Thriving in the Academy: A Model of Faculty Career Outcomes

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Abstract

Building on previous theoretical and empirical work, we propose a model of faculty career outcomes. We add concepts from the organizational sciences and propose that facilitating processes (i.e., social networks, faculty resources, protected research time) determine career outcomes. We explain how these key processes mediate the relationship between antecedent variables (individual differences, social exchange relationships, supportive work environment) and career outcomes. We also propose that these processes may operate differently for men and women. Implications and future research directions are discussed.

Key words:

Career outcomes

Faculty

Research productivity

Sex differences

Social networks

Job resources

Research time

Individual differences

Social exchange relationships

Work environment

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The topic of managerial career outcomes in business and industry is well-studied in the organizational sciences. Far less attention, however, has been paid to the factors which influence faculty career outcomes. What are the critical processes underlying whether or not faculty members succeed? How does access to certain types of resources mediate between various antecedents and career outcomes? Does the relationship between resources and career outcomes differ for male and female faculty members and, if so, how? We attempt to construct a model of faculty career outcomes that builds on previous frameworks from sociology and psychology. By including concepts from the organizational sciences, we propose a more complete theoretical framework of faculty outcomes.

To date, research on faculty career outcomes is limited but slowly increasing. Most empirical work has focused on research productivity. For example, Williamson and Cable (2003) looked at pre-doctoral research productivity, prestige of graduate program and dissertation chair productivity as predictors of early career research productivity. Other work has examined structural factors, such as the prestige of current academic affiliation as a predictor of research productivity (Long, Bowers, Barnett & White, 1998). Judge, Kammeyer-Mueller and Bretz (2004) extended previous work by studying graduate program prestige, prestige of first faculty position and chair productivity as predictors of research productivity and then relating these variables to extrinsic career outcomes (e.g., rank, salary, citations). Miller, Glick and Cardinal (2005) examined the importance of research productivity and prior university affiliations in changing faculty positions. In a different vein of work, de Janasz and Sullivan (2004) examined the importance of mentoring relationship networks in faculty productivity.

Missing within this body of work is theory that introduces variables more closely related to a faculty member's day-to-day job experience. We propose that three facilitating processes

(social networks, access to faculty resources, protected research time) are critical to faculty functioning and that these processes can lead to an accumulative advantage or disadvantage in terms of faculty member career outcomes. Using an interdisciplinary framework, we identify antecedent variables that indirectly influence career outcomes. These include individual difference variables (i.e., proactive personality, interpersonal skills), social exchange relationships (leader-member exchange, team-member exchange) and a supportive work environment (resource munificence, positive justice climate). We then try to explain sex differences in career outcomes by postulating how the model may function differently for male and female faculty members. Developing a model that includes such critical variables and that goes beyond research productivity to examine a more comprehensive set of career outcomes may provide an overarching theoretical framework to guide future empirical work in this area.

In the following sections, we discuss each of the major elements of the model (see Figure 1). We begin by giving a context for our work by discussing indicators of faculty career outcomes. We then provide an overview of the idea of accumulative advantage and how it can lead to higher career outcomes. We discuss three facilitating processes (social networks, faculty resources, protected research time) and the proposed relationships between them and career outcomes. Drawing on previous literature, we propose that antecedent variables (individual differences, social exchange relationships, supportive work environment) influence faculty career outcomes, partly by providing greater access to the facilitating processes. Thus, we propose that the facilitating processes partially explain the relationship between antecedents (individual differences, social exchange relationships, supportive work environment) and career outcomes. We also propose that the facilitating processes partially mediate the relationship between sex and career outcomes. That is, women may have lower career outcomes than men due to relative disadvantages in social networks, faculty resources and protected research time.

Finally, we show how sex-based role expectations may moderate the resources-career outcomes relationship. Directions for future research are discussed last.

Insert Figure 1 about here

Faculty Career Outcomes

We use the term *faculty career outcomes* to refer jointly to job performance and job outcomes. Job performance includes research productivity (i.e., number of publications), teaching effectiveness and service (department service, professional service) (Park, 1996; U.S. Department of Labor, 1991). Job outcomes include career advancement (tenure, rank and rate of promotions), compensation, professional visibility (awards, editorial board positions, other professional recognition), grants (e.g., the number and amount of grants) and impact (i.e., citations) (Dilts, Haber & Bialik, 1994). Within faculty career outcomes in this model (refer again to Figure 1), we include job performance and job outcomes together because, in a sense, these are all outcomes. However, it seemed necessary to distinguish between job performance and job outcomes because many of the job outcomes (e.g., salary, tenure, promotion, citations) are results of job performance (e.g., research productivity) (Bergeron, 2005; Boyer, 1986, 1990; Carnegie Foundation, 1989; Daly & Townsend, 1994; Daly, 1994; Fairweather, 2005; Long, 1992; Park & Gordon, 1996; Rodgers & Maranto, 1989). Similarly, it seems likely there is a reciprocally causal relationship between job performance and job outcomes. For example, individuals with high research productivity are more likely to receive grants. Having more grant money increases research productivity (Wanner, Lewis & Gregorio, 1981; Zuckerman, 1991) so there is a reciprocal relationship between job performance and job outcomes that needs to be captured. It also seems that some of the mediating resource variables will influence job outcomes

indirectly (i.e., through research productivity). In sum, job performance and job outcomes seem to be generally representative of objective faculty career outcomes.

The Accumulation of Advantage

A valuable concept from sociology is the idea of the accumulation of advantage. This accumulation is the magnification of initial small differences into later large differences (Merton, 1973). These initial small advantages operate over time and may add up to larger advantages over the course of a career (Long, 1992). Valian (1999) likens the concept to interest accruing on capital. In an academic context, accumulative advantage is the idea that because of a variety of mechanisms, productive scientists are likely to be more productive in the future and less productive scientists are likely to be less productive in the future (Allison & Stewart, 1974; Cole & Cole, 1967). For example, greater access to funding, equipment, resources and stimulating colleagues may provide faculty with advantages in conducting research, thus increasing their productivity. Increased productivity results in higher recognition via more citations (Long, 1992; Rodgers & Maranto, 1989), which can result in more resources and then more productivity, thus continuing the upward cycle. The accumulative advantage literature has highlighted the increasing disparity in publications and citations among cohorts of faculty members but has neglected to elucidate the more micro-processes through which some faculty members become more successful than others.

Facilitating Processes

In this section we discuss three main types of facilitating processes in the form of social networks (colleagues, mentors), faculty resources (e.g., funding, facilities, personnel) and protected research time. These processes pertain to important network connections, the use of resources to facilitate research and the competing time demands of academic jobs. We posit that

these three processes mediate the relationship between antecedent variables (discussed in the next section) and faculty career outcomes.

Social Networks

Networking has been conceptualized as individuals' attempts to develop and maintain relationships with those who have the potential to assist them in their work or career (Forret & Dougherty, 2004). Professional networks, such as collegial networks and mentoring networks, are beneficial to career development. A broader social network provides access to a larger range of individuals who can influence job and career outcomes (Podolny & Baron, 1997). Research shows that social networks are related to access to information, compensation and promotion (Forret & Dougherty, 2004; Podolny & Baron, 1997; Seibert, Kraimer & Liden, 2001). Faculty members with strong network ties have higher publication rates (Finklestein, 1982). Social networks increase the likelihood of having access to multiple mentors. A meta-analytic review of protégé career benefits shows that mentored individuals are more likely to have higher compensation, greater salary growth and more promotions than non-mentored individuals (Allen, Eby, Poteet, Lentz & Lima, 2004).

Faculty Resources

Scientific achievement is influenced by access to necessary resources (Allison & Stewart, 1974; Bentley & Blackburn, 1992; Cargile & Bublitz, 1986). Resources can include human support, information, material inputs and equipment (Bacharach & Bamberger, 1995). Human support may include university personnel, department administrative staff, classroom support technicians, and research and teaching assistants. Information may include databases, software programs and concepts or ideas from books, journals, videos/DVDs, and training or software manuals. Material inputs and equipment may include office or lab space, instrumentation, teaching supplies, classroom space and equipment (e.g., quality of AV system), software,

computers and instrumentation. Another resource is financial support because it can be used to buy or gain access to all of the above. Finally, access to a graduate program is an additional resource. Resources are critical to career outcomes. For example, access to organizational resources is positively related to managerial salary and promotion (Ng, Eby, Sorensen & Feldman, 2005; Seibert et al., 2001). Several studies have found that being associated with a department that has a graduate program is related to higher productivity (Cargile & Bublitz, 1986; Park & Gordon, 1996). There is also a strong effect of funding on faculty productivity (Wanner et al., 1981; Zuckerman, 1991).

Protected Research Time

Protected research time is positively related to a number of faculty career outcomes. Faculty members with lower teaching loads have higher research productivity (Bergeron, 2005; Cargile & Bublitz, 1986; Xie & Shauman, 1998), presumably because there is more time available for research. The number of hours spent on research is strongly associated with research productivity (Allison & Stewart, 1974; Bellas & Toutkoushian, 1999; Bergeron, 2005; Brocato & Mavis, 2005; Jacobs & Winslow, 2004a; Liddle, Westergren & Duke, 1997).

The Nature of the Relationships Among the Facilitating Processes

It is clear that social networks, faculty resources and protected research time all contribute to faculty career outcomes. What is less clear is whether (or how) the three facilitating processes jointly contribute to outcomes. Because of these interrelationships, having more access to one or more of these processes may influence the amount of access to the other processes. Thus, small advantages in one type of process can lead to greater advantages in other types of processes. It may be that the nature of the relationship is additive, with each facilitating process contributing independently to outcomes, such that there is a cumulative effect. Yet, it is also possible that there is a moderated relationship between the processes and their impact on

outcomes. We explore both of these options below (note, however, that the nature of these two different relationships is not represented in Figure 1).

An Additive Relationship

Faculty job performance. Facilitating processes may affect job performance (research, teaching, service) by individually increasing performance such that there is an additive effect. For example, social networks may influence research productivity via access to a wider range of coauthors, leading to more feedback on one's work and more relationships with those whom may have expertise in some area (e.g., a statistical technique). Faculty resources, especially in the form of a graduate program, may enhance productivity by providing access to research assistants, stimulating ideas and pressure from colleagues to publish. Protected research time gives faculty members more time to write and conduct research activities. Social networks can influence teaching effectiveness by facilitating more interaction with colleagues who have taught similar classes and by having more contacts with whom to share materials, class activities, notes and advice. Teaching assistants, in the form of graduate students, may help improve teaching ratings by providing support for students and by assuming administrative work (e.g., grading) so that faculty have more time to devote to other types of class activities. Faculty resources can also impact teaching through the ability to buy expensive videos or experiential classroom materials. With regard to service, social networks can provide more opportunities, such as being offered editorial board positions or administrative positions. Protected research time provides time to engage in professional service activities (e.g., reviewing papers). Faculty resources, in the form of support personnel, can influence the ability to engage in service activities by taking on other faculty tasks and offsetting the impact of the time required to engage in service. Thus, it seems that the three resources each make a separate contribution to research, teaching and service.

Faculty job outcomes. Social networks influence job outcomes including salary, promotion and tenure, professional visibility, grants and citations. Research shows that individuals with stronger network ties have higher compensation and faster career advancement (e.g., Forret & Dougherty, 2004; Podolny & Baron, 1997). Social networks can give individuals an advantage by having access to information that is not readily available to one's peers (Seibert et al., 2001). This may include information about current salary levels, the promotion and tenure process, and political guidance. These outcomes may also be influenced by having relationships with external others to write letters in support of promotion and tenure. Given the strong link between research productivity and career advancement (e.g., Park & Gordon, 1996; Rodgers & Maranto, 1989), it is likely that protected research time contributes to job outcomes. Helping others with their research (e.g., co-authoring research with graduate students, providing a manuscript critique for a colleague) is positively related to promotion (Bergeron, 2005). Social networks may influence professional visibility by providing more access to influential others and thus becoming better known. Being in contact with a wider range of individuals, especially within a professional association, may result in more opportunities to serve in professional positions, thus increasing visibility, and more award nominations. Resources provide the funds (as well as the impetus, in the form of graduate students) to travel to and present at professional association meetings. This may also indirectly influence citations as one's work becomes better known. Social networks may also affect grant awards. Individuals within the network may pass on information about relevant grant opportunities and share their expertise and advice on obtaining them. Resources, in the form of support personnel, can be instrumental in investigating and writing grants. Protected research time can provide time to investigate grant opportunities. Thus, it seems that the three resources each make a distinct contribution to job outcomes.

Proposition 1a: The three facilitating processes (social networks, faculty resources,

protected research time) are related additively to higher faculty career outcomes. That is, each resource contributes some independent effect on faculty career outcomes.

A Multiplicative Relationship

While it may be that the three facilitating processes have an additive relationship that influences outcomes, it is equally likely that there is an interaction between some of them. Of the three facilitating processes, faculty resources seems to be qualitatively different from the other two processes. Thus, it may be that faculty resources moderates the relationship between social networks and career outcomes, and between protected research time and career outcomes. That is, both social networks and protected research time will have more of an effect on career outcomes under conditions of high resources than under low resources.

Faculty job performance. The benefits of social networks are known and extensive (e.g., Forret & Dougherty, 2004). Colleagues within one's social network are important for many reasons. They are sources of information about data, resources, grants and other opportunities (de Janasz & Sullivan, 2004) as well as about career advice and social support (Gersick, Bartunek & Dutton, 2000). Resources provide opportunities to expand existing social networks as well as to gain access to new networks. This network expansion can happen by traveling to conferences or working with more co-authors, attending training courses or traveling to smaller, regional conferences or conferences outside one's immediate field. Thus the benefits of networks may be multiplied because of new network creation simply by having more access to resources. Having resources to travel to conferences can be helpful to teaching effectiveness because of the opportunity to attend sessions designed to improve teaching. Resources also allow faculty members to better fulfill service obligations (e.g., spending additional days at a conference to attend editorial board meetings). Thus, having more access to resources interacts with social networks to result in higher job performance than would result from a joint additive effect. In

contrast, when resources are low, there are fewer opportunities to interact with contacts in existing networks and fewer opportunities to create new networks. Thus, the many benefits of social networks are less likely to be realized.

Evidence points to the fact that faculty must make forced choices between research and other activities such as teaching, advising students and service activities (Carnegie Foundation, 1989). This is one reason that protected research time is critical to job performance. When resources are abundant, an individual can make much better use of his or her time (Bacharach & Bamberger, 1995) and the outcomes are multiplied. For example, research assistants can take on some of the more mundane and time-consuming research activities (e.g., literature searches, data entry) so that faculty members have more time to devote to writing and research (McKinley, Cheng & Schick, 1986). With additional resources, it may be possible to buy a data set rather than collect data (thus saving time and possibly resulting in greater productivity). By using teaching assistants, individuals can offload some of their teaching responsibilities to conserve even more time for research while still maintaining or improving teaching ratings. Job resources may also have motivational potential and result in high work engagement and better job performance (Bakker & Demerouti, 2007). Thus, having more access to resources interacts with protected research time to result in higher career outcomes than would result from a joint additive effect. In contrast, when resources are low, faculty members may have to spend their protected research time on activities that would be better outsourced to others. Job tasks take more time and energy than they should which can result in role overload and stress, and thus lower job performance (Bacharach & Bamberger, 1995).

Faculty job outcomes. By using resources to expand existing social networks and get access to new networks, individuals are increasing the likelihood of positive job outcomes. In social network research, the number of network contacts is related to career sponsorship. Greater

career sponsorship is associated with higher salaries and more promotions (Forret & Dougherty, 2004). A major benefit of having a large number of network contacts is having access to organizational information. Access to information is positively related to number of promotions (Seibert et al., 2001). Having a greater number of network contacts may also result in having multiple mentors. Mentors can make contacts with others to obtain assistance (e.g., lobbying for a job, funds), give information regarding opportunities and provide access to formal and informal networks of communication (de Janasz & Sullivan, 2004; Eddleston, Baldridge, & Veiga, 2004). In addition, an individual's own network is expanded via contacts with the mentor's network (Higgins, 2000; Higgins & Kram, 2001). Thus, the benefits of a network are multiplied. Having the resources to attend more conferences, and thus meet more people, can result in a greater degree of professional visibility. Social networks can provide more opportunities. These opportunities can result in meeting higher-status others with whom one normally would not come into contact. Getting to know people in powerful positions (i.e., gatekeepers) may influence career outcomes by way of receiving political guidance and better letters of recommendation. Research shows that individuals with links to high-status others have faster promotions rates than individuals with links to low-status others (Podolny & Baron, 1997). In contrast, when resources are low, there are fewer opportunities to maintain current or develop new social networks. Thus, there is less likelihood of receiving career sponsorship, having multiple mentors and getting access to information – all of which are linked to compensation and promotion (Forret & Dougherty, 2004; Podolny & Baron, 1997; Seibert et al., 2001).

Protected research time provides time and space for a variety of research activities. With slack resources, faculty members can use some of their research time to attend additional training (e.g., statistics, research methods, teaching seminars) and professional development. In a meta-analytic review, Ng et al. (2005) found that training and skills development opportunities were

positively related to managerial salary and promotion. Faculty members may also be more likely to get grants with a combination of protected research time and abundant resources. Administrative assistants and support staff can play a critical role in administering grants and contracts and in performing administrative tasks to free up faculty time for research (Bingen & Siau, 1981). This allows faculty members more time to investigate, write and submit grants. With time and additional resources, faculty members may have more opportunities to review for journals, thus becoming better known by editors and associate editors, which may increase professional visibility. In contrast, when resources are scarce, faculty members are less able to make efficient use of research time. They may be limited in their ability to travel to training and professional development and have less time and thus a lower likelihood of high career outcomes.

> Proposition 1b: Faculty resources moderates the relationship between the other two processes (social networks, protected research time) and faculty career outcomes. Specifically, career outcomes will be better under conditions of high resources than under conditions of low resources.

Antecedents to Faculty Career Outcomes

Research on career outcomes has been dominated by three main perspectives – individual, interpersonal and organizational perspectives (Callanan, 2003; Judge, Cable, Boudreau & Bretz, 1995; Kirchmeyer, 1998; Nabi, 1999; Wayne, Liden, Kraimer & Graf, 1999). The individual approach is that relevant individual difference variables, such as proactive personality and interpersonal skills, are the main predictors of career outcomes. The interpersonal view is that interpersonal relationships, such as social exchange relationships, influence individuals' career outcomes. The organizational perspective is that higher-level variables, such as a supportive work environment, have substantial impact on employees' career outcomes (e.g., Sonnenfeld &

Peiperl, 1988). We examine each of these three approaches in relation to faculty career outcomes and as antecedents to the three facilitating processes.

Individual Differences

A series of relatively stable individual differences have been used to try and explain career outcomes (e.g., Judge et al, 1995; Wayne et al, 1999). Drawing from the extant literature, our model includes proactive personality and interpersonal skills as antecedents.

Proactive personality. Proactive personality is a stable personality trait related to taking personal initiative (Bateman & Crant, 1993). Individuals who are proactive seem to be unconstrained by situational factors and tend to actively shape their work environment through behaviors that lead to better career outcomes (Seibert, Kraimer & Crant, 2001). Proactive faculty members may be more likely to take the initiative in a number of areas that influence job performance. For example, proactive individuals may positively impact their research productivity by asking for feedback from colleagues, actively seeking out potential co-authors, attending professional development activities such as additional statistics training and making more effort to find and investigate grants. They may also earn higher teaching ratings by negotiating to teach electives rather than core courses and they may be more likely to address any potential classroom problems early in the semester. High levels of proactive personality may manifest themselves in higher job performance (Crant, 1995) and in working more hours per week, which is associated with greater objective career success (Judge & Bretz, 1994; Judge et al., 1995) and a higher number of publications (Allison & Stewart, 1974; Bergeron, 2005; Brocato & Mavis, 2005; Wanner et al., 1981).

Proactive individuals may influence job outcomes by asking for a higher salary or salary increases, getting advice on promotion and tenure materials, and seeking out and establishing contacts with potential letter writers long before the promotion process begins. They may try to

increase their professional visibility by reviewing for journals, volunteering for positions in professional associations (e.g., chairing an awards committee), actively sending out manuscripts to researchers doing similar work and setting up conference sessions with the explicit purpose of meeting people in their area of expertise – all of which may which may lead to an increase in citations as well as to more opportunities. Thus, we propose that more proactive faculty members will have better job outcomes than less proactive faculty members.

Interpersonal skills. Interpersonal skills are an "interpersonal style that combines social astuteness and the ability to execute appropriate behaviors in an engaging manner that inspires confidence, trust and genuineness" (Perrewe & Nelson, 2004: 366-367). Individuals high on interpersonal skills engage in more helping behaviors at work, have better job performance (Carmeli, 2003) and are rated more highly by their supervisors (Ferris et al., 2005). Research productivity may be higher for faculty members who are able to resolve interpersonal issues with co-authors and who respond well to reviewer comments. Teaching ratings may be higher for these individuals if they result in better instructor-student relationships. Individuals with good interpersonal skills may be better able to manage (i.e., limit) their service obligations while maintaining positive relationships with colleagues and administrators.

Because decisions made in academe are often political in nature, interpersonally skilled individuals may have an advantage at getting information pertaining to organizational politics and power structures (Chao, O'Leary-Kelly, Wolf, Klein & Gardner, 1994). Some faculty members have indicated that politics are more important than service with regard to promotion, tenure and salary decisions (Cargile & Bublitz, 1986). Individuals need the support of department colleagues and researchers in the field to write external letters in order to get tenure (de Janasz & Sullivan, 2004). Higher levels of political knowledge are associated with increases in annual salaries (Seibert et al., 2001). Individuals with greater skill may have more knowledge

of important gatekeepers within the organization and more awareness of political issues. Thus, faculty members who possess good interpersonal skills may have better job outcomes. In sum, individual difference variables may influence a faculty member's career outcomes.

Proposition 2a: Higher levels of individual difference variables (proactive personality, interpersonal skills) are related to higher faculty career outcomes.

Although we have established arguments to suggest direct effects of proactive personality and interpersonal skills on faculty career outcomes, it seems also that the three types of facilitating processes (social networks, faculty resources, protected research time) play a mediating role between individual differences and career outcomes. Faculty members with high levels of proactive personality and interpersonal skills will likely have greater access to the facilitating processes than faculty members with low levels of these individual differences.

Beyond some minimal job requirements, faculty members are relatively free to determine how best to conduct their jobs. In this self-determined environment, proactive faculty members may have an advantage over faculty members who are less proactive. Proactive faculty members may be more likely to take initiative in establishing social networks. In academe, collegial networks may be critical in influencing career outcomes. Relationships with colleagues may involve collaborating on papers together and dialoguing about research problems which may lead to higher career outcomes. Proactive faculty members may work to create opportunities to meet influential others by asking people to lunch, contacting colleagues to meet at conferences and being more active in professional associations. Thompson (2005) found that proactive individuals had higher job performance because they worked to establish relationships with others who had the resources and influence to help them achieve their objectives. Proactive individuals may also have more access to faculty resources because of their personal efforts. They may expend more effort in seeking to obtain funding and to be better informed about the

resources available and how those resources are allocated. They may also have more access to a graduate program (i.e., graduate students) because they make more effort to seek out students and find mutually beneficial projects. Finally, proactive individuals may also find other ways to get what they need – through collaboration, trading off expertise for data access, etc. – so that they get resources indirectly rather than directly. With regard to protected research time, these individuals may be more likely to negotiate with the department chairperson for more research time (e.g., a sabbatical, course release). They may also indirectly get more research time by seeking out less time-consuming committees, teaching less time-intensive courses, and being proactive in blocking out writing time and not letting other tasks interfere.

Faculty members with good interpersonal skills may also have more access to all three facilitating processes. Due to their interpersonal skills, these individuals may be better liked so they have an increased likelihood of developing good relationships, including having more mentors. Mentors can ensure that a faculty member has an equitable share of resources and may be able to intercede on behalf of the faculty member. Interpersonally-skilled individuals may also have more access to faculty resources because they are better at getting information about what others are getting and can negotiate for resources in ways that do not damage relationships (Chao et al., 1994). Individuals with better interpersonal skills are more sensitive to social cues and thus can better judge and appropriately adapt to interpersonal situations. They may also be more skilled at dealing with others effectively and thus may be more successful in influencing others (Perrewé et al., 2004). This influence may lead to more protected research time if these individuals can negotiate for a lighter teaching load or say no to committee assignments without harming relationships.

In sum, having higher levels of proactive personality and interpersonal skills can lead to greater access to all three facilitating processes. Having access to these processes may translate

into more access to mentors, information, a higher likelihood of obtaining data, coauthors, grants and fewer service obligations. These processes are likely to lead to better career outcomes for faculty members. Thus, we propose that 1) faculty members with high levels of proactive personality and interpersonal skills will have greater access to the three facilitating processes; and 2) higher levels of all three facilitating processes partially mediate the relationship between career antecedents and faculty career outcomes.

> Proposition 2b: Facilitating processes (social networks, faculty resources, protected research time) partially mediate the relationship between individual difference variables (proactive personality, interpersonal skills) and faculty career outcomes.

Social Exchange Relationships

Because academic institutions do not have the traditional reporting and accountability relationships of many other types of organizations (i.e., faculty at lower ranks do not report to those at higher ranks), social exchanges are likely based on the strength of the relationship rather than on any formal obligations. Thus, social exchange relationships may assume special importance in academe. The quality of social exchange relationships includes the reciprocal exchange of ideas, feedback, assistance, information and recognition (Seers, Petty & Cashman, 1995). Two types of social exchange relationships are leader-member exchange (Dansereau, Graen & Haga, 1975) and team-member exchange (Seers, 1989). Leader-member exchange represents the quality of the relationship between a leader and a group member. In academe, this would be the relationship with the department chairperson. Team-member exchange is an individual's perception of the quality of his or her exchange relationship with his or her peer group (Seers, 1989), i.e., colleagues within one's department. It seems that both types of social exchange relationships will influence a faculty member's career outcomes.

Leader-member exchange (LMX). The main idea behind LMX theory is that leaders differ in their treatment of subordinates (Liden, Wayne & Sparrowe, 2000), such that they develop different types of relationships (or exchanges) with different members in the group. With some subordinates they have high-quality exchanges, while with other subordinates they have low-quality exchanges. Good LMX relationships may be especially important in academe where individual agreements may be somewhat more prevalent than in other types of organizations. Initial start-up packages are often confidential (Fox, 1991) and thus can greatly impact research productivity and other career outcomes. Department chairs may also indirectly influence a faculty member's teaching effectiveness in their decision of whether to assign a core or elective course (electives tend to have higher ratings). Research does show that high-quality LMX is associated with higher job performance (Kamdar & Van Dyne, 2007). With junior faculty, positive LMX may result in more feedback and "course correction" if one is off-track and in more guidance as to what is an appropriate level of service and committee work at each rank. Chairpersons can also assist junior faculty as they progress toward tenure and promotion (Blackmore, Switzer, DiLorio & Fairchild, 1997). High LMX relationships may result in more advice about career advancement strategies and the willingness to argue one's case before promotion and tenure committees. Thus, department chairs are responsible for a number of areas which may impact an individual faculty member's career outcomes.

Team-member exchange (TMX). Beyond the relationship with the department chairperson, the quality of the team-member exchange relationship with one's colleagues also may be important. According to Seers (1989), TMX assesses the effectiveness of the relationship between an individual and the group. It is the degree to which there is a reciprocal relationship in terms of giving and receiving help, sharing ideas and information, and providing feedback and recognition. Research shows that coworkers can have a positive impact on an individual's job

performance (Liden et al., 2000; Seers, 1989). Colleagues can provide work-related expertise, feedback and social support (Liden et al., 2000) that may influence research productivity. For example, faculty members with high TMX may be more likely to coauthor grants or papers with department colleagues and to get advice and feedback on manuscripts. Social support can help individuals stay motivated when dealing with high journal rejection rates. High TMX can also influence teaching effectiveness if faculty members share best practices, advice and materials. With regard to job outcomes, it seems that faculty members with higher TMX have a better chance of being promoted and tenured, all other things being equal. Faculty members with high TMX are also likely to have more equitable salaries because of greater information exchange (Pfeffer & Langton, 1988). High-quality TMX is associated with higher job satisfaction and organizational commitment (Liden et al., 2000; Major, Kozlowski, Chao & Gardner, 1995; Seers, 1989). A meta-analytic review shows that job satisfaction and organizational commitment are positively related to higher job performance (Judge, Thoresen, Bono & Patton, 2001; Meyer, Stanley, Herscovitch & Topolnytsky, 2002). Thus, high TMX can indirectly affect job performance. With better job performance, an individual will likely have higher job outcomes. Thus, we propose that high-quality exchange relationships (TMX) with other faculty members are likely to facilitate a faculty member's career success.

> Proposition 3a: Faculty members with high-quality social exchange relationships (LMX, TMX) will have better career outcomes than faculty members with low-quality social exchange relationships.

Although we have established arguments to suggest direct effects of LMX and TMX on career outcomes, it seems also that the three types of facilitating processes (social networks, faculty resources, protected research time) may play a mediating role between social exchange relationships and career outcomes. Exchange relationships involve an exchange of resources

beyond that which was formally agreed upon (Liden & Graen, 1980). In both LMX and TMX, each party brings resources to the relationship that can be exchanged (Seers et al., 1995). Faculty members with higher-quality social exchange relationships will likely have greater access to the facilitating processes than faculty members with lower-quality social exchange relationships.

Leaders bring unique positional resources (Graen, 1976) to relationships. For instance, a department chairperson may have access to a broader and different range of social networks than a faculty member. Department chairs may be contacted more frequently by industry and media groups which could lead to data collection and funding opportunities as well as increased visibility for a faculty member's research. Faculty members with high LMX relationships may have more access to these networks. Research suggests that an individual's own network can be expanded via the contacts of an influential other (Higgins, 2000; Higgins & Kram, 2001). LMX can involve the exchange of resources (Liden & Graen, 1980), in whatever form those resources happen to take. Three things that can influence access to resources are access to the leader, access to information about available resources and decision influence. Because department chairs are responsible for a number of resource issues [e.g., facilitating the procurement of grants and contracts, leading the recruitment of new faculty, allocating rewards in accordance with faculty contributions and effectively communicating the department's personnel, space, financial needs to the dean (Hoyt, 1976; Knight & Holen, 1985)], a high-quality LMX relationship may be key with regard to getting more access to faculty resources. Access to the leader is critical because some department decisions are negotiated 'behind the scenes.' Access to information is important as there are often discretionary funds available and faculty members need to understand how these funds are allocated. Because many resource allocation decisions remain confidential (Fox, 1991), faculty members with good LMX have an advantage in getting access to these funds and other resources. Subordinates with low-quality LMX have more restricted

information, less access to the leader and fewer resources (Gerstner & Day, 1997; Maslyn & Uhl-Bien, 2001). Because high-quality LMX is characterized by high levels of information exchange, trust, mutual support and influence (Lee, 1997), faculty members with high LMX may carry more weight in determining important department decisions. Indeed, research shows a positive relationship between LMX and decision influence (Dansereau et al., 1975; Schriesheim, Neider, Scandura & Tepper, 1992). New faculty hires can be regarded as a type of resource because they represent an opportunity to sway the focus of a department toward a certain research area. Hiring decisions may influence whether a faculty member's research gains or loses importance within the department, which can translate to the addition or subtraction of resources. High LMX relationships can also influence access to protected research time. Since department chairs are generally in charge of the allocation of faculty responsibilities, (Hoyt, 1976; Knight & Holen, 1985), faculty members with high LMX may have an advantage in receiving fewer new course preps and committee assignments, thus conserving more time for research.

TMX also may influence access to the three facilitating processes. Research shows that high-quality TMX exchanges involve resources and support beyond the minimum required for group and task functioning (Liden et al., 2000) and that there is a positive relationship between TMX and helping coworkers (Kamdar & Van Dyne, 2007). Faculty members with higher TMX may have more access to social networks and may be more likely to be mentored. Subordinates who receive mentoring are considered more promotable than subordinates who do not receive mentoring (Wayne et al., 1999). Research shows that high-quality TMX encourages reciprocal information exchanges (Seers et al., 1995) and that colleagues are critical sources of information (Louis, Posner & Powell, 1983). Because some of this information may be resource-related, faculty members with high TMX are more likely to have access to faculty resources. With high-quality TMX, faculty members are more likely to exchange information about how decisions are

made, how resources are allocated and may be less likely to engage in political behavior. This may result in a more equitable distribution of resources. With high-quality TMX, faculty members may be more likely to share jointly the time-consuming work of the department (e.g., new course preps, committee work) so that an individual faculty member would have more access to protected research time. Thus, it seems that high-quality TMX is likely to influence access to all three facilitating processes.

In sum, having higher-quality LMX and TMX may lead to greater access to all three facilitating processes. Having access to these processes may translate into a higher likelihood of being mentored, more access to information, more influence in hiring decisions, better teaching assignments and fewer service obligations. Because the facilitating processes are likely to lead to better career outcomes for faculty members, we propose that 1) faculty members with higher-quality social exchange relationships will have greater access to the facilitating processes; and 2) higher levels of all three facilitating processes partially mediate the relationship between career antecedents and faculty career outcomes.

> Proposition 3b: Facilitating processes (social networks, faculty resources, protected research time) partially mediate the relationship between positive social exchange relationships (LMX, TMX) and faculty career outcomes.

Supportive Work Environment

Although individual difference and interpersonal variables can influence one's career, these variables do not operate independently of context. Faculty members conduct their jobs within a work environment and there are large differences in academic work environments. Some are perceived as very supportive, some as indifferent and some as extremely unsupportive (Blackmore et al., 1997). Faculty members in a supportive work environment are likely to have higher career outcomes than faculty members in less supportive environments. Some important

components of a supportive work environment include resource munificence (i.e., whether there are sufficient resources available) and a positive justice climate (i.e., whether the department has a "just" climate or a more politicized atmosphere). Munificence seems crucial because of its direct and indirect impact on job performance and career outcomes (Bacharach & Bamberger, 1995). Although departments differ in the amount of resources available, the resources may not be equitably distributed if the department has a politicized justice climate. Thus, a positive justice climate seems critical even in resource-rich departments.

Munificence. Munificence is the scarcity or abundance of critical resources needed within an environment (Castrogiovanni, 1991; Pfeffer & Salancik, 1978). All university departments face the critical task of deciding how to allocate resources. According to Baldridge (1971), two different models of decision-making are the bureaucratic model and the political model. Most academic departments probably have both bureaucratic and political elements to their decision-making processes (Pfeffer & Salancik, 1974). One reason that munificence is important is because it affects the behavior of individuals (Koberg, 1987). Conditions of resource munificence affect which decision-making model prevails.

Under conditions of abundance, the bureaucratic model is more likely to be used (Pfeffer & Moore, 1980). The bureaucratic model emphasizes the use of universalistic criteria (Perrow, 1972), formal rules and procedures and a concern with efficiency. Thus, decision-making with regard to resource allocation is less influenced by power when resources are sufficient to meet demand (Pfeffer & Moore, 1980). This is likely because resource munificence lessens the competition among faculty members. Thus, faculty members are likely to have higher career outcomes in the form of compensation, access to grants, and sufficient teaching and administrative support. Under conditions of scarcity, however, the political model is more likely to be used. The political model (Baldrigde, 1971) emphasizes power and social influence

processes rather than bureaucratic criteria and resource optimization (Pfeffer, Salancik & Leblebici, 1976; Salancik & Pfeffer, 1978). Behavior becomes increasingly political because the competition for resources intensifies (Pfeffer & Moore, 1980). Resource scarcity increases the frequency of modifications in budget allocation and the elimination of positions, departments, programs or services (Koberg, 1987). Thus, scarcity is related to conditions of uncertainty. In decision situations that are characterized by uncertainty, power and social influence processes become more influential (Pfeffer & Salancik, 1974; Pfeffer, Salancik & Leblebici, 1976). In sum, faculty members are likely to have lower career outcomes in resource-deficient environments.

Justice climate. One indicator of the quality of the work environment is how decisions are made and the outcome of those decisions. This is referred to as the "justice climate" (Mossholder, Bennett & Martin, 1998). There are two types of justice. Distributive justice refers to the perceived fairness of outcomes (Deutsch, 1975; 1985), while procedural justice refers to the perceived fairness of the process used to determine those outcomes (Leventhal, 1980; Thibaut & Walker, 1975). A meta-analytic review shows that both types of justice are predictive of a number of important outcomes, including salary (Cohen-Charash & Spector, 2001). Many critical decisions affecting individual career outcomes are made at the department level. Some of these decisions include promotion, tenure and compensation (Darr & Johns, 2004; Pfeffer & Salancik, 1974). Other decisions include curriculum design, textbook choices, appointment of department chair, graduate student admissions (Darr & Johns, 2004) and the hiring of new faculty and doctoral students. Decisions related to courses (e.g., textbooks, curriculum design, rotating responsibility for core or elective courses) may impact ratings of teaching effectiveness. Decisions related to graduate student admissions may affect a faculty member's research productivity. Individuals are likely to have higher career outcomes in departments with a positive justice climate because the justice climate influences how decisions are made.

In a positive justice climate, decisions are more likely to be made on the basis of impersonal rules and procedures (Darr & Johns, 2004). In these instances, the allocation criteria by which decisions are made are more transparent (Hills & Mahoney, 1978). Research shows that when individuals know information will be made public or when they will be publicly identified with the decision, they are more likely to use normative criteria (instead of subjective criteria) to make decisions (Kiesler & Kiesler, 1969). Thus, politics become less important in an environment with a positive justice climate. When the justice climate is politicized, decisions are made based on the use of personal or interpersonal criteria rather than impersonal rules and procedures (Darr & Johns, 2004). Uncertainty about how decisions are made is a predictor of political climates (Johns, 1999). When the information used to make decisions remains confidential, power and social influence processes become important (Salancik & Pfeffer, 1978). Research shows that when individuals are not identified with the decision and the information on which the decision is made will not be released, the use of social similarity as a decision criterion results (Salancik & Pfeffer, 1978). That is, decisions are made by choosing someone with similar characteristics. This may translate into the hiring (or promotion) of faculty members who are similar (e.g., in gender) to established powerful faculty members. Thus, more powerful faculty members may be at an advantage – both in determining their own outcomes as well as the outcomes of others. In sum, a positive justice climate is likely to influence career outcomes.

> Proposition 4a: Faculty members in a supportive work environment (department munificence, positive justice climate) will have higher career outcomes than faculty members in a less supportive work environment.

Although we have proposed arguments to suggest direct effects of munificence and justice climate on faculty career outcomes, it is likely that the three facilitating processes (social networks, faculty resources, protected research time) play a mediating role between a supportive

work environment and career outcomes. When departments have slack resources, it is more probable that faculty members will have greater access to all three facilitating processes.

There are a number of important department decisions that affect the resources faculty members receive. These include “allocation of offices and monetary resources, committee assignments, hiring decisions, course staffing, workload assignments, allocation of graduate students, and allocation of support personnel” (Darr & Johns, 2004: 181). Sufficient department resources can support travel to conferences (and thus, more networking opportunities) and more access to graduate students and research funding. More access to graduate students can mean teaching assistance that frees up time for research. More resources may also translate into more faculty positions. This provides more people among whom to share the work of the department (e.g., service, committees).

Faculty members are generally interdependent to the extent that they share pooled resources. Under conditions of munificence, there are more resources for all faculty members and easier access to them. However when resources are scarce, individuals compete for a share of these resources, with the total amount being fixed in the short-term. Thus one faculty member’s gain is another’s loss and it becomes a zero-sum game (Darr & Johns, 2004). Conditions of scarcity are stressful and encourage individuals to engage in self-protective behaviors (e.g., Bozeman & Slusher, 1979). Because conflict is higher under these conditions, individuals defend their own perspectives even more adamantly (Cameron, 1983). When faculty members make different meanings from the same information, then no universal rules and procedures can be used to make decisions (Salancik & Pfeffer, 1974; Wildavsky, 1961). Deciding whose preferences and beliefs should prevail suggests that power may partially determine decisions. More powerful faculty members may be at an advantage because precedent (what happened previously) is a major determinant of allocation decisions (Pfeffer & Moore,

1980). Thus, standards of seniority and merit may conflict (Maniha, 1975) and some faculty members may be disadvantaged in accessing resources.

Faculty members in departments with a positive justice climate may be more likely to have their fair share of resources than faculty members in negative justice climates because of the procedures used to make resource allocation decisions. When resource allocation criteria are transparent (Hills & Mahoney, 1978) and when bureaucratic rules and procedures are used (Darr & Johns, 2004), it is more likely that resources will be divided in a fair and equitable manner. A positive justice climate may also be linked indirectly to resources. A meta-analytic review shows that both procedural and distributive justice are predictive of work performance, trust and extra-role behavior (Cohen-Charash & Spector, 2001). In departments with higher levels of trust and extra-role behavior, faculty members are more likely to cooperate and share information (Jones & George, 1998). This may impact how teaching loads are determined, how courses are staffed and the allocation of support personnel. Because faculty members are more willing to help each other (Cohen-Charash & Spector, 2001), they may be more likely to share committee work and other service duties more equitably. All of these decisions will impact faculty resources and protected research time.

If the justice climate is negative, this may suggest a more politicized work environment. Resources define power (Pfeffer, 1981) and are a goal of political behavior (Bacharach & Lawler, 1982; Mechanic, 1962). Power can be used not just to gain a larger proportion of resources but also to influence the use of universalistic decision criteria to favor one's own position (Pfeffer & Salancik, 1974). Individuals who have more power tend to argue for arrangements that benefit themselves, whereas lower-power individuals argue for arrangements that result in equality (Lawler & Yoon, 1996). Power imbalance hinders conflict resolution by decreasing the amount and frequency of information exchanged (Lawler & Yoon, 1996; Giebels, De Dreu & van de

Vliert, 1998). Even when information is available, individuals with higher power do not give it as much attention as individuals with lower power (Keltner & Robinson, 1997). This lack of agreement, coupled with less information exchange, increases the frequency of coercive tactics and confrontational behaviors (Lawler & Bacharach, 1987). When some members engage in political behavior, it may encourage other members to do the same (Johns, 1999; Darr & Johns, 2004). There may be bargaining behind the scenes concerning workload, resources and opportunities, which can advantage some faculty over others. Thus, faculty members in a positive justice climate are likely to have more access to all three types of resources than faculty members in a negative justice climate.

In sum, it seems that both department munificence and justice climate will influence a faculty member's access to the facilitating processes. Thus, we propose that 1) faculty members in a supportive work environment will have greater access to the facilitating processes; and 2) higher levels of all three facilitating processes partially mediate the relationship between a supportive work environment and faculty career outcomes.

> Proposition 4b: Facilitating processes (social networks, faculty resources, protected research time) partially mediate the relationship between a supportive work environment (department munificence, positive justice climate) and faculty career outcomes.

Sex and the Facilitating Processes-Outcomes Relationship

Sex Differences in Career Outcomes

Although women earn 40 percent of all U. S. doctorates, they are less likely to be tenured or to be full professors than men across all disciplines (National Center for Education Statistics [NCES], 2000; NCES, 2006). Promotion rates are lower for women to both the associate and full ranks (Long, Allison & McGinnis, 1993). When women do advance, they do so more slowly than men (Bayer & Astin, 1975; Rosenfeld & Jones, 1986; Valian, 1999). Women also have

lower career outcomes in terms of editorial board memberships, citations and fellow status (Judge et al., 2004). Female faculty members earn significantly less than male faculty members (see Ransom & Megdal, 1993 for a review; Toutkoushian, 1999), even after controlling for research productivity. With few exceptions (Williamson and Cable, 2003), the sex difference in publications is well-established. Productivity differences between the sexes have been observed in the fields of biochemistry (Long, 1992), sociology (Keith, Layne, Babchuk & Johnson, 2002), management (Park & Gordon, 1996), mathematics, psychology (Cohen & Gutek, 1991; Rodgers & Maranto, 1989) physics, chemistry, earth science (Cole, 1979; Cole & Zuckerman, 1984), engineering and other physical and social sciences (Cole, 1979; Cole & Zuckerman, 1984; Keith et al., 2002; Long, 1992; Xie & Shauman, 1998). Women are cited less often than men (Cole, 1979; Cole & Zuckerman, 1984) but women's lower citation rates results from the fact that women have fewer publications, not from having lower-quality publications (Long, 1992). The sex difference in research productivity has existed for decades and is considered to be a 'puzzle' (Cole & Zuckerman, 1984) because no one has been able to fully explain it.

There have been many attempts to answer the question of why there is such variation in faculty career outcomes between men and women. There are no sex differences in initial ability, graduate program quality (Rodgers & Maranto, 1989), admission rates to prestigious programs, mentorship in graduate school (Green & Bauer, 1995), financial aid (Park & Gordon, 1996) or department reputation of current faculty appointment (Keith et al., 2002). Because publications carry so much weight in tenure and promotion decisions (e.g., Boyer, 1986, 1990; Carnegie Foundation, 1989; Daly, 1994), much research has focused on productivity differences between men and women. Although a likely explanation, the productivity difference cannot be explained either through marriage or childbearing responsibilities (Cole & Zuckerman, 1987; Helmreich, Spence, Beane, Lucker & Matthews, 1980; Rodgers & Maranto, 1989). In fact, much research

shows that being married positively affects both men and women's research productivity (Helmreich et al., 1980; Rodgers & Maranto, 1989; Xie & Shauman, 1998). Sex differences also cannot be explained by patterns of collaboration or likelihood of first authorship (Cole & Zuckerman, 1984; Long, 1992). Xie and Shauman (1998) concluded there is very little direct effect of sex. Rather, men and women may differ on dimensions conducive to productivity.

Accumulative Disadvantage

Earlier, the concept of accumulative advantage was discussed. The responsible factor for the sex difference in faculty career outcomes may be the concept of accumulative *dis*advantage. Accumulative disadvantage is the idea that there are small initial differences between men and women that lead to large disadvantages for women over time (Clark & Corcoran, 1986). Valian (1999) illustrates the idea of accumulative disadvantage by comparing it to interest accruing on debt. For example, an extra course, additional committee assignments and a lack of funds to travel to conferences can disadvantage faculty members in conducting research and manifest as lower research productivity. This is important because research, in terms of number of publications, is the deciding factor in determining rewards such as salary, promotions and rank (e.g., Boyer, 1986, 1990; Carnegie Foundation, 1989; Daly & Townsend, 1994; Daly, 1994; Fairweather, 2005), even at institutions that declare their mission is teaching (Ladd, 1979; Park, 1996). Very small differences in how individuals (or groups) are treated can result in very large disparities in career outcomes. As another example, Martell, Lane and Emrich (1996) conducted a study that showed some effects of accumulative disadvantage. In a computer simulation of organizational promotion practices, they modeled the effect of a small disadvantage for females in promotion through 8 hierarchical levels. The disadvantage accounted for only 1% of the variability in promotion. The researchers ran the simulations with the lowest organizational level equally staffed by males and females. After a number of iterations, the highest level in the

hierarchy was staffed by 65% males. Thus, even small initial differences can have a large impact on long-term career outcomes. Sex differences in access to the facilitating processes (social networks, faculty resources, protected research time) result in women having less access to these processes than do men. Therefore, it seems that the three facilitating processes partially mediate the relationship between sex and career outcomes.

Differences in Access to Facilitating Processes

Access to networks. Extensive research shows the importance of social networks. Research also shows there are consistent findings of sex differences, with women being more disadvantaged than men with regard to networks (Ibarra, 1992; 1997; Gersick et al., 2000; Mehra, Kilduff & Brass, 1998). Because people tend to interact with same-sex others (homophily, Blau, 1977), men's networks tend to be made up primarily of other men, whereas women have both women and men in their networks (Ibarra, 1992; Gersick et al., 2000). Because men are more likely than women to be in the higher ranks, women have fewer opportunities than men to informally interact with high-status same-sex others (Ibarra, 1992). Higher-status individuals, associated with being at higher organizational ranks, tend to be more central in networks. Centrality is associated with information and access to resources and support (Burt, 1992; Ibarra, 1992; 1997). Women, however, tend to be on the margins of social networks (Mehra et al., 1998). Being on the margins means having less access to the benefits of networks, such as information (Burt, 1992), being linked with others for referrals or job opportunities and getting access to resources and support (Ibarra, 1992; 1997). Based on human capital theory, individuals should receive the same network returns based on their network location and human capital investments (Ibarra, 1992). However, Ibarra (1992) found that men are better able to convert their human capital investments (organizational rank, professional activity) into network centrality than

women. Therefore, it seems that women have less access to social networks than men and also have less of a return on their investment in social networks.

Access to faculty resources. Simply by having less access to networks (Cohen & Gutek, 1991; Ibarra, 1992; 1997), female faculty are likely to be more disadvantaged than male faculty in procuring necessary resources for research. Access to resources is critical in determining productivity (e.g., Xie & Shauman, 1998). Yet, female faculty tend to enter their academic positions with more limited start-up packages (Park, 1996), less office and lab space, less access to graduate student assistance and fewer support staff services (e.g., MIT Faculty Newsletter, 1999; Park, 1996). Research also shows that women have less access to funding and research assistance than men (Creamer, 1998; Xie & Shauman, 1998). This disadvantages women because, as Xie and Shauman (1998) found, research funding and resources have a large impact on productivity. Thus, women have less access to resources than men.

Access to protected research time. Faculty must make choices among different job activities (Carnegie Foundation, 1989). In the results from a national faculty survey, men viewed limited resources (i.e., lack of funds, research assistance and institutional support) as their main barrier to research productivity, whereas women listed lack of time as a limitation because of their greater allocation of hours to teaching and committee work (Astin & Davis, 1993). Studies of faculty workload generally show that women spend more time on teaching than men (Astin, Korn & Lewis, 1991; Bellas & Toutkoushian, 1999; NCES, 2000), have a heavier teaching load (Xie & Shauman, 1998), heavier student advising responsibilities (MIT Faculty Newsletter, 1999; Park, 1996; Rosser, 2004) and spend more time preparing for classes and more time advising students than do men (Astin et al., 1991). The Carnegie Foundation (1990) provides evidence that female faculty are the most active contributors to the daily campus governance process and that they are significantly more active in the work of the faculty senate, administrative advisory

committees and other campus-wide bodies. Thus, female faculty tend to do more teaching, advising, service and committee work than male faculty.

In sum, it seems that female faculty members have less access to the three facilitating processes (social networks, faculty resources, protected research time) than male faculty members. Because greater levels of the facilitating processes are associated with higher career outcomes, we propose that these processes mediate the relationship between sex and career outcomes. That is, women's lower career outcomes can be explained by their having less access to the facilitating processes than men.

Proposition 5: Facilitating processes (social networks, faculty resources, protected research time) partially mediate the relationship between sex and career outcomes.

Sex-Based Role Expectations as a Moderator of the Resources-Outcomes Relationship

In addition to having less access to the three facilitating processes, women are further disadvantaged by sex-role expectations. Sex-role expectations are "shared expectations about appropriate conduct that apply to individuals solely on the basis of their socially identified sex" (Eagly & Wood, 1991: 309). Some of these are work expectations from students, colleagues and administrators while others are home and childcare expectations. Work expectations refer to teaching, service and committee work. Home expectations regard caring for children and home-making responsibilities. Taken together, these sex-role expectations place additional burdens on women that partially mitigate the effect of facilitating processes (social networks, faculty resources, protected research time) on career outcomes. Because there are fewer (or no) such expectations of men, sex-role expectations change the effect of the facilitating processes on outcomes for women but not for men.

Sex-role stereotype research consistently demonstrates that there are different sex-based role expectations for the social behavior of men and women (e.g., Deaux & Lewis, 1983;

Williams & Best, 1982; Wood & Rhodes, 1989). The idea of 'roles' is critical because roles create certain expectations of how people will behave (Katz & Kahn, 1978). Expectations of the female sex role sanction caring for the personal and emotional needs of others, delivering routine forms of personal service and helping others achieve their goals (Eagly & Crowley, 1986). Women are also expected to be more friendly, unselfish and concerned with others than are men (Eagly & Wood, 1991). The norms governing helping behavior are very different for male and female sex roles, both in terms of the type of helping and the social context of helping **(**Eagly & Crowley, 1986**)**. Expectations of the male gender role encourage short-term heroic and chivalrous types of helping (Eagly & Crowley, 1986; Girouard, 1981). Conversely, the type of helping expected of women is behavior that occurs on a more routine basis. If women do not meet sex-role expectations, there are negative repercussions in the form of lowered performance evaluations and reward recommendations (Allen & Rush, 2001). There are no such repercussions for men (Allen & Rush, 2001) and, in fact, men tend to be overrewarded for the same behavior (Heilman & Chen, 2005). Further, Allen (2006) found that helping behavior was significantly related to promotion for men but not for women.

Expectations at work. General societal expectations tend to seep into other areas of life as well, such as the workplace. For female faculty, their expected role in the workplace may expand to include not only expectations based on their organizational role as a faculty member, but also to include expectations based on their sex role – thus expanding the expected range of behaviors (Kidder & McLean Parks, 2001). Although female faculty give more time and personal support to their students than do male faculty, students do not rate female professors as more available than male professors (Bennett, 1982). Moreover, in order to receive equivalent overall ratings, female faculty have to provide greater interpersonal support as well as be equally strong in instrumental areas (e.g., course organization and explanations). These expectations may translate

to more students during office hours, more e-mails and phone calls from students, and more formal and informal advising of students. Because students hold female professors to a higher standard than they do male professors (Bennett, 1982), women may not have a choice about spending more time on teaching, course preparation and student involvement. Research also shows that women perform more service than men (e.g., Tierney & Bensimon, 1996) and serve on somewhat more committees than men (Porter, 2007). Because women tend to be in the minority in many universities and academic fields, they may be expected to serve on more committees to guarantee representation of their group (e.g., Porter, 2007; Tierney & Bensimon, 1996). They may also be more asked to serve on committees that deal with diversity or with "women's issues" (e.g., child care). With additional service and committee work, more time is required. Each additional committee served on increases the hours spent per week on committee work by 11-17% (Porter, 2007). Beyond the actual time requirements, qualitative interviews show that service can be "self-replicating." That is, doing service often leads to more demands for service (Neumann & Terosky, 2007).

Expectations at home. There are also differing expectations of men and women at home. Women continue to shoulder the bulk of responsibility for childcare and running a home (Friedman & Greenhaus, 2000; Kulis & Sicotte, 2002; Long et al., 1993; Williams, 2000). The spouses of most female faculty tend to have full-time jobs and less flexible schedules. In contrast, about half of married male faculty have a spouse who does not work outside the home (Jacobs, 2004). Although some research concludes that childrearing does not impact men or women's job performance (e.g., Cole, 1979; Rodgers & Maranto, 1989), other research shows that it does negatively impact women's career outcomes (Hargens, McCann & Reskin, 1978; Xie & Shauman, 2003). Xie and Shauman (2003) found that having young children decreased the ratio of hours worked for women to men. For female with young children, the ratios of hours worked

ranged from .73 to .80 (depending on spousal occupation), with the result being that women work about 25% fewer hours than men. This gender gap narrows as children get older but does not reach parity until the teenage years. The difference in work hours is significant because the number of hours worked per week is strongly associated with research productivity (Bellas & Toutkoushian, 1999; Bergeron, 2005; Brocato & Mavis, 2005; Jacobs & Winslow, 2004a).

In sum, we argue that these differing expectations create greater demands on women in terms of teaching, dealing with students, service work and home and childcare responsibilities. Thus, even with the same facilitating processes (social networks, faculty resources, protected research time), women experience higher job and time demands. These differences leave female faculty less time to devote to research, which subsequently results in fewer publications and slower career advancement than male faculty. Thus, it seems that sex-role expectations moderate the relationship between facilitating processes and career outcomes and changes the nature of this relationship for women but not for men.

> Proposition 6: Sex-based role expectations moderate the relationship between the three facilitating processes and faculty career outcomes. Because there are greater sex-based role expectations for women, the relationship between facilitating processes and career outcomes is weaker for women than for men.

Directions for Future Research

While there is an abundance of research on career outcomes in business and industry, there is relatively little theoretical work on faculty career outcomes. We sought to remedy this gap by presenting a multidisciplinary theoretical model that accounts for antecedent, mediating, moderating and outcome variables. Drawing on a large body of literature from sociology, psychology and the organizational sciences, the present model explains variance in faculty career outcomes based on accumulative advantage in facilitating processes and differences in individual,

interpersonal and organizational variables. We also include factors that may be largely responsible for men and women's differing career trajectories. Some limitations of our work can be explored through future research. Absent from our model are factors such as personal resources and subjective measures of career outcomes. In addition, we have not considered the nature of causal relationships or how longitudinal processes may operate in this model.

Personal resources. The job demands-resources model (Demerouti, Bakker, Nachreiner & Schaufeli, 2001) posits that negative outcomes occur when job demands are high and job resources are low. Although originally developed to study burnout, this model seems applicable to career outcomes. Because high job demands (e.g., work overload, time pressures) can cause negative physical and affective responses (e.g., emotional exhaustion, anxiety) (e.g., Warr, 1990), sufficient job resources buffer individuals against these negative effects (Bakker, Demerouti & Schaufeli, 2003). Without sufficient resources, individuals have difficulty coping with high job demands and may experience lowered job performance, organizational commitment and higher turnover (see Kahn & Byosiere, 1992). Even with equal job demands and resources, some faculty members will experience more (or less) time stress and energy depletion than others. This may be due to differences in personal resources. Personal resources may include certain cognitive features (e.g., optimism, hardiness) or extra resources to help with home and family responsibilities (e.g., a cleaning service). Having higher levels of personal resources may buffer faculty members from the negative impact of not having enough job resources. This is likely to influence career outcomes and is an avenue for future research.

Subjective career outcomes. Scholars have argued that objective (e.g., promotion, salary) and subjective (e.g., satisfaction) measures of career success are distinct concepts (e.g., Greenhaus, Parasuraman, & Wormley, 1990; Judge et al., 1995). Indeed, meta-analytic research (Ng et al., 2005) shows that the two types of career outcomes have moderately low correlations

(.22-.30). While some of the variables in our model may be related to subjective measures of career outcomes, it is also likely there are additional antecedents such as an individual's values (Feather & Newton, 1982). Future research can examine the type of model appropriate to subjective career outcomes as well as exploring other types of outcomes such as stress, burnout and disengagement (Bakker & Demerouti, 2007).

Reverse causality in relationships. Many social science models have some potential for reverse causality and ours is no exception. The logic underlying reverse-causality (e.g., outcomes-resources) is that faculty members who are highly productive may receive more faculty resources. Thus, resources may be a consequence of job performance rather than an antecedent to it. Similarly, reverse causality may be an alternative explanation for lower career outcomes. Faculty members who are less able in the research arena may do more teaching and service-related activities as an alternative way to contribute. Thus, low research productivity would be an antecedent, rather than an outcome, of job performance. Longitudinal research is needed to explore the issue of causality.

Reciprocally causal relationships. Another area to be explored is whether the relationship between some of the variables in this model (e.g., job performance, resources) and job outcomes are reciprocally causal. That is, it may be that there are feedback loops involving mutual influence instead of unidirectional relationships. For example, faculty members who have more resources are likely to be more productive. As they become more productive, they are likely to receive more recognition (Cole & Cole, 1967). This recognition can then be parlayed into more access to resources that facilitate research, such as money, time for research, capable assistants and motivating colleagues (Allison & Stewart, 1974), thus increasing productivity even more. Thus, a positive cycle of increasing resources and job outcomes begins. Similarly, some faculty members may spend more time on department service and advising students. If they spend too

much time on these activities, their research activities may decline. At the same time, they may become known for being helpful to colleagues and students, thus creating a demand for these activities (Neumann & Terosky, 2007). If colleagues and students continue to expect this type of behavior and these individuals engage in ever-increasing amounts of department service and advising, research productivity decreases even more and a negative cycle begins. Thus, one can enter into an upward or a downward spiral regarding objective career outcomes (Bergeron, 2007). Future research should take into account these types of non-recursive relationships as well as the possibility that some faculty activities (e.g., committee work) may have indirect positive relationships to career outcomes.

Although our model has focused on academic faculty, it also may be useful in understanding career outcomes in occupations that share similar characteristics. For example, the knowledge generating aspect of an academic career is similar to other knowledge-based professions such as law, consulting and accounting. Whereas research productivity is the metric used in academe, similar measurable outcomes in other professions include sales or billable hours. Further, the gender issues presented here may be relevant to other professional jobs.

In conclusion, both individual faculty members and their departments have a vested interest in faculty career outcomes. A faculty member with the necessary social networks, faculty resources and protected research time will be more likely to reach his or her full potential. This translates into higher productivity, more citations and increased visibility for faculty members. Greater success for faculty members translates into greater department productivity overall which leads to a better reputation. A better reputation brings in better faculty members, higher-quality students and easier access to funding. Using an interdisciplinary framework may provide a more comprehensive theoretical model of faculty career outcomes and help provide more specific direction for future theoretical and empirical work.

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FIGURE 1
A Model of Faculty Career Outcomes