; Rowe, 1989), many programs in practice strive to pair students with a mentor from their own gender or ethnic background (e.g., Meznek, McGrath, & Garcia, 1989; Oestereichen, 1987; cf., Johnson, 1989).

Researchers also disagree about the efficacy of *formal mentoring*, or programs in which mentors are assigned to students or employees as opposed to those instances in which the mentor relationship is an outcome of mutual attraction and free choice. On the one hand, the proliferation of formal or assigned-mentoring programs in both business and educational settings attests to a widespread belief in their effectiveness (cf., Gerstein, 1985). On the other hand, at least some researchers and practitioners are skeptical. For example, Conrad (1985) concludes, "At least in our culture, where choice is a strongly valued part of relationships, formal arrangements have had only limited success" (p. 300). (Also see Noe, 1988b.) Given the wide variety of formal mentoring programs coupled with the paucity of well-designed evaluation research, speculation about this issue is all that is available at this time.

Estimates of the availability and prevalence of mentors in both business and educational settings vary markedly. After reviewing literature in which the frequency of mentoring within business and educational organizations varied from less than 10% to over 75%, Merriam (1983) concludes, "Clearly, how mentoring is defined determines the extent of mentoring found" (p. 165). In addition, the frequency of mentoring is also related to the sample under investigation. For example, one might expect to find a higher frequency of mentor relations among students in small residential colleges than in large commuter colleges.

Finally, researchers disagree about the motivations of individuals to act as mentors. The psychological and educational literature tends to emphasize the intangible rewards of mentoring, described by Erikson (1963) as *generativity*. Vander Zanden (1978) describes *generativity* as "a reaching out beyond one's own immediate concerns to embrace the welfare of society and of future generations. Generativity involves an element of selflessness" (p. 40). Generativity as conceptualized by Erikson is predominantly a concern of people in middle adulthood, leaving some ambiguity about the intangible rewards of mentoring for individuals at other stages of adulthood.

On the other hand, the literature from a management perspective emphasizes the tangible rewards that mentoring provides both to the mentor and the organization (Hunt & Michael, 1983; Kram, 1985; Phillips-Jones, 1982; Zey, 1984). Kram (1985) contends that a major misconception about mentoring is the belief that "the primary beneficiary in a mentor relationship is the junior person" (p. 195). Similarly, Phillips-Jones (1982) describes concrete benefits that accrue to the mentor, including: development of a "dependable crucial subordinate," rewards for "spotting and developing new talent," and "repaying past debts" (p. 54).

The recognition that mentoring provides benefits to both mentors and protégés has given rise to programs in which members of a target population assume the role of mentor to other disadvantaged, generally younger, individuals. For example, Humm and Riessman (1988) describe a program in which CUNY undergraduate students planning careers in education mentor public high-school students at risk for dropping out. The program is designed to promote the development of both mentors and protégés.

The Lowest Common Denominator

Given the variety of mentor roles and functions and the general lack of agreement about mentor-protégé relationships, is any common definition of mentoring possible? This review of the literature indicates several components of mentoring about

which there is strong agreement. These may not in themselves be a sufficient definition, but they at least provide a foundation for later work (cf., Johnson, 1989):

1. Mentoring relationships are helping relationships usually focused on achievement. The primary dynamic of the mentoring relationship is the assistance and support provided to the protégé by the mentor. This support can take many forms but is always intended to help the protégé succeed in school or work. (Supervisors and teachers do much the same. However, whereas a traditional supervisor or teacher helps the employee or student to perform specific tasks correctly [e.g., complete an assignment], the mentor typically helps the protégé achieve longer term, broader goals [e.g., promotion, graduation]. Further, the mentor does not necessarily carry the formal authority of a supervisor or teacher [Olian et al., 1988]).
2. Whereas the specific functions provided to protégés by mentors vary, mentoring includes any or all of three broad components: (a) emotional and psychological support, (b) direct assistance with career and professional development, and (c) role modeling.
3. Mentoring relationships are reciprocal relationships. The mentor as well as the protégé derives benefits from the relationship, and these benefits may be either emotional or tangible in nature. To differentiate the mentoring relationship from that of a client-based relationship, it might be added here that the benefits are other than fee for service.
4. Mentoring relationships are personal. Despite some published research in which individuals have named books or distant role models as mentors (e.g., Merriam & Thomas, 1986), most would agree that mentorship requires direct interaction between the mentor and the protégé. While these relationships are not necessarily either long-term or intimate, they do involve an exchange of information beyond that available from public record documents (e.g., procedural manuals or college catalogs).
5. Relative to their protégés, mentors show greater experience, influence, and achievement within a particular organization or environment.

Mentoring and Undergraduate Academic Success

Table 1 contains several definitions drawn from the higher education literature that are congruent with the basic components of mentoring proposed earlier. Lester and Johnson (1981; cf., Johnson, 1989) offer, perhaps, the most detailed definition. They describe mentoring in the educational context as a one-to-one learning relationship. They suggest the mentor is typically older than the protégé and may be either a faculty member, staff member, or student. The mentoring relationship, according to their definition, has both formal and informal aspects and is based on modeling behavior and extended dialogue.

Other definitions within an educational context are proposed by Blackwell (1989), Kogler-Hill, Bahnivk, Dobos, and Rouner (1989), Moore and Amey (1988), Moses (1989), Schmidt and Wolfe (1980) and Shandley (1989; see Table 1).

A variety of questions concerning mentoring and higher education remains unanswered. This section will address two such questions. First, what is the prevalence or frequency of “natural” (informal) mentoring in higher education? Of particular concern is the degree of discrepancy between mentoring available to Caucasian students versus students of color and male versus female students. A related question

is the nature of these relationships, such as the kinds of functions most often provided by the mentor.

Second, to what extent and in what ways does mentoring contribute to academic success? What mentoring functions are most important to academic success? An important subset of this broad area of questioning is the extent to which formal mentoring programs relative to informal mentoring programs and alternative types of interventions promote academic success.

Each of these questions is considered in the following sections.

Prevalence of Mentoring in Higher Education

The prevalence of natural or informal mentoring relationships in educational environments, including both undergraduate and graduate education, is unknown. Despite the absence of empirical validation, most authors assume that few undergraduates and many graduate students have mentors. Boyer (1987) poses the question, "Is the teacher to be a mentor?" He responds, "Only at the graduate level, or occasionally in tightly organized academic departments, are such connections made" (p. 158). Also suggesting that mentoring is relatively rare among undergraduates, Jacobi (1989) found that 67% of undergraduate students at a large west coast university reported that difficulty finding a mentor or role model had been a moderate or major problem for them over the past year.

Several analyses have focused on student subgroups, especially women and minority students. Based on her review of the literature, Johnson (1989) concludes that mentoring for undergraduate women and students of color is relatively rare. However, empirical and theoretical problems with existing research weaken the foundation for her conclusion. Blackwell (1989) found that only one in eight African-American students had a true mentor, but comparison statistics for other ethnic groups are not provided.

Mentoring at the graduate level appears to be somewhat more common than mentoring at the undergraduate level, although most estimates are limited because they are based on surveys conducted at a single point in time within a single institution and sometimes within a single department or discipline. For example, LeCluyse, Tollefson, and Borgers (1985) found that 76% of the female graduate students enrolled in the school of education or liberal arts within a midwestern university had a mentor, and Cronan-Hillix, Gensheimer, Cronan-Hillix, and Davidson (1986) found that over 50% of psychology graduate students attending another midwestern university had a mentor. Jacobi's (1990) analysis, however, revealed that 56% of graduate students enrolled in a large west coast university rated difficulty finding a role model or mentor as a moderate to major problem for them, and Blackwell (1989) found no differences in the frequency of mentoring reported by undergraduate and graduate African-American students.

The reported prevalence of mentoring will vary as a function of multiple factors, including: different operational definitions of mentoring (Merriam, 1983); different populations (e.g., students of color vs. Caucasians; men vs. women); different academic levels (undergraduates vs. graduate students); different institutional characteristics (e.g., small liberal arts colleges vs. large public universities); different fields of study; and so forth.

Virtually none of the research reviewed here attempted to determine the frequency of mentoring using a cross-section of institutions and students. Such informa-

tion is important for several reasons. First, it provides a baseline against which to track efforts to systematically encourage the development of mentoring relationships. Second, differences in mentoring prevalence across various institutions and fields of study could be useful information for students, and such differences could help students develop realistic expectations for undergraduate or graduate training. Third, as discussed above, differences between gender and ethnic groups in the availability of mentoring carry clear equity implications. Finally, a better understanding of informal mentoring should assist in the design of formal mentoring programs.

Empirical Links Between Mentoring and Academic Success

Empirical studies of the association between mentoring and academic outcomes are in short supply. The few empirical studies that have been published tend to be fraught with methodological weaknesses that seriously limit both internal and external validity (cf., Merriam, 1983).

Informal/natural mentoring and academic success. Only one study could be found that directly assessed the relationship between natural mentoring and academic success among undergraduates. Erkut and Mokros (1984) report results of a survey completed by 723 students at six different liberal arts colleges. While all respondents were able to identify a professor who had an impact on them by demonstrating the kinds of commitments, skills, and qualities that they saw as important for themselves, differences in student outcomes were associated with the gender of the student in relation to the mentor. The authors avoid causal attributions, however, and suggest that the mentor relationships are by-products rather than causes of high achievement. Further, their operational definition of *mentoring* emphasizes role modeling to the exclusion of direct assistance with professional development or emotional support.

Other empirical studies about mentoring and undergraduates focus on process issues rather than outcomes. For example, Rice and Brown (1990) examined students' level of psychosocial development in relation to their self-reported readiness to be a mentor or protégé. And Olian et al. (1988) used an experimental methodology to examine the factors that attract students to potential mentors.

Whereas direct support for the hypothesis that mentoring promotes academic success is largely missing, several related areas of study provide indirect support. A large body of literature indicates that contact with faculty is linked to academic success (e.g., Astin, 1977; Pascarella & Terenzini, 1977; Tracey & Sedlacek, 1985; Wilson et al., 1975; cf., DeCoster & Brown, 1982). These studies imply that mentor relations may positively influence retention and achievement, but they do not address such issues as the functions of the mentoring relationship that are most important to success or the characteristics that produce the best fit between mentor and student protégé.

Further, some research on faculty-student relations suggests that mentoring may not be a highly efficient means of promoting academic success. Specifically, Pascarella, Terenzini, and Hibel (1978) examined the effects of six different types of faculty contact on academic achievement of approximately 500 students. Results showed a curvilinear relationship between contact with faculty and academic achievement, such that "the first few informal interactions with faculty . . . appear to be the most important" (p. 457). To the extent that mentoring connotes frequent contacts

over an extended period of time, it may prove to be an inefficient strategy for promoting academic success.

Additional indirect support for the hypothesis that mentoring promotes academic success is derived from mentoring studies of other populations. For example, Roche's (1979) survey of successful business leaders showed that

executives who have had a mentor earn more money at a younger age, are more likely to follow a career plan, and, in turn, sponsor more proteges than executives who have not had a mentor. (p. 15)

More recently, Fagenson (1989) reported that managers who had a mentor, compared to those who did not, showed higher levels of job satisfaction and a higher promotion rate. And Riley and Wrench (1985) found that women lawyers who had been mentored perceived themselves as more satisfied and successful than those who had not been mentored.

Empirical studies in educational environments provide further indirect support for the link between academic success and mentoring. For example, Nicoloff and Forrest (1988) point out the association between lower publication rates among women members of the American College Personnel Association and their lower frequency of mentoring experiences in graduate school. LeCluyse et al. (1985) found a positive association between mentoring and involvement in professional activities among female graduate students in education and the liberal arts. Cronan-Hillix et al. (1986) reported that graduate students in psychology who indicated on a survey that they had a faculty mentor showed higher rates of research productivity and publications. In in-depth interviews with 20 community college presidents, Merriam and Thomas (1986) found that all but one attributed their success at least in part to a mentor relationship. (On the other hand, Alexander, 1990, found no differences in self-concept between female deans of schools of nursing who had been mentored versus those who had not.)

Such studies suffer from a serious flaw, however. Almost without exception, the researchers inappropriately infer a causal relation from an observed correlation. While these researchers conclude that having a mentor leads to success, the conclusion that being successful attracts mentors is at least as feasible. Zey's (1984) description of what mentors look for in a protégé, for example, reflects this problem. His list includes:

1. Intelligence.
 2. Ambition.
 3. Desire and ability to accept power and risk.
 4. Ability to perform the mentor's job.
 5. Loyalty.
 6. Similar perceptions of work and organization.
 7. Commitment to organization.
 8. Organizational savvy.
 9. Positive perception of the protege by the organization.
 10. Ability to establish alliances.
- (p. 182)

An individual with these attributes would probably be a successful manager with or without a mentor. It seems likely that mentoring may be a manifestation, rather than a cause, of success under these circumstances. Most reasonable, perhaps, is the assumption of a reciprocal relationship between mentoring and success, such that those individuals with the greatest potential for success are most likely to attract mentors and such that the mentors help the protégés achieve their potential.

Formal mentoring programs and academic success. Despite the absence of compelling evidence that mentoring facilitates academic success, formal mentoring programs have become especially popular in recent years within higher education. Such programs have been designed for a range of issues, including: career development

(Evans, Bourassa, & Woolbright, 1985; Gerstein, 1985; Obleton, 1984), leadership development (Moore, 1982; Sagaria & Johnsrud, 1988; Shandley, 1989), and retention or academic success among students at risk for failure or attrition (Allard, Dodd, & Peralez, 1987; Dunphy, Miller, Woodruff, & Nelson, 1987; Sharkey et al., 1987). Other programs have placed students in the mentor role, hoping that this experience will promote their development and reinforce their commitment to higher education (cf., Ender, 1984; Humm & Riessman, 1988).

Descriptions of mentoring programs designed to promote academic success are easily found in the higher education literature (e.g., American Association of State Colleges and Universities, 1985; Dunphy et al., 1987; Ellis, 1988; Johnson, 1989; King & Bireley, 1982; Kramer, Bryan, Rood, & Smith, 1982; Lester & Johnson, 1981; Lewis, 1986; Mendoza & Samuels, 1987; Meznick et al., 1989; O'Brien, 1989; Sharkey et al., 1987). Substantially fewer systematic evaluations are available. Those reports that do provide evaluation data are often fraught with methodological problems.

One of the best evaluations is reported by Cosgrove (1986), describing the outcomes of a mentoring-transcript program on freshmen. Potential selection biases were controlled by randomly assigning students who had applied to the program into experimental and control conditions and by providing opportunities for both cross-sectional and longitudinal comparisons with appropriate controls for such factors as SAT scores, place of residence, and gender. Standardized instruments were used to assess students' satisfaction with the university, use of services, behavioral patterns, and level of personal development. Results indicated that students who participated in the mentor-transcript program were more satisfied with the university environment and showed greater developmental gains than the control group. While this report provided some evidence of the effectiveness of formal mentoring programs, it did not attempt to measure the unique contribution of the mentoring relationship versus other interventions, nor did it measure program effects on student academic success. External validity is also limited, because the project was conducted at only a single institution. Nonetheless, Cosgrove's analysis is among the strongest methodological efforts to systematically assess the effects of a formal mentoring program.

Noe's (1988a) analysis of assigned mentoring relations is also noteworthy, although it is based on research with school teachers and administrators rather than undergraduate students. Specifically, Noe evaluated a professional development program for educators, in which upper level administrators were assigned to serve as mentors to teachers or lower level administrators within the same school district. Results indicated that the formal mentoring relationship provided psychosocial but not career or vocational benefits to protégés, suggesting that formal mentoring programs may have limited effectiveness. His analysis can be criticized for its relatively small sample size (139 protégés and 43 mentors) and reliance on self-report methods. Further, the extent to which his findings can be generalized to the university setting is unknown. Nonetheless, his analysis underscores the need to further examine formal mentoring programs as a strategy for promoting academic success.

Methodological rigor is clearly necessary to fully understand the impact of formal mentoring programs, but this is not in itself sufficient. An additional problem is that so-called mentoring programs are so diverse that they actually have little in common. For example, mentoring programs may use faculty, staff, administrators, or students as mentors; the mentor and protégé may meet in individual or group settings; these

meetings may occur in the residence hall setting, classroom setting, or elsewhere; the number of meetings may range from fewer than five to dozens over the course of a year; mentors may receive special training or may be essentially unsupervised; mentors may participate in programs on a volunteer basis, or they may receive a stipend or salary; protégés and mentors may have some or no choice in their pairings; additional interventions may accompany the mentoring program; the program may last a semester, a year, or longer; and so forth (cf., Johnson, 1989; Kramer et al., 1982; Merriam, 1983).

In addition to the diversity in the components of mentoring programs, they vary in their goals and objectives. Even those programs that focus on academic success, as opposed to personal development, may differ in the outcomes of interest. Some programs emphasize improved achievement (e.g., grades or standardized test scores) while others emphasize reduced attrition or increased interest in graduate or professional school (cf., Johnson, 1989; Merriam, 1983; Wrightsman, 1981).

Until some standardization emerges in the definition, components, and goals of mentoring programs, empirical research is unlikely to provide convergent findings. Fortunately, some efforts to provide guidelines for the design of mentoring programs are emerging (DeCoster & Brown, 1982; Johnson, 1989; Lester & Johnson, 1981).

Special issues regarding women and minority students. The relationship between mentoring and academic success raises additional questions and concerns when the research focus is on the attendance of female students and students of color at coeducational or predominantly White institutions. Because the leadership and faculty of these colleges and universities are traditionally White and male, students of color and women may have less access to informal networks and other sources of social support. They may find the institutional environment, and its underlying values, confusing or alienating. They may become victims of subtle or overt racism or sexism. Further, students of color are more likely than White students to have attended inner city high schools and to be first generation college students, both of which characteristics are associated with academic difficulties and higher attrition rates in college. Mentoring is often recommended as a means of providing female students and students of color with the support, socialization, and direct assistance they need to succeed in an environment they may experience as alienating or even hostile (Johnson; 1989; Moore & Amey, 1988; Moses, 1989; Sedlacek, 1983; Ugbah & Williams, 1989).

The relative scarcity of female and minority faculty (and, at some schools, students, staff, and administrators) gives rise to concerns that, although female students and students of color may have a heightened need for mentoring, they may experience difficulty obtaining mentoring. Erkut and Mokros (1984) explain:

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. (p. 400)

Thus, women and students of color may seek mentors of the same gender and ethnicity and may experience difficulty relating to or learning from mentors of a different gender or ethnicity (Moore & Amey, 1988). Similarly, Ugbah and Williams (1989) suggest that faculty mentors are most likely to seek student protégés of their same sex or ethnicity.

A related concern is that cross-sex or cross-ethnicity mentoring relationships may be less effective than same-sex or same-ethnicity mentoring relationships for pro-

tégés who are women or students of color (Hughes, 1988). Meznik et al. (1989) explain that mentors of the same ethnic background as their protégés can assist students in resolving apparent conflicts between the values of one's culture or community and the values of the institution. They suggest that mentors "show success is possible without having to abandon cultural identity" (p. 9). Similarly, Moses (1989) notes that "many potential mentors are unfamiliar with Black issues and women's issues and may be unable to relate to the needs of Black women students" (p. 10).

While the prevailing folk wisdom is that same-sex or same-ethnicity mentors have the most to offer, some authors suggest that mentors of a different gender or ethnicity from the protégé may provide special benefits. Rowe (1989) notes that some women prefer male mentors as a means of better understanding those who run educational institutions, and Kram (1985) notes that cross-gender relationships carry both risks and opportunities (e.g., the opportunity to improve communication skills and modes of expression).

As with most other aspects of the literature on mentoring, empirical research which addresses these issues is in short supply. Relatively little research systematically investigates gender and ethnicity effects on mentoring functions and outcomes within higher education. Further, the available research does not indicate consistent patterns of results. (Speizer's 1981 review of role modeling and mentoring also reports mixed results across a variety of studies about the importance of same-sex models and mentors for success in school and professional life.)

Focusing on students' preferences for mentors, Erkut and Mokros (1984) found female students were more likely than males to select female role models. Similarly, Ugbah and Williams (1989) found that students generally selected mentors of their own gender. In contrast, Olian et al. (1988) did not find that students participating in their experimental research preferred mentors of the same sex. With regard to ethnicity, Ugbah and Williams (1989) found that Black students generally preferred Black mentors where possible.

Turning to mentoring functions, Erkut and Mokros (1984) also report few sex differences in the types of support provided to students by their role models and mentors. Sex differences did emerge, however, in students' preferences for mentoring functions. Male students appeared to look for a mentor with status and power who could provide direct assistance with career development while female students wanted a mentor who could serve as a role model for combining rewarding professional and personal/social activities. On the other hand, both males and females responding to Ugbah and Williams' (1989) survey of Black students felt that the most important functions provided by their mentors were increasing their self-confidence, offering encouragement, and serving as a positive role model.

Very few analyses have addressed gender or ethnic differences in mentoring outcomes. Cosgrove (1986) found no sex differences in his analysis of the effects of participation in a mentoring-transcript program on freshmen's use of, and satisfaction with, campus services and satisfaction with the campus environment. (Ethnic differences were not reported.)

More focused research about the possible interactive or mediating effects of sex and ethnicity on the development and outcomes of mentoring relationships in higher education is sorely needed. Among the issues that may benefit from additional focused research are: the prevalence of mentoring; protégé preferences for mentors

or mentor preferences for protégés; preferred and actual functions provided by mentors to protégés; and outcomes of the mentoring relationship, including both academic outcomes (e.g., grade point average, making the transition from community college to a 4-year college, receiving the baccalaureate degree, enrolling in graduate or professional schools, entering the professoriate) and affective/developmental outcomes (e.g., attitudes toward college, involvement in college community). Investigations of such topics might compare multiple groups, reflecting $2 \times 2 \times N$ combinations of protégé and mentor sex and ethnicity.

Research Design and Measurement Issues

Most empirical research on mentoring and academic success has relied on retrospective, correlational designs in which data are collected at only a single point in time with a limited sample (e.g., Burke, 1984; Cronan-Hillix et al., 1986; Erkut & Mokros, 1984; Fagenson, 1989; LeCluyse et al., 1985; Nicoloff & Forrest, 1988; Riley & Wrench, 1985; Roche, 1979.) The result is research that fails, for the most part, to either control for potentially confounding factors or eliminate alternative explanations for observed effects. (Exceptions include Cosgrove, 1986; Noe, 1988a.)

Future research on mentoring requires quasi-experimental designs that include both cross-sectional and longitudinal components (Cook & Campbell, 1979). This is not to suggest that pure experimental research, such as that conducted by Olian et al. (1988), is without utility. Laboratory research, however, is limited in its ability to indicate the relationship between mentoring and academic outcomes.

Much of the existing research does include a cross-sectional component—typically, a comparison of people who have had mentors versus those who have not had mentors. In addition, however, cross-sectional designs are needed to compare the outcomes associated with different mentoring functions (e.g., an emphasis on emotional support vs. direct assistance), different patterns of interaction (e.g., frequent vs. occasional meetings; emotional vs. intellectual discussions), and different mentor-protégé characteristics (e.g., same sex or ethnicity vs. cross-sex or ethnicity). Further, especially in studies related to the efficacy of formal mentoring programs, students who have mentors should be compared not only to unmentored students but also to students participating in other kinds of planned interventions designed to promote academic success.

The longitudinal component of mentoring research poses additional challenges. Rather than simple, pre- and postdesigns, measures should be collected at multiple intervals, especially because at this time it is not known how long it takes for mentoring effects to emerge or how long they last. For example, measurable gains in academic achievement associated with a mentoring relationship may not appear for several quarters. Such gains may persist even after the relationship ends, or the effects may erode. Further, to the extent that unmentored students develop compensatory strategies, differences between mentored and unmentored students may decline over time. On the other hand, differences between groups may become amplified over time as mentored students continue building on their initial advantages.

The importance of measures at multiple points in time is supported by Terenzini, Theophilides, and Lorang (1984), who found that the effects of faculty interaction on students' skill development were not evident until the end of the sophomore year. Further support for longitudinal research is provided by Wrightsman (1981), who

argued that existing research on mentoring was “frozen in time” (p. 6) and failed to take account of the “enfolding, stage-theoretical nature of the mentoring relationship” (p. 6).

Even using quasi-experimental designs, mentoring research will be subject to some potentially serious confounding factors. As the previous sections imply, mentoring brings a student both a special kind of relationship and access to special opportunities. It will therefore be difficult to determine the extent to which observed outcomes are attributable to the relationship, as expressed through the functions and roles described in Table 2, or the special opportunities and challenges that accrue to the protégé (e.g., participation in research, internships, the opportunity to audit a graduate seminar, etc.). The applied implications of errors in interpretation could be substantial. If positive outcomes are mistakenly attributed to the mentoring relationship as opposed to the special experiences afforded the protégé, for example, formal programs might be designed to emphasize relationships rather than special challenges.

Research examining both informal mentoring and formal mentoring based on systematic, rather than random, selection faces the challenge of controlling for sampling and self-selection biases (Cook & Campbell, 1979). Under these circumstances, comparison groups likely will differ in both their measurable preparation for college and such hard-to-capture factors as motivation, level of maturity, and interpersonal skills. Where random selection cannot be used to control for such confounds, statistical controls must be employed, with the recognition they are likely to be imperfect or incomplete.

Mentoring research also needs valid and reliable measurement instruments. The research reviewed here is based almost entirely on self-report rather than observation (an important exception is Kram, 1985). While survey and interview methods may be the most feasible approaches to studying mentoring among college students, valid and reliable instruments or scales have not yet been developed. Some researchers have relied on global questions about whether or not one has (or has had) a mentor (Burke, 1984; Fagenson, 1989; LeCluyse et al., 1985; Roche, 1979) while others have developed more detailed measures focusing on an array of mentoring functions or characteristics (Busch, 1985; Erkut & Mokros, 1984; Knox & McGovern, 1988; Kogler-Hill et al., 1989; Noe, 1988a; Riley & Wrench, 1985). Substantial variety in both kinds of measures reflects the lack of consensus about definitional and conceptual issues.

A final problem with existing mentoring research is potentially low levels of external validity. As noted previously, most research is based on data collected within a single institution, often from students in only a single department or college (an exception in Erkut & Mokros, 1984) and sometimes from students of one gender or ethnicity (e.g., Blackwell, 1987; LeCluyse et al., 1985). The extent to which such findings generalize to other institutions and other students is unknown.

In addition to quantitative quasi-experimental research, ethnographic and qualitative methods also have much to contribute to a better understanding of the relationship between mentoring and academic success. Research, emerging from both psychology and management and based on interviews with mentors and protégés, has addressed the components and dynamics of mentoring relationships (e.g., Kram, 1985; Levinson et al., 1978). Similar approaches within the higher education environment may address issues such as: how mentoring relationships begin; the motivations

of mentors to serve in this role; the dynamics of same-sex or same-ethnicity versus cross-sex or cross-ethnicity mentoring relationships; the developmental progression of mentoring relationships; challenges and obstacles to, as well as facilitators of, developing mentoring relationships; and perceived outcomes of mentoring.

A variety of qualitative or "naturalistic" methods may be used to explore and evaluate mentoring within higher education (cf., Patton, 1987; Williams, 1986). These include: individual interviews with mentors and protégés (cf., Levinson et al., 1978); group interviews or *focus groups* (cf., Jacobi, 1991); direct observation, including extended observation, or fieldwork (cf., Kram, 1985; Patton, 1987; Zey, 1984); or content analysis of mentor or protégé journals or other written accounts (cf., Tobias, 1990). These methods offer the opportunity for in-depth and (in some cases) longitudinal exploration of mentoring relationships and for hypothesis generation. They are less appropriate for confirming hypotheses about the strength and direction of the association between mentoring and academic success.

Theoretical Models of Mentoring in Higher Education

The previous section reviewed existing empirical research about mentoring and undergraduate education. One of the weaknesses of research about mentoring is the lack of a theoretical or conceptual base to explain proposed links between mentoring and academic success. While a variety of broad theoretical explanations has been proposed (cf., Johnson, 1989; Thomas, Murrell, & Chickering, 1982), specific hypotheses suggested by these theories are implicit at best. Thus, an important direction for future research is to delineate what different theoretical perspectives suggest about the likely characteristics and outcomes of mentoring relationships.

Describing the theoretical link between mentoring and academic outcomes is more than an intellectual exercise. Different theoretical approaches shift the focus of investigations and emphasize different aspects of the mentoring relationship. In empirical studies of mentoring, the theoretical perspective will guide the manner in which the independent variable (mentoring) is measured, the selection of dependent and mediating variables, and the determination of appropriate comparison groups.

Further, all formal mentoring programs are guided by some model of mentoring in relation to academic achievement. When such models remain implicit, the programs may be inadequately developed and are almost certain to be inadequately evaluated (Conrad & Miller, 1987). In this section, four different theoretical approaches to the study of mentoring are briefly described, and their implications for empirical research are discussed.

Some researchers (e.g., Erkut & Mokros, 1984; Thomas et al., 1982) have suggested that social learning theory (Bandura, 1977) provides a theoretical foundation for mentoring. While social learning theory describes the role of modeling in learning, it does not address other aspects of mentoring such as professional or emotional support, and therefore it is not discussed further in this review.

Other researchers have proposed original theories or models of mentoring. One of the most comprehensive models is offered by Hunt and Michael (1983). Their framework for the study of mentoring depicts reciprocal relations among five categories of factors: (a) contextual or environmental factors, (b) mentor characteristics, (c) protégé characteristics, (d) stages and duration of the mentoring relationship, and (e) outcomes for mentor, protégé, and organization. Such models are important to

achieve an understanding of the dynamics of the mentoring relationship within different organizational environments. However, the links between mentoring and undergraduate academic success require a consideration of both the dynamics of the mentoring relationship and the dynamics of undergraduate achievement. Thus, the approach taken here, in which mentoring is integrated into other higher education theories, should be viewed as complementary to, and not competitive with, efforts to develop models of the mentoring relationship.

Involvement in Learning

Astin (1977, 1984; Study Group on the Conditions of Excellence in American Higher Education, 1984) contends that the extent to which a student is involved in the educational process is a good predictor of graduation and academic achievement. Synthesizing an array of empirical research on college impacts, the Study Group (1984) concluded:

There is now a good deal of research evidence to suggest that the more time and effort students invest in the learning process and the more intensely they engage in their own education, the greater will be their growth and achievement, their satisfaction with their educational experiences, and their persistence in college, and the more likely they are to continue their learning. (p. 17)

From this perspective, mentoring can be viewed as a vehicle for promoting involvement in learning. The mentor would encourage and motivate the student protégé to deepen his or her involvement in learning and would provide opportunities for particular kinds of involvement (e.g., research assistantships).

Empirical studies of mentoring derived from this theory would assess the impact of mentoring on academic success, with involvement as an intervening variable. Typically, the students' level of involvement is assessed by measures of participation in, and time devoted to, various (usually academic but sometimes extracurricular) activities. Appropriate comparison groups could include not only mentored and unmentored students but also students participating in other programs designed to promote involvement in learning—such as, special research programs, many field studies efforts, or freshmen seminar series.

One might hypothesize that, of the three broad mentoring functions, direct assistance with professional development would show the strongest links to involvement and thereby to academic success. For example, faculty mentors could promote involvement by providing their protégés with challenging assignments, coaching or advising them about educational activities, or sponsoring them for special educational opportunities. On the other hand, peer mentors might promote involvement through role modeling or by demonstrating through their own activities the benefits of involvement. Finally, emotional support might be essential to encourage students who lack confidence or assertiveness to take a more active approach to their education.

Academic and Social Integration

Tinto (1975) has proposed a conceptual, predictive model of attrition in which retention or attrition are viewed as outcomes of commitment (both to the educational process and to a particular institution) and integration into the educational environment (both academic and social). This model has been validated in a variety of empirical studies (Pascarella & Terenzini, 1977; Terenzini, Pascarella, Theophilides,

& Lorang, 1985; Terenzini & Wright, 1987). Pascarella and Terenzini summarize Tinto's model as follows:

In short, Tinto's conceptual model asserts that the student brings certain input characteristics to college such as family background, personality attributes, academic aptitude, and goal and institutional commitments. These interact with the particular college or university environment and lead to a certain level of integration into the academic and social systems of the institution. Other things being equal, the higher the levels of academic and social integration the less likely the student is to voluntarily leave the institution. (pp.540–541)

Astin's concept of involvement and Tinto's concept of integration clearly overlap and are sometimes used interchangeably. However, a careful reading of the theoretical models suggests that the concept of involvement primarily focuses on student behavior, with attitude and affect being secondary concerns (cf., Astin, 1977). In contrast, the concept of integration is primarily focused on students' attitudes and feelings about their educational experience, with behavior being a secondary concern (Shepard, 1989). Thus, for purposes of this discussion, involvement is used to convey a focus on students' behavior while integration is used to convey a focus on students' attitudes, feelings, and self-concepts in assessing the outcomes of mentoring. In addition, the concept of involvement has been linked to a range of outcome measures, including: retention, satisfaction with college, and academic achievement. In contrast, integration is predominantly used to explain voluntary attrition.

Empirical studies of mentoring derived from Tinto's theory would assess the impact of mentoring on academic retention, with integration as an intervening variable. The students' level of integration might be assessed by attitudinal measures such as the extent to which the student feels part of the university community, understands and shares institutional values, and feels satisfied with faculty and peer relations. (Behavioral measures such as those reported by Terenzini et al., 1985, could also be used.) Appropriate comparison groups could include not only mentored and unmentored students but also those students participating in programs designed to promote integration into the university environment—such as, special freshman year programs and some summer bridge programs.

One might hypothesize that of the three broad mentoring functions, emotional support would show the strongest links to integration and thereby to academic success. For example, staff, faculty, or student mentors could promote a feeling of belonging or integration among students by offering them acceptance, validation, and friendship. Direct assistance with professional development might follow in importance, particularly socialization functions that assist students in understanding the institutional culture. Role modeling, from this perspective, would also be a means of socialization.

Social Support

Social support theory focuses on the role of supportive relationships in preventing stress, reducing the harmful effects of stress, and/or increasing individuals' abilities to cope effectively with stress. Many definitions of social support have been proposed, one of the most common of which is "information leading the subject to believe he is cared for and loved, esteemed, and a member of a network of mutual obligations" (Cobb, 1976, p. 300). Research in this area has tended to focus both on the individual's subjective perception of the adequacy of social support in relation to

his or her needs as well as on objective appraisals, or “maps,” of the individual’s actual social support network (Pearson, 1990; Vaux, Phillips, Holly, Thomson, Williams, & Stewart, 1986).

House (1981) has proposed four broad categories of social support:

- (1) Emotional support (esteem, affect, trust, concern, listening);
- (2) Appraisal support (affirmation, feedback, social comparison);
- Informational support (advice, suggestion, directives, information);
- (4) Instrumental support (aid-in-kind, money, labor, time, modifying environment). (p.23)

Although controversy continues regarding the exact nature of the associations between stress, well being, and social support, a large number of empirical studies has established that social support is effective in preventing stress or in buffering people from the negative effects of stress. These findings have included studies based on college student populations (e.g., Ostrow, Paul, Dark, & Berhman, 1986).

From this perspective, mentoring provides emotional, appraisal, informational, and instrumental support which either prevents stress or buffers students from the negative effects of stress. As a result, stress does not interfere with the students’ academic activities, and they are better able to cope with the demands of the college environment.

The four functions of social support can be linked in a straightforward manner to the three major functions of mentoring. Emotional and appraisal social support correspond with the emotional support function of mentoring while instrumental and informational social support correspond with direct assistance for professional development. From the framework of social support, the social comparison component of appraisal social support perhaps best corresponds to the role-modeling function of mentoring.

Within the educational environment, different kinds of support are best provided by different kinds of mentors. For example, informational support is probably best provided by staff or faculty while emotional and appraisal support are probably best provided by students, with counseling staff as back-up (Pearson, 1990).

Developmental Support

Whereas a variety of developmental theories emphasizes the importance of mentors, many of these (e.g., Levinson et al., 1978; Sheehy, 1974) focus on adult development and have, at best, limited applicability to the traditional undergraduate student experience. A number of authors, however, has linked mentoring to other developmental theories.

For example, Thomas et al. (1982) link their discussion of mentoring to Perry’s (1970) nine stages of cognitive development. They suggest that the ideal mentor will have reached Stage Nine thinking or will “have achieved a self-created role and be involved in expanding it, know who she is and how she affects other people, places and things, and be ready to encounter risks to her self-esteem in achieving full potential” (p. 52). They also point out, however, that effective mentoring will provide students with stimulation at only one stage beyond their current cognitive levels, so that the mentor needs to be aware of, and responsive to, the developmental stage of the student.

Chickering’s own work is not without applicability to the study of mentoring. Chickering (1969) underscores the importance of student-faculty relations in promoting the development of students’ intellectual competence, autonomy, purpose,

and integrity. He concludes that student-faculty relations that succeed in promoting student development are characterized by “accessibility, authenticity, knowledge, and an ability to talk with a student” (p. 244). It is difficult to directly translate these concepts to specific mentoring functions, but one might infer that the role-modeling function is of greatest importance to student development followed by emotional support and direct assistance.

Empirical studies of mentoring derived from developmental theory would assess the impact of mentoring on students’ personal, social, or cognitive development. A variety of standardized measures could be used to assess students’ level of development before and after exposure to a mentor in comparison with students who did not have a mentor. Appropriate comparison groups would include not only mentored and unmentored students but also those students participating in programs designed to promote student development (e.g., Walsh, 1985).

Table 3 summarizes these theoretical perspectives and indicates how each theory might guide empirical research.

Conclusion

Over the last 10 to 15 years, dozens of colleges and universities have implemented mentoring programs or otherwise attempted to systematically encourage mentoring relationships for undergraduates. These interventions reflect the belief that mentoring can improve students’ levels of academic achievement, assist students at risk for attrition to graduate, feed the pipeline to graduate schools and the professoriate, and humanize large and impersonal institutions. Because mentoring is closely associated with graduate education, its systematic extension into undergraduate study as a strategy for promoting academic success may appear natural, feasible, and desirable.

Unfortunately, neither empirical nor theoretical research has kept pace with program development. The concept of mentoring remains unclear and imprecise, and the effectiveness of informal or formal mentoring in promoting undergraduate academic success is assumed rather than demonstrated.

There is a critical need for more research about mentoring, especially as it applies to undergraduate academic success (cf., Hunt & Michael, 1983; Noe, 1988b). First, simple descriptive information is needed about the number of students who have access to mentors, the nature of these relationships, and the characteristics of the mentors and protégés. Second, quasi-experimental research is needed to better understand the relationship between mentoring and undergraduate academic success. Third, evaluation research is needed to measure the effectiveness of formal mentoring programs. Fourth, qualitative and ethnographic research is needed to better understand the dynamics and development of mentoring relationships—specifically, in higher education environments. Fifth, basic theoretical research is needed to better understand how mentoring is linked to academic outcomes.

Specific questions for investigation include: (a) What are the prevalence and distribution of mentoring in undergraduate education today? (b) How does mentoring vary as a function of student and institutional characteristics? (c) Are students of color and female students less likely than Caucasian students or male students to have mentors? (d) What is the association between mentoring and undergraduate academic success? Is informal mentoring a cause, effect, or correlate of undergraduate academic success? (e) How do the gender and ethnicity of mentors and protégés influence the nature and outcomes of mentoring relationships? (f) Which mentoring

TABLE 3
Overview of four theoretical approaches

Research design components	Theoretical approach			
	Involvement	Integration	Social support	Social & cognitive development
Represented by	Astin, 1977	Tinto, 1975	Cobb, 1976; House, 1981	Chickering, 1969; Perry, 1970
Independent variable*	Presence of mentor/mentoring functions	Presence of mentor/mentoring functions	Perceived stress/demands for adaptation	Presence of mentor/mentoring functions
Mediating variable*	Behavioral indicators of involvement in learning	Behavioral/affective indicators of integration/sense of belonging	Availability/use of mentoring functions	Stage of development./developmental congruence between student & mentor
Dependent variable	Acad. achievement./retention/satisfaction	Retention	Health/retention/achievement	Developmental gains/skills development
Most important mentoring component	Direct assist.	Emotl. support	Direct assist./emotl. support	Role modeling

*Other control variables should be included in research—such as, demographic variables, level of academic preparation, participation in other special programs

functions are most closely associated with undergraduate academic success? (g) What factors produce the best fit between protégé and mentor? (h) To what extent are formal mentoring programs effective in promoting retention and academic success? What program characteristics seem to produce the best results? Finally, how do mentoring programs compare to other programs with similar goals? Until such questions are answered, mentoring remains an intriguing, but untested, strategy for enhancing undergraduate academic success.

References

- Alexander, D. W. (1990). An exploration of attributes present in a mentor/protege relationship in nursing education administration. In L. B. Welch (Ed.), *Women in higher education: Changes and challenges* (pp. 199–208). New York: Praeger.
- Allard, W. G., Dodd, J. M., & Peralez, E. (1987). Keeping LD students in college. *Academic Therapy, 22*, 359–365.
- American Association of State Colleges and Universities. (1985). *Innovation and change in state colleges and universities*. Washington, DC: Author. (ERIC Document Reproduction Service No. ED 264 799)
- Astin, A. W. (1977). *Four critical years: Effects of college on beliefs, attitudes, and knowledge*. San Francisco: Jossey-Bass.
- Astin, A. W. (1984). Student involvement: A developmental theory for higher education. *Journal of College Student Personnel, 25*, 287–300.
- Bandura, A. (1977). *Social learning theory*. Englewood Cliffs, NJ: Prentice-Hall.
- Blackwell, J. E. (1987). Mentoring and networking among blacks. In A. S. Pruitt (Ed.), *In pursuit of equality in higher education* (pp. 146–162). Dix Hills, NY: General Hall.
- Blackwell, J. E. (1989). Mentoring: An action strategy for increasing minority faculty. *Academe, 75*, 8–14.
- Boyer, E. L. (1987). *College: The undergraduate experience in America*. New York: Harper & Row.
- Burke, R. J. (1984). Mentors in organizations. *Group and Organization Studies, 9*, 353–372.
- Busch, J. W. (1985). Mentoring in graduate schools of education: Mentors' perceptions. *American Educational Research Journal, 22*, 257–265.
- Chickering, A. W. (1969). *Education and identity*. San Francisco: Jossey-Bass.
- Clawson, J. G. (1980). Mentoring in managerial careers. In C. B. Derr (Ed.), *Work, family and the career: New frontiers in theory and research* (pp. 144–165). New York: Praeger.
- Cobb, S. (1976). Social support as a moderator of life stress. *Psychosomatic Medicine, 38*, 300–314.
- Conrad, C. (1985). *Strategic organizational communication: Cultures, situations, and adaptation*. New York: Holt, Rinehart and Winston.
- Conrad, K. J., & Miller, T. Q. (1987). Measuring and testing program philosophy. In L. Bickman (Ed.), *Using program theory in evaluation. New directions for program evaluation: No. 33* (pp. 19–42). San Francisco: Jossey Bass.
- Cook, T. D., & Campbell, D. T. (1979). *Quasi-experimentation: Design and analysis issues for field settings*. Chicago: Rand McNally.
- Cosgrove, T. J. (1986). The effects of participation in a mentoring-transcript program on freshmen. *Journal of College Student Personnel, 27*, 119–124.
- Cronan-Hillix, T., Gensheimer, L. K., Cronan-Hillix, W. A., & Davidson, W. S. (1986). Students' views of mentors in psychology graduate training. *Teaching of Psychology, 13*, 123–127.
- DeCoster, D. A., & Brown, R. D. (1982). Mentoring relationships and the educational process. In R. D. Brown & D. A. DeCoster (Eds.), *Mentoring-transcript systems for promoting student growth. New directions for student services: No. 19* (pp. 5–18). San Francisco: Jossey-Bass.

- Dunphy, L., Miller, T. E., Woodruff, T., & Nelson, J. E. (1987). Exemplary retention strategies for the freshman year. In M. M. Stodt & W. M. Klepper (Eds.), *Increasing retention: Academic and student affairs administrators in partnership. New directions for higher education: No. 60* (pp. 39–60). San Francisco: Jossey-Bass.
- Ellis, E. W. (1988). *Students' perceptions of mentor relationships at Florida A&M University: A historically black institution*. Tallahassee, FL: The Florida A&M University Foundation. (ERIC Document Reproduction Service No. ED 305 423)
- Ender, S. C. (1984). Student paraprofessionals within student affairs: The state of the art. In S. C. Ender & R. B. Winston (Eds.), *Students as paraprofessional staff. New directions for student services: No. 27* (pp. 3–21). San Francisco: Jossey-Bass.
- Erikson, E. H. (1963). *Childhood and society*. New York: Norton.
- Erkut, S., & Mokros, J. R. (1984). Professors as models and mentors for college students. *American Educational Research Journal, 21*, 399–417.
- Evans, N. J., Bourassa, D. M., & Woolbright, C. (1985). Working with young undergraduate women. In N. J. Evans (Ed.), *Facilitating the development of women. New directions for student services: No. 29* (pp. 45–59). San Francisco: Jossey-Bass.
- Fagenson, E. A. (1989). The mentor advantage: Perceived career/job experiences of proteges versus non-proteges. *Journal of Organizational Behavior, 10*, 309–320.
- Gergen, K. J. (1978). Toward generative theory. *Journal of Personality and Social Psychology, 36*, 1344–1360.
- Gerstein, M. (1985). Mentoring: An age old practice in a knowledge-based society. *Journal of Counseling and Development, 64*, 156–157.
- Gray, W. A., & Gray, M. M. (1986). *Mentoring: A comprehensive annotated bibliography of important references*. Vancouver, British Columbia: International Association for Mentoring.
- House, J. S. (1981). *Work stress and social support*. Reading, MA: Addison-Wesley.
- Hughes, M. S. (1988). Developing leadership potential for minority women. In M. A. D. Sagaria (Ed.), *Empowering women: Leadership development strategies on campus. New directions for student services: No. 44* (pp. 63–75). San Francisco: Jossey-Bass.
- Humm, A. & Riessman, F. (1988). Peer mentoring: An anti-drop-out strategy. In N. S. Giddan (Ed.), *Community and social support for college students* (pp. 177–189). Springfield, IL: Charles C. Thomas.
- Hunt, D. M., & Michael, C. (1983). Mentorship: A career training and development tool. *Academy of Management Review, 8*, 475–485.
- Jacobi, M. (1989). *Student services assessment: Report on undergraduate student problems*. Los Angeles: University of California, Student Affairs Information and Research Office.
- Jacobi, M. (1990). Student services assessment: *Report on graduate student problems*. Los Angeles: University of California, Student Affairs Information and Research Office.
- Jacobi, M. (1991). Focus group research: A tool for the student affairs professional. *NASPA Journal, 28*, 195–201.
- Johnson, C. S. (1989). Mentoring programs. In M. L. Upcraft & J. Gardner (Eds.), *The freshman year experience: Helping students survive and succeed in college* (pp. 118–128). San Francisco: Jossey-Bass.
- Kanter, R. M. (1977). *Men and women of the corporation*. New York: Basic.
- King, R. & Bireley, M. (1982). *Undergraduate selection/retention in Wright State University's College of Education and Human Services*. Dayton, OH: Wright State University. (ERIC Document Reproduction Service No. ED 220 458)
- Knox, P. L., & McGovern, T. V. (1988). Mentoring women in academia. *Teaching of Psychology, 15*, 39–40.
- Kogler-Hill, S. E., Bahniuk, M. H., Dobos, J., & Rouner, D. (1989). Mentoring and other communication support in the academic setting. *Group and Organization Studies, 14*, 355–368.
- Kram, K. E. (1985). *Mentoring at work: Developmental relationships in organizational life*. Glenview, IL: Scott, Foresman & Co.

- Kramer, M. C., Bryan, W. A., Rood, R. P., & Smith, M. A. (1982). The national scene: Other alternatives and models. In R. D. Brown & D. A. DeCoster (Eds.), *Mentoring-transcript systems for promoting student growth. New directions for student services: No. 19* (pp. 33–48). San Francisco: Jossey-Bass.
- LeCluyse, E. E., Tollefson, N., & Borgers, S. B. (1985). Differences in female graduate students in relation to mentoring. *College Student Journal, 10*, 411–415.
- Lester, V., & Johnson, C. (1981). The learning dialogue: Mentoring. In J. Fried (Ed.), *Education for student development. New directions for student services: No. 15* (pp. 49–56). San Francisco: Jossey-Bass.
- Levinson, D. J., Carrow, C. N., Klein, E. B., Levinson, M. H., & McKee, B. (1978). *The seasons of a man's life*. New York: Ballentine.
- Lewis, J. L. (1986). The black freshman network. *College and University, 61*, 135–140.
- Mendoza, J., & Samuels, C. (1987). *Faculty mentoring system for minority student retention. Glendale Community College, year-end report*. Glendale, CA: Glendale Community College. (ERIC Document Reproduction Service No. ED 288 588)
- Merriam, S. (1983). Mentors and proteges: A critical review of the literature. *Adult Education Quarterly, 33*, 161–173.
- Merriam, S. B., & Thomas, T. K. (1986). The role of mentoring in the career development of community college presidents. *Community/Junior College Quarterly of Research and Practice, 10*, 177–191.
- Meznek, J., McGrath, P., & Garcia, F. (1989). *The Puente Project. A report to the Board of Governors, California Community Colleges*. Sacramento: Office of the Chancellor. (ERIC Document Reproduction Service No. ED 307 920)
- Moore, K. M. (1982). The role of mentors in developing leaders for academe. *Educational Record, 63*, 23–28.
- Moore, K. M., & Amey, M. J. (1988). Some faculty leaders are born women. In M. A. D. Sagaria (Ed.), *Empowering women: Leadership development strategies on campus. New directions for student services: No. 44* (pp. 39–50). San Francisco: Jossey-Bass.
- Moses, Y. T. (1989). *Black women in academe: Issues and strategies*. Washington, DC: Association of American Colleges. (ERIC Document Reproduction Service No. ED 311 817)
- Nicoloff, L. K., & Forrest, L. (1988). Gender issues in research and publication. *Journal of College Student Development, 29*, 521–528.
- Nieva, V. F., & Gutek, B. A. (1981). *Women and work: A psychological perspective*. New York: Praeger.
- Noe, R. A. (1988a). An investigation of the determinants of successful assigned mentoring relationships. *Personnel Psychology, 41*, 457–479.
- Noe, R. A. (1988b). Women and mentoring: A review and research agenda. *Academy of Management Review, 13*, 65–78.
- Obleton, N. B. (1984). Career counseling black women in a predominantly white coeducational university. *Personnel and Guidance Journal, 62*, 365–368.
- O'Brien, E. M. (1989). Keeping them coming back for more: Retention personnel help schools hold onto minority students. *Black Issues in Higher Education, 5*(1), 3–5.
- Oestereich, M. (1987). Effectiveness of peer tutors/mentors for disadvantaged students at Brooklyn College: Preliminary analyses. *Linkages, 5*, 27–33. (ERIC Document Reproduction Service No. ED 296 021)
- Olian, J. D., Carroll, S. J., Giannantonio, C. M., & Feren, D. B. (1988). What do proteges look for in a mentor? Results of three experimental studies. *Journal of Vocational Behavior, 33*, 15–37.
- Ostrow, E., Paul, S. C., Dark, V. J., & Berhman, J. A. (1986). Adjustment of women on campus: Effects of stressful life events, social support, and personal competencies. In S. E. Hobfoll (Ed.), *Stress, social support, and women* (pp. 29–45). Washington, DC: Hemisphere.
- Pascarella, E. T. (1980). Student-faculty informal contact and college outcomes. *Review of Educational Research, 50*, 545–595.

- Pascarella, E. T., & Terenzini, P. T. (1977). Patterns of student-faculty information interaction beyond the classroom and voluntary freshman attrition. *Journal of Higher Education*, 48, 540–552.
- Pascarella, E. T., Terenzini, P. T., & Hibel, J. (1978). Student-faculty interactional settings and their relationship to predicted academic performance. *Journal of Higher Education*, 49, 450–463.
- Patton, M. Q. (1987). *How to use qualitative methods in evaluation*. Newbury Park, CA: Sage.
- Pearson, R. E. (1990). *Counseling and social support: Perspectives and practice*. Newbury Park, CA: Sage.
- Perry, W. G. (1970). *Forms of intellectual and ethical development in the college years*. New York: Holt, Rinehart and Winston.
- Phillips-Jones, L. (1982). *Mentors and proteges*. New York: Arbor House.
- Pounds, A. W. (1987). Black students' needs on predominantly white campuses. In D. J. Wright (Ed.), *Responding to the needs of today's minority students. New directions for student services: No. 38* (pp. 23–38). San Francisco: Jossey-Bass.
- Rice, M. B., & Brown, R. D. (1990). Developmental factors associated with self-perceptions of mentoring competence and mentoring needs. *Journal of College Student Development*, 31, 293–299.
- Riley, S., & Wrench, D. (1985). Mentoring among women lawyers. *Journal of Applied Social Psychology*, 15, 374–386.
- Roche, G. R. (1979). Much ado about mentors. *Harvard Business Review*, 57, 14–16, 20, 24, 26–28.
- Rowe, M. P. (1989). What actually works? The one-to-one approach. In C. S. Pearson, D. L. Shavlik, & J. G. Touchton (Eds.), *Educating the majority: Women challenge tradition in higher education* (pp. 375–383). New York: American Council on Education and Macmillan.
- Sagaria, M. A. D., & Johnsrud, L. K. (1988). Generative leadership. In M. A. D. Sagaria (Ed.), *Empowering women: Leadership development strategies on campus. New directions for student services: No. 44* (pp. 13–26). San Francisco: Jossey-Bass.
- Schmidt, J. A., & Wolfe, J. S. (1980). The mentor partnership: Discovery of professionalism. *NASPA Journal*, 17, 45–51.
- Schockett, M. R., & Haring-Hidore, M. (1985). Factor analytic support for psychosocial and vocational mentoring functions. *Psychological Reports*, 57, 627–630.
- Sedlacek, W. E. (1983). Teaching minority students. In J. H. Connes, J. F. Noonan, & D. Janha (Eds.), *Teaching minority students. New directions for teaching and learning: No. 16* (pp. 39–50). San Francisco: Jossey-Bass.
- Shandley, T. C. (1989). The use of mentors for leadership development. *NASPA Journal*, 27, 59–66.
- Shapiro, E. C., Haseltine, F. P., & Rowe, M. P. (1978). Moving up: Role models, mentors, and the “patron system.” *Sloan Management Review*, 19, 51–58.
- Sharkey, S. J., Bischoff, P. M., Echols, D., Morrison, C., Northman, E. A., Liebman, A., & Steele, B. (1987). Pioneer programs for retaining “at-risk” students. In M. M. Stodt & W. M. Klepper (Eds.), *Increasing retention: Academic and student affairs administrators in partnership. New directions for higher education: No. 60* (pp. 61–86). San Francisco: Jossey-Bass.
- Sheehy, G. (1974). *Passages: predictable crises of adult life*. New York: Bantam.
- Shepard, C. F. (1989). *College drop-out: An examination of two schools of thought*. Unpublished doctoral dissertation, University of California, Los Angeles.
- Speizer, J. J. (1981). Role models, mentors, and sponsors: The elusive concepts. *Signs: Journal of Women in Culture and Society*, 6, 692–712.
- Study Group on the Conditions of Excellence in American Higher Education. (1984). *Involvement in learning: Realizing the potential of American higher education*. Washington, DC: National Institute of Education.
- Terenzini, P. T., Pascarella, E. T., Theophilides, C., & Lorang, W. G. (1985). A replication of a path analytic validation of Tinto's theory of college student attrition. *The Review of Higher Education*, 8, 319–340.

- Terezini, P. T., Theophilides, C., & Lorang, W. G. (1984). Influences on students' perceptions of their academic skill development during college. *Journal of Higher Education, 55*, 621-636.
- Terezini, P. T., & Wright, T. M. (1987). Influences on students' academic growth during four years of college. *Research in Higher Education, 26*, 161-179.
- Thomas, R., Murrell, P. H., & Chickering, A. W. (1982). Theoretical bases and feasibility issues for mentoring and developmental transcripts. In R. D. Brown & D. A. DeCoster (Eds.), *Mentoring-transcript systems for promoting student growth. New directions for student services: No. 19* (pp. 49-65). San Francisco: Jossey-Bass.
- Tinto, V. (1975). Dropout from higher education: A theoretical synthesis of recent research. *Review of Educational Research, 45*, 89-125.
- Tobias, S. (1990, July/August). They're not dumb; they're different. *Change*, pp. 13-30.
- Tracey, T. J., & Sedlacek, W. E. (1985). The relationship of noncognitive variables to academic success: A longitudinal comparison by race. *Journal of College Student Personnel, 26*, 405-410.
- Ugbah, S., & Williams, S. A. (1989). The mentor-protégé relationship: It's impact on blacks in predominantly white institutions. In J. C. Elam (Ed.), *Blacks in higher education: Overcoming the odds* (pp. 29-42). Lanham, MD: University Press of America.
- Vaux, A., Phillips, J., Holly, L., Thomson, B., Williams, D., & Stewart, D. (1986). The Social Support Appraisals (SS-A) Scale: Studies of reliability and validity. *American Journal of Community Psychology, 14*, 195-219.
- Walsh, R. W. (1985). Changes in college freshmen after participation in a student development program. *Journal of College Student Personnel, 26*, 310-314.
- Williams, D. (1986). *Naturalistic evaluation. New directions for program evaluation: No. 30*. San Francisco: Jossey-Bass.
- Wilson, R. C., Gaff, J. G., Dienst, E. R., Wood, L., & Bavry, J. L. (1975). *College professors and their impact on students*. New York: Wiley.
- Wrightsmann, L. S. (1981, August). *Research methodologies for assessing mentoring*. Presented at the Annual Conference of the American Psychological Association, Los Angeles. (ERIC Document Reproduction Service No. ED 209 339).
- Zanden, J. W. V. (1978). *Human development (2nd ed.)*. New York: Knopf.
- Zey, M. G. (1984). *The mentor connection*. Homewood, IL: Dow Jones-Irwin.

Author

MARYANN JACOBI is Director, Student Affairs Information and Research Office, UCLA, 1292 PCPC, 405 Hilgard Ave., Los Angeles, CA 90024-1573. She specializes in institutional research and program evaluation.