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Faculty Productivity and Career Stages:

An Examination of Socialization Effects

by

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ABSTRACT

The applicability of the socialization thesis to understanding variations in faculty productivity is tested using data collected in 1985 from 5,000 Canadian academics. The general hypotheses are that productivity would be determined by the socializing effects of the organization on academics' professional role orientations and behaviours, and that the strength of the effects would depend on career stage. Path analysis findings provide no support for either expectations. The model explains 40% of the variation in productivity and identifies past performance as the key determinant irrespective of career stage. Organizational effects on professional orientations are present, but have no impact on productivity and do not vary as hypothesized across career stages. Empirical limitations of the study are discussed, and areas of the socialization thesis requiring further elaboration are identified. The conclusion is that although this study provides no support for the socialization thesis, neither does it present evidence to refute it.

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DEDICATION

In memory of

my grandmother, Mrs. Savitagauri Sonpal, the heart of our family, and

my father, Kirtikumar M. Sonpal, Esq., a gentle and noble man.

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CHAPTER ONE

INTRODUCTION

The purpose of this study is to identify key individual and organizational variables related to the publishing activity[1] of faculty members working in different academic settings across Canada. The focus is on examining and comparing the relative saliencies and inter-relationships of the factors impacting on publishing activity for faculty at different stages of the academic career process. The central factors included in the study are individuals' perceptions of the structural and cultural features of their work environments; individuals' assessments of their role-expectations, interests, abilities and motivations; and variables related to individuals' backgrounds such as sociodemographic characteristics and career aspects. The selection of these factors is informed by the socialization framework and by empirical findings in the extant faculty productivity literature.

Publishing activity remains one of the primary social processes by which scholarly thoughts and findings are disseminated and evaluated, and by which knowledge is certified and verified (Merton, 1973; Fox, 1992). Despite its widely acknowledged centrality to the scientific enterprise, research consistently shows that there is a very high variation in faculty publication activity, and that the distribution is very highly skewed both within and between disciplinary fields, with a small concentration of academics producing the great majority of publications (Fox, 1983).

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[1] I use the terms publishing activity and productivity interchangeably in this report. I do acknowledge, however, that faculty productivity is a much broader term and encompasses more than simply publishing activity.

Variations in faculty productivity have been found to be related, to varying degrees, to sociodemographic characteristics such as gender and age of the individual, psychological and behavioural predispositions, as well as differences in the individual's career background, such as the prestige of the graduate school of origin, academic qualifications, past performance record, experience, rank and tenure status. In addition, faculty publishing activity has been shown to be associated with aspects of organizational contexts such as prestige of current institution, organizational size, disciplinary field and aspects of organizational climate.

While sociodemographic variables have never accounted for more than 10% of the variation in faculty publications, broad institutional variables, together with individual differences in career background such as past performance and career stage, have accounted for almost two-thirds of the faculty publication variation. In addition, longitudinal studies provide convincing evidence that organizational contexts have a causal influence on faculty productivity. However, what aspects of these broad characteristics have the key impact, and the nature of the mechanism by which they influence publication activity, remains a question.

It is clear from a review of the extant literature, however, that there is a complex relationship among the determinants of faculty publication activity, and that understanding faculty behaviour requires addressing the interplay between individual characteristics on the one hand, and the impact of organizational conditions on the other hand. However, with exceptions, there are few solid theoretical attempts in the literature to explain how organizational contexts and individual characteristics are inter-related, and how these relationships influence faculty productivity.

One of the frameworks which incorporates both individuals' characteristics and their perceptions of organizational factors is the socialization thesis. Unfortunately, apart from research examining the impact of one's graduate school, there are no

methodologically sound studies in the literature which approach the examination of faculty publication activity explicitly from this perspective. However, there is much empirical evidence which indirectly supports this thesis. In addition, the literature suggests that career stage may be a fruitful locus for unravelling what is clearly a complex relationship between the various determinants of faculty productivity. From a theoretical and a substantive standpoint, it appears that a systematic inquiry from a socialization framework using career stage as an analytical variable would make a useful contribution to the extant literature in faculty productivity.

The theoretical model used to guide the study and its interpretations is based on a synthesis of the ideas of socialization theorists and integrates key empirical findings from the faculty productivity literature. The central components of the model include individuals' sociodemographic and career backgrounds, their perceptions of various aspects of their organizational environments, their assessments of their professional abilities, interests and attachments, and their current productivity as measured by the number of articles published in the last three years. The key expectations were that productivity would be a result of the socializing influence of the organizational environment on individuals' orientations and attitudes towards their professional roles, and that the strength of the socialization effects would depend on career stage.

The data used for the study were obtained from the Academic Profession in Canada survey conducted in 1985 by the Institute for Social Research, York University. Although outdated, the use of this database for the purposes of this study was justified given that it is the only available source of information regarding the activities, perceptions, preferences and attitudes for a national sample of Canadian faculty, and that the sample size is both large and representative.

From the substantive standpoint, there are few studies that have examined the perceptions of work contexts and outcomes for Canadian faculty. Most of the extant

literature on faculty productivity originates in the United States, particularly since the 1970s, in response to concerns arising from changing demographic and economic conditions in American higher education. Given that this study uses a rich, though largely unexplored, Canadian data set, it contributes to the Canadian literature by describing Canadian faculty member's perceptions of their own abilities, interests, attachments and their perceptions of the conditions in which they work.

CHAPTER TWO

LITERATURE REVIEW

The faculty productivity literature consistently shows both a very high variation in publication activity among faculty members and a very highly skewed distribution, with a small concentration of academics producing the great majority of published works (Fox, 1983).

Some of the earliest studies on faculty productivity were guided by psychological perspectives focusing on the cognitive, emotional, and behavioural styles argued to differentiate the more productive faculty members from their less productive colleagues (e.g.,, Cattell and Drevdahl, 1955; Roe, 1952). Personality studies showed that productive scientists display strong impulse control, preoccupation with ideas rather than people, high ego strength, and traits of autonomy and independence early on in life (e.g., Cattell and Drevdahl, 1955; Roe, 1952). Studies of behavioural habits showed that the high performers are a highly committed group of individuals, spending vast amounts of time on research, doing several projects simultaneously (Simon, 1974), strongly identifying with their work and are highly absorbed and self-reliant (Pelz and Andrews, 1976).

These studies gave rise to the "sacred spark" thesis of faculty productivity which proposed that variations in productivity were due to differences in psychological predispositions which made some individuals more suited than others to the demands of academic life (Cole and Cole, 1973). The evidence on which this argument is based is weak. There are few systematic tests of the sacred spark thesis. Most assertions are based on small, limited samples of eminent scientists with no comparison groups (e.g.,

Simon, 1974). Others find that the impact of individual predispositions on productivity depends on organizational location (Pelz and Andrews,1976) and disciplinary field (Hargens, 1978). Finally, others have argued that in a group as small and highly selected as academics, there is insufficient variation in psychological and behavioural dispositions to account for the high variation in productivity (Allison and Stewart, 1974: 597). The "sacred spark" thesis, thus, although it may be true to some extent, does not adequately appear to explain the large variation in faculty productivity.

Beginning in the late 1960, more sociologically inclined researchers began investigating the association between productivity and organizational context both for academics and for scientists located in nonacademic institutions. Significant relationships were found between productivity and both structural and cultural aspects of organizational contexts, such as prestige of graduate school and prestige of the current institution (e.g., Berelson, 1960; Crane, 1965; Long, 1978; Reskin, 1979),[2] organizational size (Blau, 1973), institutional focus, i.e., the degree of research orientation and emphasis (Blau, 1973; Long and McGinnis, 1981; Blackburn and Lawrence, 1995), disciplinary field (Bayer and Dutton, 1977; Wanner, Lewis and Gregorio, 1981; Baird, 1991), doctorate-granting status, proportion of faculty with superior qualifications, affluence (Blau, 1973), provision of adequate research facilities and opportunities (Glaser, 1964), and aspects of organizational climate such as degree of autonomy and freedom (Glaser, 1964; Pelz and Andrews, 1976), degree of collegial support and perceptions of colleagues' commitments to research (Pelz and Andrews, 1976; Blau, 1973; Blackburn and Lawrence, 1995).

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[2] Institutional prestige has generally been measured via peer evaluations of (i) the quality of the graduate faculty, and (ii) the effectiveness of the doctoral program (The American Council of education ratings from: (i) Carrter, A.M. 1966. *An Assessment of Quality in Graduate Education.* Washington, DC: A.C.E. and (ii) Roose, K.D. and C.J. Andersen. 1970. *A Rating of Graduate Programs.* Washington, DC: A.C.E.).

The question of whether aspects of organizational context have a causal influence on productivity, or whether productive individuals are attracted to and selected by organizational contexts which enable them to continue being productive, is settled by a series of longitudinal studies which convincingly establishes that the relationship is predominantly unidirectional with organizational context having a causal impact on productivity.

Long's (1978) longitudinal study of changes in productivity levels that occur over time for individuals who do not change departments showed that while early publication levels are most strongly influenced by pre-employment factors such as mentor's prestige and past productivity levels, change in publication levels that occur over the next three years is most strongly due to factors associated with the current organizational location as measured by the prestige of the scientist's current department. Similarly, for individuals who changed their departments, early publication levels were most strongly influenced by the prestige of their department of origin and past productivity, and had no relationship with the prestige of the new department; in contrast, later publication levels had no association with prestige of the old department but were best predicted by past productivity and prestige of the current department. Similarly, Long and McGinnis (1981) report from another longitudinal study that effects of earlier productivity decreased with time and became increasingly replaced by organizational context as measured by institutional prestige.

Other studies show that although there is some selectivity in the type of individuals hired by prestigious institutions, such selectivity is based not on prior productivity records, but on the prestige of the graduate school of origin (Crane, 1970; Long, Allison and McGinnis, 1979). In addition, there is no evidence that prestige of doctoral school is a better predictor of future productivity than is past performance record (Long, Allison and McGinnis, 1979).

Unfortunately, there is little evidence in the literature of how organizational context influences productivity. Studies which use institutional prestige as their measure of organizational context cannot specify which of the many aspects presumably associated with prestigious locations (e.g., greater resources and opportunities, favorable intellectual climates, stronger research emphases, higher reputations, and the like) have the key impact on productivity, or the mechanisms by which these effects are transmitted.

Blau (1973) argues that structural characteristics such as institutional affluence, size, doctorate-granting status, proportion of faculty with doctorate degrees, reputation and research emphasis influence research productivity indirectly by enabling an institution to attract faculty with high research potential, and helping them to realize these potentials once they have been recruited. A cadre of highly qualified faculty, in turn, create a climate with high research emphasis and an intellectually stimulating environment which act as catalysts for individuals' research involvement. Thus, according to Blau, it is the structural effect of the superior colleague climate, most likely to prevail in large, affluent, doctorate granting institutions, which is responsible for the high overall research productivity of the individuals located in these institutions.

In addition to the focus on the effect of organizational context on productivity, changing demographics of American higher education in the 1970s and 1980s, spurred researchers into exploring the relationship between productivity and variables such as age (e.g., Bayer and Dutton, 1977; Blackburn, Behymer and Hall, 1978; Lawrence, 1984) and gender (e.g., Blackburn, Behymer and Hall, 1978; Reskin, 1978; Cole, J.R., 1979; Trautvetter and Blackburn, 1990).

Gender differences among faculty publication activity have been widely reported in the literature. Over 50 studies have demonstrated that women's publication record lags significantly behind that of men's (Trautvetter and Blackburn, 1990). Explanations from psychological perspectives for gender differences in publication activity focus on factors

including differences in cognitive abilities (Bachtold and Werner, 1970), research interests, motivational sources (Helson, 1971; Blackburn and Lawrence, 1995) and commitment to nonresearch roles such as teaching or child-rearing (Hargens, Lowell, McCann and Reskin, 1978). However, empirical findings are mixed and inconclusive.

In contrast, from a sociological perspective, others have argued that social conditions such as women's overwhelming concentration in inferior institutional locations and in lower ranks (Blackburn, Behymer and Hall, 1978), discriminatory exclusion from opportunities (Smart, 1991), and social role expectations are more important explanatory factors. Again, results have been mixed. In terms of its predictive power in models of faculty productivity, however, although gender is a persistent variable, it consistently accounts for a very small percentage.

Many researchers have found a bimodal, saddle-shaped relationship between publication activity and age in several institutional settings and disciplinary contexts (e.g., Allison and Stewart, 1974; Bayer and Dutton, 1977; Blackburn, Behymer and Hall, 1978; Cole, 1979; Pelz and Andrews, 1976). Some scholars argue that the fluctuating relationships between age and productivity are due to developmental differences with each developmental stage being characterized by different needs and foci of activity (Levinson et al., 1978). Such arguments appear to be indirectly supported by findings that faculty attitudes, professional interests and satisfaction vary with age (Baldwin and Blackburn, 1981: 599). However, since the findings are based on cross-sectional data, one cannot conclude that the differences are due to changes with age rather than cohort differences. Also, the finding that there are different shapes of productivity curves under different conditions suggests strongly that age and productivity have no direct predictable relationship with each other unless other factors are also taken into account.

Some factors which are directly correlated with age are the individual's rank in the academic hierarchy, years of experience and tenure status. Numerous studies have shown

faculty publishing activity to be related to career stage, as measured by rank, experience or critical career events (e.g., Blackburn, Behymer and Hall, 1978; Stumpf and Rabinowitz, 1981; Wanner, Lewis and Gregorio, 1981; Blackburn, 1985).

Career developmentalists argue that human development is a product of the interaction between a person's psychological growth and the demands of the social environment (Hodgkinson, 1974: 264), both of which are argued to be contingent upon the career stage. As people go through the different career stages, they experience changes in their needs, expectations, career concerns and goals, which, in turn, impact on their work behaviours and attitudes (Hall, 1976: 52-64).

Empirical evidence to support the argument that faculty at different stages in their career have different needs, goals and motivations is persuasive. For example, Braskamp, Fowler and Ory (1982) report findings that are very close to predictions from the career stage perspective. Similarly, Baldwin and Blackburn (1981), based on in-depth interviews with 106 faculty members from 12 American liberal arts colleges, report that there were differences across career stages in the relative values placed by faculty on various professional activities, in their understandings of the operating procedures of the institution, in their self-perceptions of their abilities and in their sources of motivations.

In a compelling examination of the relationship between structural and psychological factors, their association with career stage, and their relationship with behaviour, Glaser (1964) found that each career stage was characterized by a unique combination of organizational conditions such as degree of autonomy, provision of adequate research facilities, and opportunities for acquiring new skills, all provided to varying degrees as rewards for past achievement (p.72). In addition, persons at each career stage shared a unique set of career concerns. Glaser argues that the behavioural responses of each scientist depends on the scientist's past performance, his perceptions of the particular set of organizational conditions linked to his career stage and his evaluation

of their relevance in solving the concerns unique to his career stage. This argument takes into account individual attitudes and goals as well as the social context associated with an individual's level in the organization; its key concepts, thus, are similar to those proposed by the career stage thesis of human behaviour.

Pelz and Andrews (1976), from their study of three levels of scientists in development laboratories, also report that career stages are associated with particular combinations of individuals' needs and goals and their perceptions of the opportunities provided by the organization to fulfill their needs.

Thus, career stage appears to be a critical factor upon which faculty attitudes, access to organizational conditions and opportunities, and behaviours are contingent. The research indicates that it may be an important analytical variable for unravelling the relationship between individual motives and organizational characteristics. However, review of the literature also indicates that are few systematic research studies in this area.

Another individual level variable which has been consistently found to be strongly related to productivity is past performance (for example, Cole and Cole, 1973; Blackburn and Havinghurst, 1979; Glaser, 1964; Long, Allison and McGinnis, 1979; Reskin, 1977; Long and McGinnis, 1981).

From a psychological perspective, some researchers have argued that recognition of one's past performance maintains the motivation for future research endeavors (Glaser,1964:20; Blackburn and Lawrence, 1995). Others, from a sociological approach, have argued, based on the "accumulative advantage" thesis, that differences in past performance lead to differential allocation of resources as rewards, and that these differences in access to resources lead to variations in future productivity (Allison and Stewart, 1974). These researchers demonstrate that variation in publication activity increase with career age of the faculty, and that there is greater inequality with age in the allocation of recognition and resources.

However, despite its elegant analyses and widespread citation in the productivity literature, there are a few flaws with the Allison and Stewart analysis. First, it is a cross-sectional study and does not adequately address the possibility that productivity and resource inequalities may be inherent cohort characteristics rather than changes over time. Second, one of their key measures of resources and the only one which was found to mediate the relationship between career age and publication inequality - time spent on research - is really a measure of behaviour rather than resource per se.[3] Third, although there is convincing evidence of association between productivity, resources and esteem with career age, there is no direct evidence that resources and esteem are indeed allocated on the basis of past productivity rather than on the basis of, or in addition to, other criteria. Gregorio, Lewis and Wanner (1982), for example, found that at least one of the rewards of performance, salary, was more strongly related to years of experience and rank than to merit indicators such as the number of books or articles published. They also found that salary was significantly related to non-performance variables such as gender, race, marital status and the number of dependents one had (p.499).

Long and McGinnis (1981) suggest that past publication activity is associated with future productivity because scientists who are active publishers seek out environmental contexts in which such activity will continue to be rewarded, and therefore increase their chances of remaining productive in the future. According to this argument, then, resource accrual is not as passive a process as first appears to be on the basis of the accumulative advantage thesis.

Although the literature is not clear about the mechanism by which past performance impacts on future productivity, nor about the extent of its influence in the

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[3] The more valid measures of resources - number of research assistants and success at obtaining grants - were found to be positively related to career age but had no effect on publication inequality: a finding that puts the strength of Allison's and Stewart's thesis to question.

face of other competing factors such as organizational context, there is sufficient empirical evidence that past performance is an important variable that needs to be included in models of academic productivity.

In summary, it is clear that understanding faculty behaviour requires addressing the interplay between individual characteristics on the one hand, and the impact of organizational conditions on the other hand. However, there are few solid theoretical attempts in the literature at explaining how organizational contexts and individual characteristics and differences are inter-related, and how these relationships influence faculty productivity.

An outstanding exception to the above broad handed critique is Blackburn's and Lawrence's (1995) model of faculty productivity, which is the most recent and the most integrated framework in the extant faculty productivity literature. It is based on a psychological explanation for differences in human motivation and behaviour. According to this model, sociodemographic characteristics and career background aspects such as graduate school attended, rank, tenure and past productivity record, are the key causal variables related to individuals' self knowledge of attributes, interests, preferences, commitments and evaluations of self-efficacy. Based on motivation research, it is argued that these variables influence one's perceptions of the social or organizational environment (social knowledge). Social knowledge includes variables such as perceptions of support received from colleagues and supervisors, material resources available, intellectual climate of the work place, and institutional preferences and values. Motivation arises from the combination of one's self-knowledge and social knowledge, and manifests itself as behaviours, which in turn, lead to products (i.e., the tangible outcomes of one's behaviour).

Test of the model on various institution types showed that the model was able to account for between 23% and 80% of variation in faculty productivity depending on

institution type. The strongest predictors of current publication rates were the actual behaviours engaged in by the faculty, in particular, the amount of time spent at research and at writing grant proposals. These, in turn, were most strongly influenced by the perceptions that the institution values competition, ambition and research. Of the self knowledge variables, belief in oneself as a competent researcher was the strongest predictor of how one perceived the organization. Although self knowledge and social knowledge variables had little direct impact on publication rates, their influence occurred indirectly via their impact on grant involvement and research involvement. In addition, cumulative past performance was also a consistently strong predictor of current publication rate.

The test of the Blackburn and Lawrence (1995) model of faculty productivity has demonstrated its applicability to all institutional types and its ability to tease out potentially salient factors and their relationships under different conditions. On the other hand, there is a nagging problem with the model with respect to the placement of the self knowledge and the social knowledge constructs relative to each other. Self knowledge is placed antecedent to social knowledge. The authors argue that results from cognitive motivation research indicate that:

> individuals' understandings of themselves (e.g., their self-assessed competence, personality dispositions, efficacy) predict how they perceive their environments (e.g., norms, resources) more frequently than environmental perceptions predict this self-understanding (Kanfer and Ackerman, 1974; Wigfield and Braskamp, 1985)[4]. (p.27)

Blackburn's and Lawrence's interpretation of Bandura's theory of self-efficacy (p.24) suggests that self-efficacy is a product of the features of the task as well as the individual's evaluation of the social context in which it is embedded, in particular, the resources required to complete the task and ease of access to them. This suggests that

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[4] The citations can be found in Blackburn and Lawrence (1995), and are not included in this paper.

part of social knowledge informs self-efficacy. Since Blackburn and Lawrence place self-efficacy as one of the variables within the construct of self knowledge, it would appear that self knowledge, or at least that part of it which is dependent on perceptions of external conditions, should follow social knowledge in the causal sequence rather than precede it.

This argument is based on what is an apparent logical inconsistency in the model, given how the scholars have chosen to define their constructs. However, it is also possible to argue on theoretical grounds for the causal influence of social conditions on the development of one's interests and dispositions and on the evaluations of one's capabilities. This is precisely what socialization theory does.

In contrast to cognitive motivation frameworks which posit that individuals' understanding of themselves influence how they perceive their environments, and subsequently, their behaviour (Blackburn and Lawrence, 1995: 27), socialization theory suggests that the environmental context plays the key role in the development of an individual's characteristics and subsequent behaviour.

Occupational socialization theorists argue that organizations influence workers' perceptions and subsequent behaviours through socialization, a process by which individuals moving from one role to another acquire the skills, knowledge, values and dispositions that make them functional members of their new social group (Van Maanen and Schein, 1979).

Although there are no systematic tests of the socialization thesis with respect to its applicability to faculty productivity, the literature does provide indirect support for the socialization arguments by identifying as empirically important concepts similar to those proposed by socialization theorists (e.g., degree of freedom and autonomy, coordination, communication among colleagues, and opportunities for professional growth and higher status) (Pelz and Andrews, 1976).

Empirically, there is also evidence that graduate school, argued to be a critical socializing environment for those embarking upon an academic career, has a significant impact on one's later productivity levels (Crane, 1965; Reskin, 1979; Long, 1978). In particular, the influences of productive mentors (Reskin, 1979; Long, 1978), and professional colleagues (Corcoran and Clark, 1984) have been identified as potential predictors of future publication activity. Similarly, Lawrence and Blackburn (1985) report differences in the productivity levels and the perceived importance of research activities across three cohorts of faculty members, suggesting that the differences are due to the different socialization experiences of the different cohorts.

In addition, Blau's (1973) study which incorporated both structural and individual level variables, found that faculty perceptions of research obligations were most strongly influenced by perceptions of institutional preferences and by colleagues' emphasis of research activities rather than by the individual's own level of training and interests. These findings suggest that socialization may be a possible explanation for these differences. Thus, although there are no systematic, direct tests of the role of socialization in faculty productivity beyond those focusing on the impact of the graduate school attended, the empirical evidence does provide much indirect support for the socialization thesis.

In conclusion, review of the literature suggests that there is a complex relationship among the determinants of faculty publication activity. It is clear that explanations of faculty productivity need to address the interplay between individual characteristics and organizational factors; explanations based solely on individual characteristics, such as the sacred spark thesis, or those based solely on structural factors, such as the accumulative advantage thesis, are unable to satisfactorily identify the complex mechanism by which faculty publication behaviour is determined. There is also strong evidence for the causal effect of organizational conditions on individual perceptions and behaviour. One of the frameworks which incorporates both individuals' characteristics and their perceptions of

organizational factors is the socialization thesis. Unfortunately, apart from research examining the impact of one's graduate school, there are no methodologically sound studies in the literature which approach the examination of faculty publication activity explicitly from this perspective. However, there is much empirical evidence which indirectly supports this thesis, suggesting that a well conceptualized and systematic inquiry in this direction might be fruitful. In addition, the literature suggests that career stage may be a fruitful locus for unravelling what is clearly a complex relationship between the various determinants of faculty productivity.

CHAPTER THREE

THEORETICAL FRAMEWORK

THE SOCIALIZATION FRAMEWORK

Socialization is generally defined as the process by which persons acquire the skills, knowledge and dispositions that make them functional members of their society. Its purpose is to give persons adequate knowledge of the behaviour and values expected of them as members of the group, the ability to meet these role prescriptions and to hold the appropriate values, and the motivation to behave appropriately in pursuit of the designated values (Brim, 1966).

There are many specific types of socialization processes depending on when or where they occur and the nature of their substantive contents (e.g., childhood socialization, adult socialization (Brim, 1966) and occupational socialization (Van Maanen and Schein, 1979)). The socialization thesis is based on Mead's theory of the development of self-identity through social interaction. It is argued that, as members of social groups, individuals strive for recognition and approval from others in the group, and attempt to gain these by learning and conforming to the norms and values within the group (Van Maanen and Schein, 1979). Over time, these group norms become internalized and create a host of one's own standards and expectations by which one is motivated. The degree to which one's specific behaviours conform to the norms of a given reference group, whether it be the immediate group or a more distant one, will depend on the demands for such behaviour by the group, and the priority given to this reference group by the individual (Brim, 1966).

Thus, socialization needs to be understood by:

> reference to the individual's perceptions of himself and his behaviour, and of the social organization in which he lives. We should be interested in the kinds of people he says are of greatest significance to him, in what he thinks others expect him to do, and in what they think of his performances. We should also know if he accepts what others prescribe for him as right and legitimate, or whether he thinks their expectations are unfair. We should know much about his relationships, as he sees them, to the significant others - whether he likes them, trusts them, thinks they are consistent in their behaviour, whether the relationship is of long or short duration, and so on. (Brim, 1966: 8)

Socialization within the organizational context depends on the organization's capacity to provide clear performance norms, its ability to provide opportunities for members to meet these norms, and its ability to selectively reward members' behaviours. These, in turn, are determined by organizational goals, degree of participation in goal-setting by organizational members, social composition of members, degree of interaction between members, degree of commitment of members to the organization as opposed to the external community, and differences in the overall organizational climate (Wheeler, 1966). The organizational capacities together with individuals' knowledge of the norms and demands of their roles, and their abilities and motivations to meet organizational demands, mediate the process by which given combinations of individual and organizational characteristics result in any particular socialization outcome.

Socialization and career stage

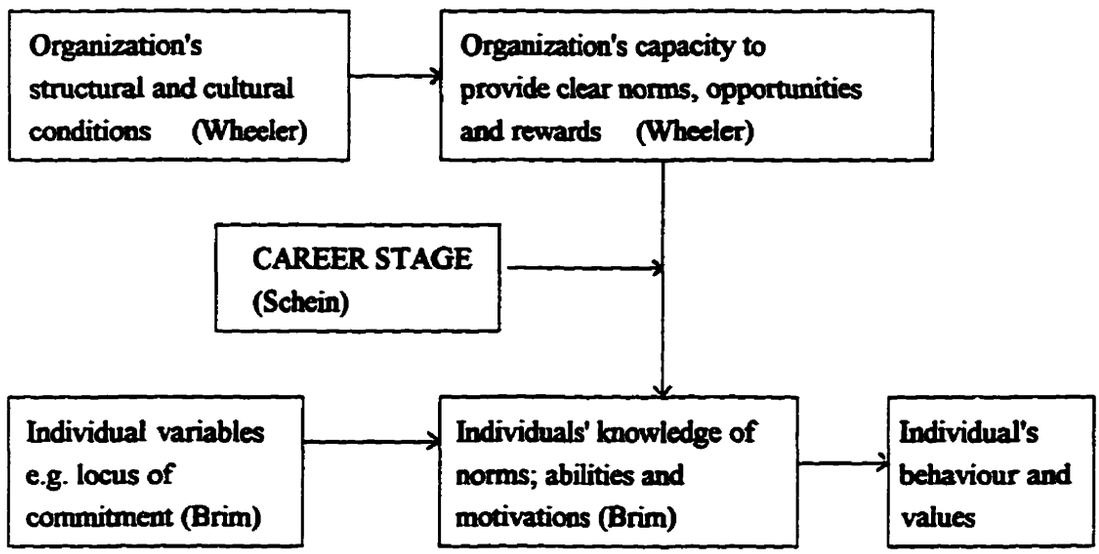
Schein (1971) argues that socialization within the organization occurs primarily in connection with passage through hierarchical or inclusion boundaries associated with changes in career stage. The individual is argued to be most vulnerable to socialization pressures just prior to boundary passage because the anxiety to successfully move through the boundary motivates him or her to learn and conform to organizational norms and values. The impact of socialization, thus, is at a maximum at this time, continuing for

some time after passage. For the same reason, the socialization process is more prevalent during the early stages of the career than after the individual has been fully accepted by the organization.

Thus, based on Schein's arguments, one may expect that for faculty members, vulnerability to organizational socialization processes will be very strong for assistant professors, and lecturers and instructors still waiting for their first regular appointments. The impact of socialization would be expected to drop soon after promotion from assistant professor to associate professor, and then rise again in anticipation of tenure or promotion to full professor. In contrast, the influence of the organization on the individual would be expected to be weak for full professors or associate professors who feel that they are no longer likely to be promoted to full professorial ranks.

Synthesis of Brim's and Wheeler's theses (1966) with Schein's career stage scheme (1971) results in a conceptual model which incorporates career stage as a key contingency within the socialization framework (Figure 3.1).

Figure 3.1: The Socialization Framework Incorporating Career Stage



The key arguments are: First, structural and cultural conditions in an organization determine the organization's capacities to provide clear norms, adequate opportunities and appropriate rewards to its members for meeting these norms. Second, these norms and values are transmitted to individuals via socialization, a cognitive psychological process through which individuals, striving for recognition and approval from the group to which they belong, learn and conform to the norms and values within the group. The socialization process influences individuals' understandings of the organizational norms, their own assessments of their abilities, and their motivations. Third, the strength of the process depends on the individual's career stage. Fourth, the outcomes of socialization also depend on individuals' own backgrounds and characteristics such as their level of commitment to the organization.

Socialization thesis in contrast to structural arguments

The central positioning of individuals' conscious awareness and knowledge of (i) the organization's norms, (ii) their ability to meet the role demands, and (iii) their motivations to do so, as part of the intervening mechanism through which socialization impacts on individual behaviour serves to distinguish the socialization thesis from purely structural perspectives. According to structuralists, structural conditions have a determining influence on individual behaviour independently of the individual's consciousness. Furthermore, structuralists would argue that any effect that individual self-consciousness might have on individual behaviour is trivial compared to the direct effects of structural variables.

One of the issues which arises from this is the question of whether individuals' perceptions of organizational context (i.e., the *subjective* reality) are an accurate reflection of the *objective* reality (i.e., the reality which exists independently of individuals'

perceptions). By raising this issue, my intent is not to open a Pandora's box of a long-ranging and complex philosophical debate which is neither of interest to, nor within the scope of, the present inquiry. However, a thorough assessment of the socialization thesis versus the structural position requires that the concepts and variables suggested by both schools of thought be incorporated in the theoretical model; its equally thorough empirical counterpart should include appropriately measured variables (e.g., as self-reported perceptions for the socialization camp, and as independent, aggregated assessments for the structural camp). Blau (1973), for example, separates the responses for each variable by organization, sums them and obtains the average score on each variable for each organization. These then serve as appropriate *structural* measures for the various organizational variables.

For the present study, the data are based on self-report surveys with no access to information regarding the specific institutional location of each respondent. Thus, it is not possible to derive structural measures in the manner adopted by Blau (1973). Due to this limitation, for the purposes of the present study it will be assumed that there is no difference between individuals' perceptions of organizational conditions and the actual reality. The key test of the socialization thesis would therefore be determined by whether organizational context has a direct impact on individual behaviour, or whether this impact is mediated, as the socialization thesis would require, by individuals' self-perceptions of their abilities and motivations.

THEORETICAL MODEL

The theoretical model for this study integrates the above synthesized socialization framework (Figure 3.1; page 20) with key empirical findings of previous faculty

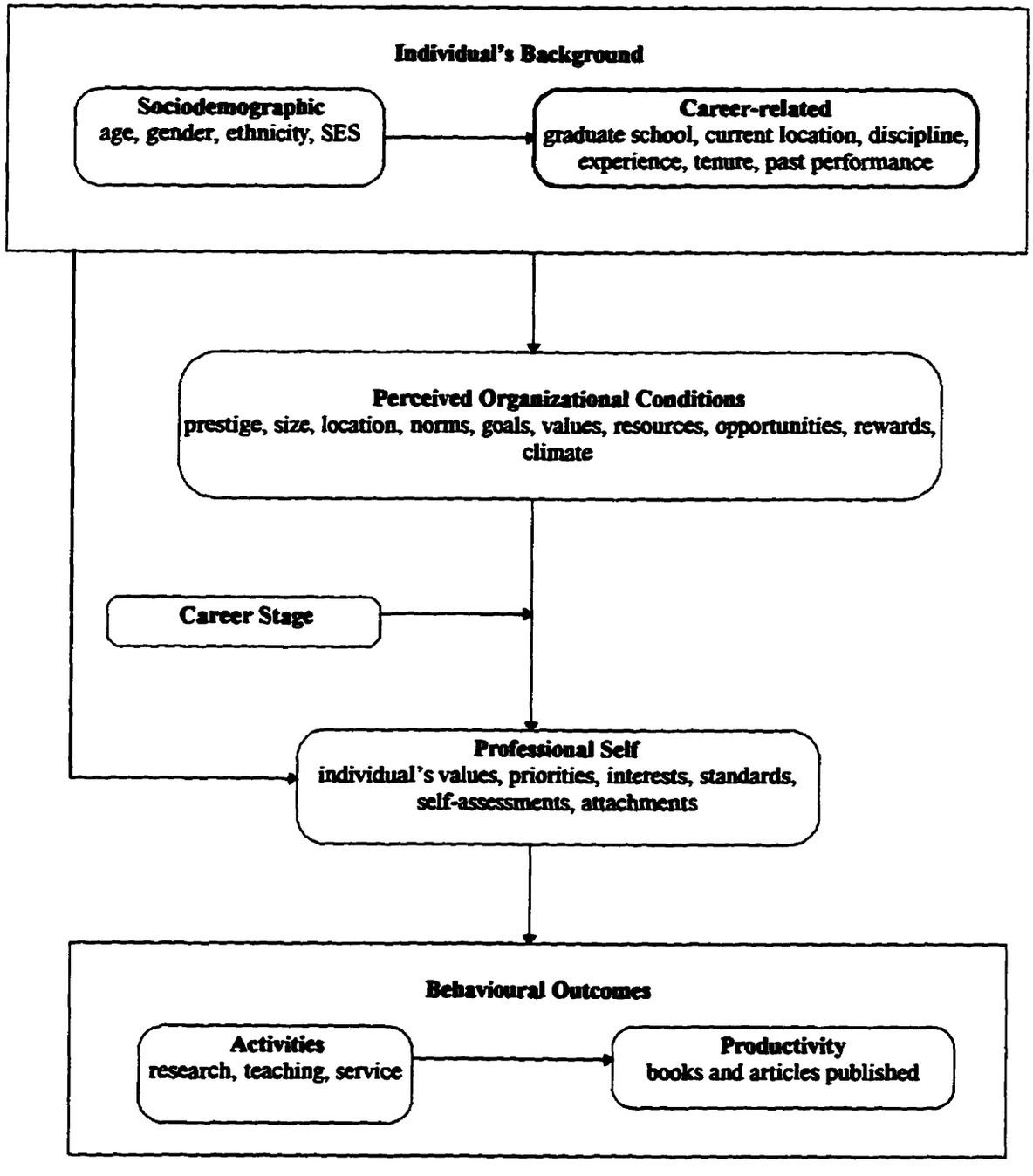
productivity studies. The assumptions underlying this model (Figure 3.2; page 24) are that:

1. Academic institutions vary with respect to how much they value and encourage productive behaviour among their faculty. These variations can be found between universities as well as across disciplines and departments within the same university.
2. Academic institutions vary with respect to the types of productive behaviours they encourage among their faculty. Some settings may encourage excellence in teaching or community service and others may focus on research activities.
3. Scholarly productivity, as measured via the number of books and articles published, is most likely to result from research activities.

Each of the components in the model contains a set of conceptually related variables. The arrows in Figure 3.2 (page 24) represent the expected causal relationships between the components. The specific relationships between any two variables each subsumed within two different components will depend on the specific combination of variables involved.[5]

[5] Due to the limitations of the measures available in the dataset, not all the variables suggested in the theoretical model will be included in the actual empirical analysis.

Figure 3.2: Theoretical Model for the Investigation of Faculty Productivity



Definitions and placements of constructs

Behavioural Outcomes

Behavioural Outcomes represents the ultimate dependent component in this model within which there are two sub-components: Activities and Productivity. Based on Blackburn's and Lawrence's (1995) findings, productivity of faculty members is expected to be a direct result of the types of activities they choose to engage in. Productivity is defined as the tangible outputs produced by faculty during a given period of their professional careers, and is restricted to include products such as scholarly publications in the form of journal articles and books. Activities are defined as the range of behaviours faculty normally engage in to carry out their academic duties. These generally include research, teaching and service to the community. Faculty members who choose to engage in research activities are expected to be more likely to produce scholarly publications than faculty who focus on teaching or service roles.

Based on the arguments of the socialization framework, the types of activities faculty choose to engage in are expected to be largely a direct result of their values, standards of performance, attitudes and interests. The latter, in turn, are expected to be determined by faculty members' perceptions of the structural and cultural conditions of their immediate work environment.

Professional Self

Professional Self is defined as individuals' perceptions of their role-expectations and their understandings of their own abilities and motivations. Included within this component are variables such as professional values, interests, goals, standards of performance, self-evaluations of one's career progress and the individual's attachment to the local environment and the discipline at large.

The Professional Self component represents the key link between an individual's perceptions of the structural and cultural conditions of the organization and the behaviours ensuing in response to these conditions. This mediating component distinguishes the socialization framework from more structural approaches which would trivialize the intervening role played by this component, and focus more on the direct relationship between organizational conditions and behaviours. Following the structuralists, it is expected that organizational conditions may have a direct impact on behaviour independent of the socialization process, for example, when there are simply no resources available to conduct research even though the organization may try to inculcate these values in its members. However, this direct effect is expected to be weak compared to the indirect link via the Professional Self component.

The socialization framework also suggests that not only would various aspects of the professional self be determined by perceptions of conditions in one's current organizational location, but would also carry over the influences of one's previous social and academic background especially in the very early stages of the career before the organization has had the opportunity to instill its influence. Thus, a direct relationship is expected between the components of Professional Self and Individual Background for individuals in the early career stages, and a considerably weaker relationship is expected between these two components for individuals who have been in the organization for a relatively longer period.

Perceived Organizational Conditions

This component represents individuals' perceptions of structural and cultural aspects of the immediate work environment, in most cases, the departmental conditions. Variables to be included in this component include faculty members' understanding of their departmental norms and values, perceived opportunity structures and resources available,

and the apparent intellectual climate of the department. Aspects of this component are expected to be strongly related to the Professional Self variables during the career stages where socialization is likely to be strong (i.e., when the faculty member is eager to establish a foothold, or advance, within the organization).

Individual Background

This component subsumes within it all those aspects of the individual's background which include the sociodemographic characteristics as well as characteristics of the individual's academic career. Career Background is defined as encompassing all those aspects which together provide an historical account of a faculty member's career in academia. These aspects may include factors such as the quality of the graduate school attended, the highest degree earned, the disciplinary field, the length of service, the quality of the current place of employment, the current rank and tenure status, and past performance record. Research has shown that all these factors affect, to varying degrees, current productivity.

Social stratification studies and empirical findings in the faculty literature suggest that Sociodemographic Characteristics such as gender, ethnicity and socioeconomic status of family of origin often determine the academic opportunities available to individuals. The structural conditions which are associated with female faculty members, for example, are often quite different from those faced by their male counterparts. Sociodemographic characteristics have been shown to play an important role in determining the career paths and backgrounds of faculty members.

Thus, these background variables are important antecedents to the types of organizations in which faculty members find themselves located, and need to be included in the model as controls in order to reveal some of the more complex relationships expected in the latter half of the model. In their own right, however, based on

socialization arguments it is expected that individuals' social and career backgrounds will influence, albeit weakly, faculty members' current behaviour by virtue of having shaped individuals' values, priorities and interests independently of the socializing influence of the immediate work environment. In particular, it is expected that this relationship will be noticeable in situations where the socialization pressures of the current environment have not yet had their influence (e.g., when the individual is very new to the department), or in organizations where the culture is too weak and ambiguous to have any influence over the individual.

General hypotheses

The exact nature of the strength and direction of the relationships between the various components in the model will depend on the specific combinations of variables being examined. In general, it is expected that there will be a relationship between individuals' perceptions of the demands and opportunities of their respective organizations, and the corresponding activities engaged in by individuals in response to these demands. In particular, it is expected that individuals working in departments that appear to them to emphasize teaching over research activities, will be more likely to engage in the former rather than the latter behaviour.

The relationship between perceived organizational conditions and behavioural outcomes is expected to be directed largely via the influence that perceived organizational conditions have in shaping aspects of one's professional self. The strength of this relationship will depend on the individual's career stage and locus of commitment, and is hypothesized to be stronger for individuals in the early stages of their careers or those anticipating promotion in the near future, and for those individuals more strongly attached to the immediate organization. In contrast, for individuals who are not vulnerable to the socialization pressures of the organization (e.g., faculty who have attained the rank of full

professor, or individuals whose commitments are not restricted to the immediate organizational environment), it is expected that their behaviours will be determined largely by their own set of interests, norms and values.

Finally, it is expected that productivity, as measured via scholarly publications, will be greatest for those individuals working in environments whose culture appears to support, and whose structure seems to provide opportunities for engaging in research activities. Such environments may be found in departments which seem to place high value on research activities by providing their members with research opportunities and rewards, and which seem to have a superior intellectual climate in terms of the calibre of its faculty and graduate students.

Summary: Strengths and weaknesses of the theoretical model

The primary strength of the proposed theoretical model lies in its integration of key characteristics which have been identified as important by the empirical literature: individuals' perceptions of the structural and cultural features of their work environments; individuals' assessments of their role-expectations, interests, abilities and motivations; and variables related to individuals' backgrounds such as sociodemographic characteristics and career. This allows the investigator to examine simultaneously the relative effects of these sets of variables as well as the nature of their inter-relationships and combined effects. The strength of the model also lies in its solid theoretical foundation; the selection, placement and proposed relationships between constructs are derived from a sound theoretical position and based on tested empirical grounds. Of equal importance, the strength of this model lies in its emphasis on examining publication activity separately for faculty at different career stages. This acknowledges the complexity of the phenomenon under investigation and has the potential for providing a deeper understanding of the problem.

The weakness of the model lies in its omission of many other possible influences of productivity at both the macro and the micro levels. At the macro level, for example, it neglects attention to the influences of broader social contingencies such as national or international policies on the type of research that is emphasized and funded. At the micro level, this model neglects attention to the influence of factors such as personal health and family obligations. Similarly, the model does not acknowledge the very strong possibility of feedback effects between current performance and continued productivity; it is, in this sense, a static and not a dynamic model of productivity. The reasons for not attempting to attain this level of comprehensiveness are focus and parsimony. My purpose is to test the applicability of a particular theoretical framework to the phenomenon under study. By incorporating the key theoretically suggested variables as well as those identified as empirically important, I believe that I have achieved a satisfactory level of comprehensiveness without losing focus of the purpose of the study. Similarly, it is in the interests of parsimony that I have elected to omit variables which I believe will have relatively little to contribute.

CHAPTER FOUR

RESEARCH DESIGN

DATA

The data used for this study were obtained from the Academic Profession in Canada survey conducted in 1985 by the Institute for Social Research, York University.[6] Although dated, the use of this database for the purposes of this study is justified given that it is the only available source of information regarding the activities, perceptions, preferences and attitudes for a national sample of Canadian faculty.

SAMPLE

From a survey population of all full-time teaching staff at 52 Canadian universities (approx. 30,701), the Institute for Social Research systematically selected a sample of 10,312 faculty members, stratified by university size and region.[7] From this sample, 5,217 completed questionnaires were received to compile the database on which the present study will be based, representing an overall response rate of 51%.

The sample for the present study is restricted to individuals working on a full-time basis at the current institution, without having a regular appointment elsewhere. Of the 5,217 respondents in the database, 5,060 fulfilled this requirement. Based on sociodemographic characteristics and career background factors, the faculty members in

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[6] Principal Investigator: Jos Lennards, Dept. of Sociology, Glendon College, York University. The database is archived for public use, and a copy was obtained with permission from the ISR.

[7] A detailed description of the sampling and data collection procedures, response rate and weighting schemes, and the original questionnaire can be obtained from The Institute for Social Research, York, Ontario. The target population did not include administrative executives beyond the position of department head.

this sample are representative of the broader population of full-time Canadian academics around this time period (see Chapter Five).

The sample of 5,060 was used for all the analyses conducted on the entire group of faculty members, generally referred to in the text as the "sample of all full-time faculty." To conduct separate analyses by career stage, this sample was divided into career stages defined by particular combinations of rank and tenure status as summarized in Table 4.1. Respondents whose career stages could not be defined due to missing information, had to, necessarily, be excluded from the analyses by career stage. Similarly, hierarchical anomalies such as untenured full professors, tenured lectures and tenured instructors were also excluded. This resulted in a sample size of 4,783 which could be meaningfully divided by career stage.

Table 4.1: Summary of sample and sub-samples to be used in analyses.

ANALYSIS		SAMPLE	N
A. FACULTY PRODUCTIVITY		All full-time faculty members, with regular appointment at current institution	5060
B.	PRODUCTIVITY BY CAREER STAGE	All full-time faculty members, with regular appointment at current institution, whose rank and tenure-status are defined and who are not hierarchical anomalies.	4783
a)	STAGE ONE	Untenured assistant professors, lecturers and instructors	839
b)	STAGE TWO	Tenured assistant professors and untenured associate professors	462
c)	STAGE THREE	Tenured associate professors 4 years or less in the position	509
d)	STAGE FOUR	Tenured associate professors 5-10 years in the position	717
e)	STAGE FIVE	Tenured associate professors 11 years or more in the position	482
f)	STAGE SIX	Tenured full professors	1774

Untenured instructors, lecturers and assistant professors were classified as being in the first stage of the academic career (n=839). Within the academic hierarchy, these ranks represent the lowest rungs, and the usual starting points for those beginning a career in academia. The second career stage includes tenured assistant professors and untenured associate professors (n=462). These individuals have passed through the first important organizational boundary - that of being granted tenure or of being awarded a higher rank.[8] Theoretically, socialization effects are expected to be strong for these two groups.

The next 3 career stages consist of those individuals who are tenured associate professors. In contrast to those who are in the second career stage, tenured associate professors have passed through two critical organizational boundaries - attaining both tenure and associate professorship. Theoretically, those who have been recently promoted to this stage are expected to be less vulnerable to the pressures of socialization than those in the earlier stages. In accordance with the career development theorists and their empirical findings (e.g., Braskamp, Fowler and Ory, 1982), it is expected that the new found security of these individuals will encourage them to perhaps try different professional pursuits than those emphasized by the organization for promotional purposes. However, as time passes, and these individuals begin anticipating and preparing for promotion to the level of full professor, it is expected that they will, once again, become vulnerable, and responsive, to the organizational demands. Finally, there are those individuals who remain associate professors for a long time, some for the rest of their careers - either because they have been passed over for promotion or are not interested in advancing beyond their current position. It is expected that they will be the least likely of

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[8] Departments often differ in whether tenure or promotion constitutes the first boundary passage.

all the associate professors to feel pressured by the organizational demands. These phases are conceptualized in this study as 3 separate career stage levels.

Examination of the time that tenured associate professors have spent in their current position reveals that the middle 50% of the sample has been there between 4 and 11 years, with the mode being 6 years. This suggests that promotion to the full professor level in this sample probably occurs between 7 to 11 years after attaining the rank of associate professor. Thus, it is likely that 4 to 5 years after reaching the associate professor level, most individuals begin preparing for promotion possibilities. Based on these data, the sample is divided into three stages as follows: Career stage three consists of tenured associate professors who have spent four years or less in their current position (n=509); stage four comprises individuals who have been tenured associate professors for 5 to 10 years (n=717); and stage five contains all those individuals who are probably likely to remain associate professors for a long time (i.e., those who have already spent 11 years or more in this position) (n=482).

The final career stage, stage six, consists of those individuals who have attained full and highest membership in the academic organization, full professors with tenure (n=1774). Theoretically, this group is expected to be the least likely to be vulnerable to the organizational demands, and thus, to demonstrate a weak relationship between the components of Perceived Organizational Conditions and Professional Self.

MEASUREMENT

The variables for each of the components in the model are measured as described below.[9] Where scales are used to measure variables with multiple indicators, item analyses were conducted to ensure that criteria for internal consistency are met. Where multiple

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[9] For the path analyses, not all the variables listed below were utilized; of the remaining, some were recoded. Operational definitions of variables specific to the path analyses are described at the beginning of Chapter Six.

dimensions existed, principal components factor analysis using varimax rotation was performed to identify the underlying dimensions and to help streamline the measures. Missing data, both system-missing and those assigned as user-missing (e.g., response "unable to judge" or "not applicable"), were carefully scrutinized for each variable. No systematic distribution of missing values was readily apparent. System and user-defined missing have been treated in different ways for each variable depending on substantive and statistical implications. Generally, for scales, missing values in each scale item were replaced with the modal or mean categories for that item to avoid the danger of having too many discarded responses for the summated scale.[10] For single item measures of variables, missing values were discarded during analysis.

Sociodemographic characteristics

Sociodemographic variables examined are age, gender, socioeconomic status of family of origin (family SES) and marital status. Age is obtained by subtracting the respondent's stated year of birth from 1986, since the survey was conducted in the first half of 1986. Gender, socioeconomic status of family of origin and marital status are obtained directly from the answers given by the respondents. Gender is coded as "male" or "female". Family SES is obtained from the question "How would you characterize the socioeconomic status of your family when you were about 16 years old?", and is coded from "poor" (1) to "wealthy" (7). Marital status is coded as "married" or "not married" (including divorced, widowed).

Career background

Highest degree earned is coded as (1) First professional degree, bachelor's degree or less, (2) Master's degree or post-graduate professional diploma, and (3) Ph.D. or

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[10] Replacement with modal category was done for variables with highly skewed distributions; approximate normal distributions had their missing values replaced by the mean.

equivalent. Field of discipline is based on the current department in which the main teaching appointment is held. The original database has 111 different department types coded. These were collapsed into 5 broad categories: (1) mathematical and natural (pure) sciences, (2) social sciences, (3) humanities, (4) fine and performing arts, and (5) professional fields, which includes law, all health professions, business, engineers, architects, education and social work. Years of experience is the number of years in total employed on a full-time basis in higher education. Seniority is the number of years employed on a full-time basis at the current institution.

Past performance refers to the total number of the following published during the lifetime prior to the past three years, based on respondent' self-reported estimates: scholarly books, single author, joint author or editor, and scholarly chapters or articles in refereed or non-refereed books or journals. No attempt was made to weigh these different types of publications. The frequency distribution of this variable was very highly positively skewed, with mode at zero. For path analysis, to meet the assumption of normality, a log transformation of the variable was used instead of the raw score, whereby: transformed score = $1 + \log_{10}(\text{score} + 0.1)$. The logarithm function helps to better approximate a normal distribution; the addition of 0.1 to the count eliminates the awkwardness of dealing with the log of zero (minus infinity) without substantively affecting the count; and the addition of 1.0 to the logarithm transformation eliminates negative scores without changing the relative order of the respondents with respect to their productivity.[11]

[11] Adapted from Pelz and Andrews (1976: 274).

Perceived organizational conditions

This component represents the individual's perceptions of the structural and cultural aspects of the immediate work environment. As far as possible, the measures for variables in this construct are restricted to the departmental context.

Department size is measured by the number of full-time, regular members in the department. Perceived institutional values are measured by asking how important each of the following factors the respondent thinks they are in making tenure decisions at the university: teaching effectiveness, scholarly publications and service. Importance of teaching effectiveness and importance of scholarly publications are each measured by single items, scored "not at all important" (1) to "very important" (7). Importance of service is measured by the sum of three items: (i) service to the university (administration and committee work), (ii) professional service to discipline and wider academic community, and (iii) public service to external community (lecturer, expert, consultant). Scores for the summated scale range from 3 to 21 (r = 0.445 to 0.627; Cronbach Alpha = 0.7553).[12]

Perceived resources available is measured by summing the scores for assessments of 10 different types of resources or facilities available at the university: (i) basic research equipment/ instruments, (ii) laboratory space, (iii) availability of research assistants, (iv) basic computer facilities, (v) classroom space, (vi) office space, (vii) secretarial support, (viii) library holdings, (ix) travel funds for faculty, and (x) internal research funds (Cronbach Alpha = 0.7918). Scores for the summated scale range from 10 ("very poor" on all counts) to 70 ("very good" on all counts).

Various aspects of the perceived organizational climate are examined, some at the departmental level, others for the university as a whole. The department's perceived

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[12] Generally, alpha should be at least 0.70 to demonstrate internal-consistency (Nunnally, 1978)

student quality is measured by a single item regarding the department's undergraduate student quality, coded "very poor" (1) to "very good" (7). The department's perceived intellectual atmosphere and department's perceived faculty morale are each measured by a single item, coded "very poor" (1) to "very good" (7).

At the university level, perceived institutional pride is measured by "There is a strong sense of institutional pride at this university" (1=strongly disagree, 7=strongly agree); perceived sense of identity is measured by "This institution lacks a clear sense of identity, a feeling of shared purpose and mission" (1=strongly agree, 7=strongly disagree); perceived faculty involvement is measured via "Lack of faculty involvement is a real problem at this university" (1=strongly agree, 7=strongly disagree); and perceived faculty loyalty is measured by "Although faculty may criticize certain practices, most seem to be very loyal to this institution" (1=strongly disagree, 7=strongly agree).

Perceived administrative quality is measured by the sum of five items: (i) "Communication between the faculty and the administration leaves much to be desired" (1=strongly agree, 7=strongly disagree); (ii) "Generally, the top-level administrators at this university are providing competent leadership" (1=strongly disagree, 7=strongly agree); (iii) "The administration encourages faculty initiative" (1=strongly disagree, 7=strongly agree); (iv) "Faculty at this university are given the feeling that their contributions are appreciated by the administration" (1=strongly disagree, 7=strongly agree); and (v) "The administration at this institution strongly supports academic freedom" (1=strongly disagree, 7=strongly agree). Scores for the summated scale range from 5 to 35, with higher scores indicating a greater perception of superior university administration (r = 0.333 - 0.653; Cronbach Alpha = .8319).

Perceived teaching opportunities is measured by: "Satisfaction with your opportunity to teach the courses of your choice" (1= very dissatisfied, 7=very satisfied). Perceived research opportunities is measured by: "Satisfaction with your opportunity to

actually pursue your research interests" (1= very dissatisfied, 7=very satisfied). Perceived policy-influencing opportunities is measured by the sum of three items: "As an individual faculty member, how much opportunity do you have to influence the policies of your (i) department, (ii) faculty, and (iii) university" (1= no opportunity at all, 5=a great deal). Scores for the summated scale range from "no opportunity at all" (3) to "a great deal" (15) (r = 0.332 to 0.632; Cronbach Alpha = 0.7443).[13]

In addition, how the respondents' feel about their workloads compared to their perceptions of their colleagues' workloads is measured. Comparative teaching load is measured by response to the question "On average, how does your regular teaching load compare to that of most of your departmental colleagues?" Comparative administrative load is measured by the question "How does your administrative and committee load compare to that of most of your departmental colleagues?" Responses are coded: "much heavier" (5); "heavier" (4); "about the same" (3); "lighter" (2); and "much lighter" (1).

Organizations and organizational conditions constantly change over the years. The database used for this study has information for perceptions of departmental changes in the past five years for the following aspects: teaching loads, faculty morale, student quality, enrollment and proportion of undergraduate majors, emphasis on research performance and emphasis on teaching performance. About 20% of the sample did not respond to this section because they had not been at the current institution for at least five years; these respondents were eliminated from the analysis.

Perceived changes in student demands is measured by the sum of four items: total undergraduate enrollment, proportion of undergraduate majors, teaching load/hours, and teaching load/class size. The summated score ranges from 4 to 28, with higher scores

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[13] Factor analysis revealed two dominant factors: (i) teaching and research opportunities, and (ii) policy-influence. I am retaining teaching and research opportunities as separate variables due to their substantive distinction.

indicating perceived increase in student demands over the past five years; all four items loaded on the same factor. Perceived change in faculty morale is measured by a single item coded "very large decrease" (1) to "very large increase" (7). Perceived changes in research performance and perceived changes in teaching performance are each measured by single items respectively, with scores ranging from "very large decrease" (1) to "very large increase" (7).

Professional self

This component includes measures of the faculty members' own interests, values, career evaluations, their sources of self-esteem, locus of attachment, and their assessments of the time they spend on various academic activities compared to their colleagues.

Interests are measured by asking the respondents how much they enjoy various aspects of professional activities: teaching, research, and administration. All items are coded "not at all enjoy" (1) to "very highly enjoy" (7). Teaching interest is measured by a single item. Research interest is measured by the sum of two items: "working on a specific research problem/ artistic project" and "presenting results of research publications/ artistic performances." Administration interest is measured by the sum of two items: "involvement in departmental affairs" and "involvement in university affairs." The summated scores range from 2 to 14.

Personal values are measured by asking separately how important each of the following factors should be in making tenure decisions at the university: teaching effectiveness, scholarly publications and service. Personal value of teaching effectiveness and personal value of scholarly publications are each measured by single items, scored from "not at all important" (1) to "very important" (7). Personal value of service is measured by the sum of three items: (i) service to the university (administration and committee work), (ii) professional service to discipline and wider academic community,

and (iii) public service to external community (lecturer, expert, consultant). Scores for the summated scale range from 3 to 21 (r = 0.384 to 0.645; Cronbach Alpha = 0.7325).

The academics' different sources of self-esteem are measured by asking, in turn, "In terms of your self-esteem as an academic, how important is it to you: (i) to be respected by your students, (ii) to be respected by your departmental colleagues, (iii) to be respected within your university, (iv) to be known and respected in your discipline at other universities within your province, (v) to be known and respected in your discipline across Canada, (vi) to be known and respected in your field internationally, (vii) to meet your own professional standards. Responses are coded from "very unimportant" (1) to "very important"(7). Factor analysis resulted in three separate factors: one's own standards, local environment and the discipline. Source of self-esteem: own standard is measured by a single item, item (vii) above. Source of self-esteem: local is measured by sum of items (i), (ii) and (iii) (r=0.455 to 0.561; Cronbach Alpha = 0.7571). Source of self-esteem: discipline is measured by the sum for items (iv), (v) and (vi) (r=0.545 to .768; Cronbach Alpha = 0.8667). For the summated scales, scores range from 3 to 21.

Locus of attachment: local is measured by the sum of two items: "sense of attachment to: (i) your department and (ii) your university" (r= 0.508). Responses for the individual items are coded "very weak" (1) to "very strong" (7), and scores for the summated range from 2 to 14. Locus of attachment: cosmopolitan is measured via the "sense of attachment to your discipline."

Career evaluation is measured by the sum of two items: (i) "My academic career is not moving along as well as I would like it to," and (ii) "In my department I do not receive the recognition I deserve", coded from "strongly agree" (1) to "strongly disagree" (7). Summated scores range from 2 to 14, with the higher scores indicating more positive career evaluation than lower scores (r=0.399).

View of the university is measured by the question: "In general, how do you feel about the university?" Responses are coded: "It has been a very poor place for me" (1); "It has been a poor place for me" (2); ""It has been a fairly poor place for me" (3); "It has been neither a good nor a bad place for me" (4); "It has been a fair place for me" (5); "It has been a good place for me" (6);"It has been a very good place for me" (7).

Activities

Activities are measured via the time spent, respectively, on teaching, administrative duties, research, and consulting or outside practice. Time spent on teaching is measured as the sum of the hours spent per week in the present term on each of the following activities: (i) clinical, practice supervision of students, (ii) scheduled teaching (actual class hours), (iii) direct preparation for teaching, and (iv) advising and counseling individual students. Time spent on administrative duties is measured by the number of hours per week, on average, spent on administrative and committee related activities. Time spent on research is measured by the number of hours per week, on average, set aside for own professional reading/ writing/ research. Time spent on consulting is measured by the sum of two items: proportion of work time during the regular academic year which is devoted to: (i) consulting (with or without pay), and (ii) outside professional practice. Responses to the consulting items are coded: "none" (0), "1-10%" (5), "11-20%" (15), "21-30%" (25), "31% or more" (35); summated scores range from 0 to 70%.

Finally, I also include within activities, a measure of the total number of journals to which the respondent subscribes. This measure is commonly found within the productivity literature, and is utilized as an indicator of the effort made to keep abreast of developments in one's field.

Productivity

Current productivity is measured in two dimensions: (i) Books - the total self-reported count of the number of scholarly books produced in the past three years, with the respondent as single author, joint author or editor; and (ii) Articles - the total self-reported count of the number of scholarly chapters, or articles written in refereed or non-refereed books or journals in the past three years. These two measures are conceptualized as separate dimensions based on previous research findings that different models of productivity underlie these different types of products (Wanner, Lewis and Gregorio, 1981). For the path analysis, the measure of current productivity is restricted to the article counts. In addition, since the distribution for this variable is very highly positively skewed, for the path analysis, it is log transformed in the same manner as the past productivity measure: transformed score = $1 + \log_{10}(\text{score} + 0.1)$.

STATISTICAL ANALYSES

Descriptive profiles of the samples and sub-samples are obtained by examination of the frequency distributions, mean scores and standard deviations. To evaluate whether differences in distributions across career stage are of substantial significance, various measures of association have been calculated, selected on the basis of the levels of measurement of the variables. Since career stage, the pivotal variable in this analysis, is ordinal, the choice of measures of association is restricted to those which can be used at this level or lower. For the nominal variables, the uncertainty coefficient, U, is reported; for variables at the ordinal level or higher, somer's d or tau-b are reported,[14] depending on

[14] U uses information about the whole distribution and, unlike lambda, is not sensitive to the modal category being consistent across all stages. Somer's d and tau-b are selected over the more common gamma because they use more information about the independent variable and are more conservative measures than gamma (Loether and McTavish, 1993).

whether a causal direction can be specified between the variables.[15] I have also reported eta-squared which indicates the proportionate reduction in error in predicting values of the dependent variable on the basis of category means. While somer's d assumes and reports a linear association between the variables, eta does not, and is therefore more useful for this particular analysis where there is little reason to expect a linear change in variables with change in career stage (Loether and McTavish, 1993: 251).[16] Also, pertinent inferential statistics (i.e., Pearson's Chi-square or the F values from one-way anova results from comparisons of means) are also reported together with their significant levels. Almost without exception, due to the large sample sizes, all chi-square and F values are statistically significant ($p<.0000$). Thus, in all cases, when evaluating differences across stages, attention is paid to the substantive value of the measure of association rather than the reported statistical significance.

For the multivariate analyses, path analysis is selected as the appropriate technique because it allows for the simultaneous examination of relationships between all specified variables, as well as enabling the decomposition of total associations between two variables into direct and indirect effects. This decomposition is essential for this study in order to test one of the central arguments of the socialization thesis that professional self variables are key mediators through which organizational context impact upon individual behaviour. Seven models are tested: one for the entire sample of full-time faculty, and one each for faculty members divided into each of the six career stages. Significant path

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[15] The causal directions specified are as dictated by the theoretical model. Thus, for the relationship with sociodemographic and career background variables, career stage is conceptualized as the dependent variable, while for the relationship with the perceptual, attitudinal and behavioural variables, career stage is treated as the causal variable. In instances where it seems absurd to specify a causal relationship, e.g., between career stage and institutional size or type, the symmetric measure tau-b is reported.

[16] Eta does, however, require that the dependent variable be measured at the interval level at least, and can therefore not be reported for those relationships where career stage is the dependent variable.

coefficients (standardized regression coefficients) are reported for each model, and indirect and total effects are computed using significant direct paths. In addition, where comparisons across samples are necessary, the unstandardized regression coefficients are reported.

CHAPTER FIVE

FINDINGS: (A) DESCRIPTIVE PROFILES

This chapter is divided into three sections. Part One briefly summarizes the distributions and mean scores for the sample of all full-time faculty members who held regular appointments at the current institution (N = 5060) in the mid-1980s. Part Two summarizes the differences in distributions and means across the six career stages for these faculty members, and reports the measures of association between the variables of interest and career stage. Part Three compares the distributions and mean scores between faculty who have produced at least one article in their lifetimes up to the past 3 years and those who have produced none in the same period.

PART ONE: DESCRIPTIVE PROFILE OF ENTIRE SAMPLE

Tables A1 and A2 (Appendix A) summarize the frequency distributions, mean scores, standard deviations and modal values obtained by all the full-time faculty members in this sample on the various variables of interest to this study. The text which follows is a brief synopsis of all this information.

The vast majority of the respondents in this sample are male (83%), married (78%), in their forties (47%) and originate from families of about average socioeconomic backgrounds (31%). The vast majority also have doctorate degrees (75%) or other graduate qualifications (21%), and have spent, on average, just over 14 years employed full-time in higher education (SD:8.24) and almost 13 years, on average, employed in their present institutions (SD:7.53). Almost 80% of them are tenured, 40% are associate professors, 36% are full professors and 20% are assistant professors. The faculty

members are drawn from a very broad range of disciplines, with the majority located in the professional and applied sciences fields (40%), 23% in the social sciences, 20% in the mathematical and natural sciences, 12% in the humanities, and 4% in the performing and fine arts.

In terms of regional location, just over a third (35%) of the respondents are located in Ontario, almost 30% are in the western provinces, just over a fifth (22%) are in Quebec and the remaining 14% are in the Atlantic provinces. Over half (57%) the faculty members are employed in universities in which the majority of the faculties offer graduate education, an additional 17% are located in universities in which some faculties offer graduate education and only a quarter (26%) are located in universities with primarily an undergraduate focus. Similarly, about half the faculty members (49%) are located in departments which offer doctorate degrees, an additional 27% are in departments which offer at least a master's degree or a graduate professional diploma, and the remaining 24% work in departments which offer only a bachelor's degree, a first professional degree or less. About half the faculty (51%) work in mid-sized departments with 11 to 30 members, about a fifth (21%) work in departments with more than 30 members and just over a quarter (28%) work in small departments with 10 members or less.

With respect to sociodemographic factors such as gender and age, and career factors such as experience, seniority, rank, regional location and institution type, the faculty members in this sample are representative of the broader population of full-time Canadian academics around this time period (Gregor and Jasmin, 1992: 39-44). Also, with respect to age and gender, the Canadian sample is comparable to American faculty of the same time period (Blackburn and Lawrence, 1995).

On average, the faculty members feel that their institutions place moderate values on teaching effectiveness (mean:4.29; SD:1.71)[17] and service (mean:11.18; SD:3.62; scale:3-21) when making tenure decisions, and that very high value is placed on scholarly publications (mean:6.04; SD:1.29; mode:7.00). These findings are consistent with findings from American studies which report strong emphasis on publication activity for tenure and promotion decisions especially in universities with research and graduate education foci.

In terms of departmental and institutional climates, most respondents rate the various aspects as being neither too positive nor too negative. At the departmental level, student quality is perceived to be just above moderate (mean:4.39; SD:1.41; mode:5.00), intellectual quality is perceived to be about moderate (mean:4.16; SD:1.54), and faculty morale is perceived to be just under moderate (mean:3.71; SD:1.58; mode:3.00). At the institutional level, perceived sense of institutional pride, administrative quality and faculty involvement are found to be about moderate, with mean scores of 4.15 (SD:1.62), 19.13 (SD:6.08; scale:5-35) and 4.26 (SD:1.55) respectively. In contrast, sense of identity (mean:4.06; SD:1.74) and faculty loyalty (mean:4.81; SD:1.35) are perceived to be slightly above moderate by most people (mode:5.00). It is interesting that perceived sense of identity and faculty loyalty at the university level are generally above moderate despite faculty morale at the departmental level being just under moderate, suggesting that aspects of climate at the departmental level are not necessarily good indicators of aspects of climate at the institutional level.[18]

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[17] Unless mentioned otherwise, all attitudinal and perception variables are measured on seven-point scales. For all variables, higher scores indicate stronger perceptions or attitudes. Also, unless reported otherwise, all scores are reasonably normally distributed with modal values at or very close to the mid-point of the scale.

[18] This finding is further substantiated by the relatively low correlations between departmental faculty morale and sense of institutional identity (r=.2812), faculty involvement at university level (r=.2781) and faculty loyalty at the university level (r=.2769).

Organizations constantly change over time. On average, respondents feel that student demands have increased somewhat in the past five years,[19] (mean:18.49; SD:2.66; mode:16.00; scale:4-28), as has emphasis on research performance (mean:4.99; SD:1.25). Emphasis on teaching performance is perceived to have remained about the same (mean:4.14; SD:1.13), and faculty morale is felt to have dropped slightly (mean:3.17; SD:1.32; mode:3.00). These findings are not surprising considering that these were the times when student enrollments had begun to soar and concerns about financial restraint had begun to surface (Gregor and Jasmin, 1992), putting more pressure on faculties to cope with what they had. Nonetheless, in terms of their workloads, the faculty members feel that they have about the same loads, on average, as their colleagues with respect to teaching activities (mean:3.14; SD:0.71; scale:1-5) and administrative tasks (mean:3.26; SD:1.16; scale:1-5).

While perceptions of the institutional climate may affect how faculty members feel about their workplaces and thereby have an impact on their behavioural outcomes, perceptions of the opportunities and resources available in the workplace probably have more of a direct impact on the types of activities that faculty members can engage in. Faculty members' perceptions of teaching and research opportunities are strongly negatively skewed, with most respondents expressing high satisfaction with the availability of these opportunities in their organizations (mode:6.00). On average, faculty members feel that there are slightly greater teaching opportunities (mean:5.25; SD:1.64) available than research opportunities (mean:4.62; SD:1.95). Policy-influencing opportunities, in contrast, are perceived, on average, as being moderate (mean:8.58; SD:2.34; scale:3-15).

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[19] a) The reader will recall that, since the data were collected in 1986, the "past five year" period being referred to here is the first half of the 1980s.
b) About 20% (n=966) of the sample had not been at their current institution for at least five years and therefore did not respond to this question. These individuals were eliminated from analysis.

Faculty members are also found, on average, to rate the various resources available in their institutions as moderate (mean:38.57; SD:9.73; scale:10-70).

Faculty in this sample, on average, value both teaching effectiveness (mean:5.83; SD:1.08; mode:6.00) and research activities (mean:5.82; SD:1.07; mode:6.00) equally and highly, while most place moderate importance to service activities (mean:13.01; SD:3.25; scale:3-21). Consistent with their values, the faculty, on average, are very highly interested in and enjoy engaging in teaching (mean:5.85; SD:1.17; mode:6.00) and research activities (mean:11.75; SD:2.19; mode:14.00; scale:2-14), but are only moderately interested in administration duties (mean:7.91; SD:2.99; scale:2-14).

The faculty members have various sources of self-esteem, all of which they consider important. The most important source of self-esteem for faculty is their own set of standards (mean:6.65; SD:0.90; mode:7.00), followed by the local environment in which they work (mean:17.56; SD:3.06; mode:18.00; scale:3-21) and recognition from their discipline at large (mean:15.44; SD:4.44; mode:21.00; scale:3-21). It is interesting to note that none of these sources of self-esteem are important at the expense of the others; in other words, those who consider their own standard as an important source of self-esteem, also consider, to varying degrees, the local environment and the discipline as important sources of self-esteem.[20] Consistent with this broad range of sources regarded as highly important for self-esteem, the faculty members, on average, have strong senses of attachment to both their local environments (mean:10.25; SD:2.68; mode:12.00; scale:2-14) and to the broader discipline (mean:6.20; SD:1.05; mode:7.00). Again, attachment to either of these loci is not at the expense of detachment from the other.[21]

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[20] This finding is supported by the fact that the correlations between these three measures are all positive, ranging from .2917 to .3955.

[21] This finding, which merits further investigation in its own right, is contrary to the position that organizational commitment and commitment to the profession or the discipline are mutually exclusive and inversely related (e.g., Gouldner, 1957)

The relatively strong sense of attachment to the local environment is reflected in the positive views faculty members as a group express about their universities (mean:5.79; SD:1.13; mode:14.00; scale:2-14). Almost 90% of the respondents feel that the university has been a fair to a very good place for them. Many such evaluations, however, depend on how critical faculty members are about their current locations, how much information they have about other universities, and whether they feel that they personally could fare better in a different location, provided that such an opportunity to move might arise. Given the tight hiring freezes that many universities seem to have implemented since the 1980s, it is possible that faculty members express contentment with their current locations out of resignation to the circumstances rather than genuine joy. On the other hand, we also find that faculty members express very positive evaluations of their careers so far (mean:9.53; SD:3.16; mode:14.00; scale:2-14). Thus, it appears that faculty members, on average, are quite content and satisfied with their locations as well as their personal professional progresses.

With respect to their activities, faculty members, on average, spend about 23 hours per week on teaching related duties (SD:13.28; mode:20.00), about half that on research activities (mean:12.73hrs/wk; SD:10.58; mode:10.00), just under 7 hours per week on administrative tasks (SD:8.55; mode:2.00) and about 8.5% of their time (SD:10.14; mode:5.00) on consulting activities. As an indicator of the effort made to keep abreast of development in one's field, we find that faculty members in this sample, on average, subscribe to between four and five journals (SD:3.15) with most reporting 3 journal subscriptions. However, as the standard deviations show for all these variables, there is a lot of variation among faculty members in their allocation of effort to these respective activities. Since a comparable range of variation is not observed in faculty members' perceptions of their organizational conditions or in their own values and interests, it

suggests that faculty members' relative efforts to their various academic activities are quite likely influenced by factors in addition to just these.

Finally, in terms of their productivity, faculty members in this sample have produced, on average, just over 18 books and/or articles in their lifetimes up to the past three years (mean:18.54; SD:24.21), a count which averages to about 1.5 books and/or articles for every year employed full-time in higher education (SD:2.28). Consistent with all previous studies in the literature, the distribution of this variable is highly positively skewed with a small majority of faculty members having produced the vast majority of publications and the vast majority of faculty having made few contributions; while a few faculty members have reported producing up to 196 books and/or articles in their lifetimes, 19% (966) of the sample have produced no books and/or articles in their lifetime.

This highly varied and extremely skewed distribution is reflected in the current productivity of faculty members (i.e., the number of books or articles that they have produced during the past 3 years). On average, faculty members have published about 5.5 articles (SD:6.96) over the past 3 years, though 24% of the sample have published no articles in this time. The average number of books written in the past 3 years is 0.5 (SD:1.24) with 72% of the sample reporting to have published no books during this time.

Although these distributions of productivity are similar to those encountered by almost all other previous studies in the literature, many of these previous studies were conducted in relatively more affluent and presumably less competitive and pressure-filled times than the mid-1980s during which the data used for the present study were collected. Because of this, it had been suspected that the 80s faculty, in response to a more competitive environment, would have at least slightly higher productivity levels than their 60s and 70s counterparts (i.e., that the modal values might shift from zero to a slightly higher number). This does not appear to be the case. One of the reasons could be that

although publication pressures may have increased, actual resources and opportunities may have either remained the same, or more likely, have decreased.

PART TWO: DESCRIPTIVE PROFILE OF FACULTY MEMBERS BY CAREER STAGE

In Tables A3 to A4 (Appendix A), frequency distributions and mean values of variables which might reasonably be expected to vary with career stage are reported, together with relevant measures of association. In the ensuing synopsis of the findings, only those relationships which have substantively meaningful associations are discussed.

Current Productivity

Examination of the current productivity measures shows that both book productivity and article productivity are weakly linearly associated with career stage (d: 0.116; d: 0.118 respectively). The eta-squared values show that variations in career stage account for about 1.9% of the variation in current book productivity and about 4.7% of the variation in current articles productivity.

Frequency distributions for books and articles published in past 3 years are both extremely positively skewed at each stage, with modal values for both variables at each stage being zero. Faculty in stages 1 and 2 have the lowest means for the current book productivity at 0.267 (SD:1.432) and 0.297 (SD:0.722) respectively. These individuals are in the early stages of their careers, and writing books is an activity one can expect more from those in later stages. As expected, the mean for current book productivity rises dramatically for faculty in stage 3 (mean:0.552; SD:1.425), with a similar distribution obtained for faculty in stage 4 (mean:0.537; SD:1.429). The average drops significantly for faculty in stage 5 (mean:0.322; SD:0.773) compared to their colleagues in stages 3 and 4, while, faculty in stage 6 have the relatively highest book productivity at 0.691 (SD: 1.234).

For the number of articles published in the past three years, faculty in stage 6 once again lead the count (mean:7.260; SD:8.241) followed by faculty in stage 3 (mean:6.346; SD:6.315) and faculty in stage 4 (mean:4.862; SD:1.429). Faculty in stage 5 are at the bottom of the pack (mean:3.193; SD:6.180), followed by faculty in stage 1 (mean:4.190; SD:5.037) and faculty in stage 2 (mean:4.242; SD:4.773).

The general patterns observed for both the current books and the current articles productivity is similar. First, as expected, a small handful of faculty are responsible for producing most of the scholarly publications, while the majority of faculty produce only a relatively small percentage of total publications, and this pattern is consistent for all career stages.

Second, full professors (faculty in stage 6) have the highest relative current productivity, on average, followed by associate professors who have been in the position for four years or less (stage 3). This finding is contrary to theoretical expectations; it was expected that the productivity of these two groups would be relatively low because they, having been recently promoted (stage 3) or at the highest ranks (stage 6) would be least vulnerable to the "publish or perish" demands of their organizations. In contrast, faculty in stage 4 were expected to demonstrate higher current productivity than their colleagues in stage 3 based on the argument that the former would be anticipating promotion to full professor level in the near future, and preparing for it by increasing their performance rate; the observed productivity means for this group are contrary to expectations.

Third, faculties in stages 1, 2 and 5 have relatively low averages for both books and articles. The lowest average productivity of articles by faculty in stage 5 (i.e., associate professors who have held that position for eleven years or more), is as expected. Since promotion to full professorial ranks usually occurs between 7 to 10 years after attaining associate professorship, these individuals might have been passed over for promotion or are not interested in rising any further up the academic ladder; they are least

likely to be vulnerable to the socialization demands of their organizations, and their low productivity is probably a reflection of this. In contrast, the relatively low productivity with respect to article counts for faculty in stages 1 and 2 is surprising. Faculty in stage 1, in particular, would normally have a wealth of material from their recently completed dissertations or post-doctorate works. In addition, one would expect that they would be most motivated to prove their competence to the organizations in which they had recently launched their careers and would do so by demonstrating high publishing activity. Similarly, one would expect that faculty in stage 2, untenured associate professors and tenured assistant professors, would also be eager to demonstrate their abilities to the organization to attain tenure or promotion, and would therefore have relatively high productivity rates.

These unexpected findings are intriguing. In contrast, the finding that current productivity varies with career stage is consistent with the argument underlying this study that differences in career stage are worthy of closer scrutiny to help untangle the complex relationships influencing faculty productivity.

Sociodemographic characteristics

Of the sociodemographic variables, only age (d: 0.417) and gender (U: 0.208) demonstrate substantively important associations with career stage. While the observed association between age and career stage is spurious since the passage of time underlies both the notions of age and career stage, the association between career stage and gender is quite genuine.

The observations show a gradually decreasing percentage of female faculty with increasing career stage. While male faculty form the majority at all career stages, female faculty proportions are highest in stages 1 (31%) and 2 (29%), decrease to under a tenth by stage 5, and are the lowest at 7% in stage 6. The lower representation of women with

increasing career stage is argued to be a result of women having faced numerous structural and cultural barriers preventing them from gaining access into and making progress through the traditionally male world of academia (Aisenberg and Harrington, 1988; Symons and Page, 1984).

Career background

Examination of differences across career stage in the career backgrounds of faculty members shows that there are weak to strong linear associations between career stage and the various measures of career background. The strongest associations with career stage are demonstrated by experience (d: 0.534) and seniority (d: 0.525). However, like age, these associations are spurious. On average, faculty in stage 1 have been employed in higher education for 4.30 years (SD:3.31), faculty in stage 2 for 10.24 years (SD:5.61), faculty in stage 3 for 8.83 years (SD:4.07), faculty in stage 4 for 14.30 years (SD:4.42), faculty in stage 5 for 20.33 years (SD:4.76) and faculty in stage 6 for 20.10 years (SD:6.99). Interestingly, there is a very high correlation between seniority and experience overall (r: 0.843; $p<0.001$), suggesting that there is very little mobility of Canadian faculty across institutional locations.

There is a moderate, positive association between highest degree earned and career stage (d:0.285). In all career stages, as expected, the majority of the faculty members have doctorate degrees. There are relatively lower proportions of faculty with doctorates in stages 1 (62%) and 2 (58%), with these proportions increasing substantially by stage 3 (78%), with the trend continuing until by stage 6, 87% of the faculty members have doctorate degrees.

Across all career stages, the distribution of the past performance, as measured by the total number of books and articles written up to the past three years is extremely positively skewed, with modal values for all stages being zero. The moderate positive

linear association between past performance and career stage (d:0.329), is to be expected since individuals at higher career stages generally have had longer time to accumulate publications than those in earlier stages. The average counts range from 5.71 publications (SD: 8.71) for faculty in stage 1 to 33.55 (SD: 30.62) for faculty in stage 6.

Past performance rate, which takes into account the length of the careers, is also extremely positively skewed for each stage, with modal values at zero. The linear association between past performance rate and career stage is weak (d:0.126), and the mean values reveal definite fluctuations with career stages. The highest past performance rate is for faculty in stage 6 (mean:1.89; SD:2.17), followed by faculty in stage 1 (mean:1.804; SD: 3.19) and faculty in stage 3 (mean:1.735; SD:2.48). Faculty in stage 5 have the lowest past performance rate, on average, at 0.641 (SD: 0.87), followed by faculty in stage 4 (mean: 1.08; SD:1.33), and faculty in stage 2 (mean:1.218; SD:2.10). Individuals in stage 6 have the highest past performance rates on average, as well as the highest current performance rates.

Organizational contexts and perceptions of organizational conditions

Evidence in the literature suggests that individuals in different career stages have different perceptions of organizational demands, pressures, systems and procedures, and opportunities available (e.g., Baldwin and Blackburn, 1981; Glaser, 1964; Pelz and Andrews, 1976). Examination of the distribution of this sample and their mean scores across career stages show that the associations between the various perceived organizational conditions and career stage are weak to moderate at best. The proportion of variation in each of these variables which can be explained by variation in career stages ranges from almost zero to a mere 6.1%.

Faculty in all career stages appear to have similar perceptions of the types of activities valued by their respective institutions. The measures of linear association

between career stage and value of teaching effectiveness (d: 0.044), value of scholarly publications (d: -0.042) and value of service (d: -0.009) are all negligible; career stage accounts for about 1.2% of the variation in teaching effectiveness scores, but only 0.5% of the variation in scores for perceived value of scholarship and service. Irrespective of career stage, faculty members, on average, feel that their institutions place moderate value on teaching effectiveness, slightly less than moderate value on service and very high value on scholarship for making tenure decisions.

Faculty in all career stages also appear, on average, to have similar perceptions of various aspects of departmental and institutional climate. While about 1.0% of the variation in perceptions of the department's intellectual atmosphere and 1.5% of the variations in perceptions of the department's faculty morale can be accounted for by career stage, there is little evidence of association between any of the other measures of organizational climate and career stage. Faculty members in all stages rate the various aspects of their institutional and departmental climates as being generally about moderate. Close examination of the mean values for all the variables of organizational climate shows that, although the differences are slight, on average, faculty in stages 6 and 1 consistently have the most positive perceptions of the climate, and faculty in stages 3 and 4 have the most negative perceptions relative to their colleagues.

A similar pattern is also obtained for the distribution of scores across career stage for perceptions of resources available, with faculty in all stages, on average, rating the resources in their institutions as being about moderate. Although there is no linear association between the two variables (d: 0.055), about 1.2% of the variation in perceptions of resources available can be accounted for by career stage, just enough to make the familiar U-shaped pattern evident again with faculty in stages 6 and 1 having the relatively highest mean scores and faculty in stage 3 having the lowest mean scores compared to their colleagues.

Weak positive linear associations with career stage are observed for perceptions of teaching (d:0.119), research (d:0.119) and policy-influencing opportunities (d:0.189) available in the institution. Career stage accounts for 2.1% of the variation in perceptions of teaching opportunities available, 2.4% of the variation in perceptions of research opportunities available, and up to 6.1% of the variation in perceptions of policy-influencing opportunities available.

Faculty across all stages are more than moderately satisfied with their teaching opportunities, just slightly more than moderately satisfied with their research opportunities, and the mean level of satisfaction for each of these opportunities generally increases with career stage. For perceptions of policy-influencing opportunities available, faculty in all stages except stage 6 feel less than moderately satisfied with the availability of these opportunities, but these perceptions, on average, improve with career stage.

Faculty were asked how much heavier they felt their teaching and administrative workloads were compared to their colleagues' workloads. Career stage accounts for about 1.2% of the variation in scores for comparative teaching loads and about 4.4% of the variation in scores on comparative administrative loads. The linear association between comparative teaching loads and career stage is negligible (d:0.068) while the linear association between comparative administrative load and career stage is slightly stronger, but still fairly weak (d:0.126).

On the whole, faculty members in all stages feel that their own teaching loads are comparable or just only very slightly heavier, on average, than their colleagues' loads. In contrast, the differences across stages are more evident for perceptions in comparative administrative workloads. On average, faculty in higher stages feel that their administrative loads are higher than their colleagues, while those at the junior levels feel that their loads are not quite as high as their colleagues' loads. This finding is consistent

with the expectation that new faculty would not be called upon to engage in many administrative tasks, with the senior faculty more likely to be engaged in such duties.

Faculty members who had been in their current organizations for at least 5 years (n=4094) were asked about their perceptions of various aspects of departmental changes which had occurred over this period, i.e., in student demands, faculty morale, and in emphases on teaching and research performance. There is little evidence of substantively meaningful association between career stage and these variables. Faculty members across all career stages feel, on average, that student demands have increased slightly over the past 5 years, that faculty morale has decreased slightly, that emphasis on teaching performance has remained about the same, and that emphasis on research performance has increased slightly.

These perceptions of slight increase in student demands and research performance and slight decrease in faculty morale over the past five years are not surprising considering that the early 80s, the time period to which these variables refer, were the years when Canadian universities were just beginning to feel financial constraints and greater student enrollments, leading to greater career uncertainties and pressures to be competitive. This analysis by stage shows that these effects were being felt equally by faculty in all career stages and not restricted to any particular groups.

In summary, it appears that faculty members across all stages are quite homogeneous with respect to their perceptions of various aspects of the organizational conditions with which they are faced. The standard deviation values for the distribution of scores for the entire sample, however, suggests that there is a normal range of variation in faculty members' perceptions of their organizational locations (Table A2, Appendix A). Apparently, little of this variation is due to variation in career stage. Despite the relative homogeneity across career stage, certain patterns are evident. In particular, faculty in stages 6 and 1 share the most positive evaluations of their environments while faculty in

stages 3 and 4 share the most negative evaluations of their organizational conditions, on average relative to their colleagues in other stages.

Perceptions of professional self

Career developmentalists have argued that as people progress through different career stages, they experience changes in their needs, expectations, career concerns and goals (e.g., Hall, 1976; Hodgkinson, 1974); empirical studies of faculty and scientists have provided evidence to support these claims (e.g., Braskamp, Fowler and Ory, 1982; Baldwin and Blackburn, 1981; Glaser, 1964).

Examination of the mean scores in perceptions of professional self across career stages shows that quite a few of the variables included under this concept exhibit variations across career stage; faculty members in different stages are not quite as homogeneous regarding their self-perceptions and attitudes as they are with respect to their perceptions of their organizational conditions. The linear associations, however, remain weak at best, suggesting that there are no gradual unidirectional changes in faculty members' perceptions of their professional selves.

The degree of importance faculty members feel should be placed on various academic activities for tenure decisions is measured as an indicator of how much the faculty members value these respective activities. Career stage accounts for about 2.1% of the variation in how much faculty members value research, about 1.4% of the variation in how much they value service, but little of the variation in how much they value teaching effectiveness. There is negligible linear association between career stage and these variables. Faculty in all stages, on average, value teaching and research activities highly and about equally, while they all value service activities just slightly more than moderately. Faculty in stages 6 and 3, on average, place the highest values on research activities while

faculty in stages 5 and 2 place the least value on research and high values on teaching and service, compared to their colleagues in other stages.

Faculty members were measured on their degree of interest in teaching, research and administration. The associations between career stage and these variables are negligible, although career stage can account for about 1.7% of the variation in research interests. On average, faculty across all career stages express a high degree of interest in both teaching and research activities, and just under moderate interest in service activities. On average, compared to their colleagues in other stages, faculty in stages 6 and 1 express the highest interest in research activities while faculty in stages 5 and 2 express the least interest.

Faculty members have various sources of self-esteem which are all important to them to varying degrees. Faculty members in all stages place extremely high importance on their own standards as a source of self-esteem, relatively high importance on the local environment as a source of self-esteem, and moderately high importance on the discipline as a source of self-esteem. There is negligible association between career stage and the variables measuring own standards as the source of self-esteem and the local environment as the source of self-esteem; however, career stage accounts for about 2.9% of the variation in mean scores for the importance given to the discipline as the source of self-esteem. On average, compared to their colleagues in other stages, faculty in stages 6 and 3 place higher importance on the discipline as a source of self-esteem while faculty in stages 5 and 2 place the least importance relative to their colleagues on this source of self-esteem. This could be one of the reasons why faculty in stages 6 and 3 have relatively high productivity rates; publishing is one of the primary ways of obtaining recognition outside one's home institution.

Faculty members' locus of attachment is measured for two dimensions: local, representing the degree of attachment to one's department and university, and

cosmopolitan, representing the degree of attachment to the discipline. There is a weak linear association between local locus of attachment scores and career stage (d:0.121), with career stage being able to account for about 2.1% of the variation in the local locus of attachment scores. Faculty members across all career stages are found to be fairly, though not very, strongly attached to their local environments. On average, compared to their colleagues in other stages, faculty in stages 1 and 3 express the lowest attachments to their local environment and faculty in stages 4 and above express the strongest attachments

There is a negligible linear association between cosmopolitan locus of attachment scores and career stage; however, career stage is able to account for 2.9% of the variation in the mean scores for cosmopolitan locus of attachment. On average, compared to their colleagues in other stages, faculty in stages 6 and 1 express the strongest attachments and faculty in stage 5 express the lowest attachments to their discipline.

Faculty members' career evaluation was measured in terms of their perceptions of how well their careers are progressing and their sense of whether they are being deservedly recognized in their departments. There is a weak linear association between career evaluation scores and career stage (d:0.159), and career stage is able to account for about 8.3% of the variation in the career evaluation scores, the highest proportion for any of the professional self variables.

Faculty in stage 5 express the least positive career evaluation, on average, compared to the rest of their colleagues; they are just under moderately satisfied with their career progress and the recognition they receive from their departments. In contrast, faculty in stage 6 express the most positive evaluation of their career, with their mean score indicating that, as a group, they are quite highly satisfied with their careers. These individuals have made it to the top ranks of the academic ladder and they should have little

to complain about, although the fact that their mean score is not closer to the upper end of the scale indicates that there is some level of discontent even among these individuals.

Faculty in stage 3 also express relatively high satisfaction with their career progress and recognition received, relative to their colleagues. This could be because they have a solid past performance record, a high current productivity, and their relatively recent promotion to the associate professor ranks (sometime in the past four years) probably indicates to them that their department values them. In contrast, faculty in stage 2 are only just slightly more than moderately satisfied with their careers so far.

The average relative career satisfaction of faculty in stage 6 is reflected in their view of the university as a whole. Faculty in stage 6 feel, on average, that the university has been a good place for them, in contrast to faculty in other stages who all feel that the university has been a fair to good place for them. There is a weak linear association between career stage and view of the university (d:0.143), and career stage accounts for about 3.4% of the variations in mean scores for view of the university. Interestingly, faculty in stage 5, who expressed the most discontent about their careers relative to their colleagues, do not transfer their negative evaluations to their views of the university as a whole; perhaps they receive recognition from and feel valued by sources within the university but outside their immediate departments such as students or committee colleagues.

In summary, although the linear associations between faculty members' perceptions of their professional selves and career stage are quite weak, close examinations of mean scores reveal that there are noticeable patterns across career stage. In particular, faculty in stages 6 and 3, on the one hand, and faculty in stages 5 and 2, stand out as being different from each other with respect to their values, interests, attachments and career evaluations. This pattern is the same as that observed for past and current productivity.

Activities

On average, all faculty members work a total of about 43 hours per week. There is negligible linear association between career stage and the time spent on teaching, research activities, consulting, and the number of journal subscribed; as expected, there is a weak linear association between career stage and time spent on administrative tasks (d:0.126). Career stage accounts for about 1.6% of the variations in time spent on teaching activities, about 1.4% of the variations in time spent on research activities, and about 3.3% of the variations in time spent on administrative duties.

With few exceptions, at the group level at least, the time devoted to any activity reflects the activities valued by and of interest to the faculty members. On average, compared to their colleagues in other stages, faculty in stages 2 and 5 spend the greatest amount of time on teaching activities, second only to faculty in stage 1, and the least amount of time on research activities; faculty in stages 6 and 3 spend the greatest amount of time on research activities, on average relative to those in other stages. The high time spent on teaching activities by faculty in stage 1 is probably because they are teaching courses for the first time and need additional time for preparation. Faculty in stage 6 are also found, on average, to spend relatively more time on administrative tasks than their colleagues in other stages, a reflection most likely of the duties that are allocated to them by virtue of their senior positions.

In sum, the patterns of variations across career stage in the time devoted to various activities are consistent with those which had been earlier noted in the activities valued by, and of interest to, faculty members.

Conclusion

This analysis by career stages has revealed that Canadian faculty members in 1985 were quite homogeneous to each other in many aspects across career stages; in particular,

their variations in behaviour, perceptions and attitudes are not as diverse as suggested by career development theorists. Nonetheless, the findings also show that there are definitely patterns with respect to which career stages almost consistently emerge at the extreme ends of the range of average scores. Of most relevant interest to this study is the finding that faculty members in different career stages differ in their mean scores of current productivity measures. Faculty in stages 6 and 3 have the highest current productivity scores, on average, compared to their colleagues for both the number of books and the number of articles produced over the past 3 years, while faculty in stages 5, 1 and 2 have the lowest mean current productivity. Similarly, on average, faculty in stages 6 and 3 have similar values, interests and self-perceptions, and these differ from those held by faculty in stages 5 and 2. In contrast, faculty in stages 6 and 1 have similar perceptions of their organizational environment, and these differ from those held by faculty in stages 3 and 4. This analysis has also revealed that the relationship between career stage and the variables included in this study is complex and not linear.

PART THREE: DIFFERENCES BETWEEN PRODUCERS AND NONPRODUCERS

One of the most persistent findings in this study and the extant literature is that there is a large proportion of faculty members who have very little research output in their entire careers. There is also a strong correlation between cumulative past performance and current productivity ($r:0.592$; $p<0.001$). About 71% of the individuals who have not produced any articles in their entire careers up to the past 3 years, have also not produced any in the past 3 years; and 87% of faculty who have published at least one article in their lifetime up to the past 3 years have also published at least once in the past 3 years.

Do faculty members who have produced at least one article in their lifetime (the "producers") differ from colleagues who have never published (the "nonproducers")?

Table A5 (Appendix A) summarizes the results of t-tests of comparisons of means and chi-square tests of differences in distributions between producers and nonproducers.

Compared to nonproducers, producers are more likely to be male, older, to have greater seniority and experience, to be located in universities in which most faculties offer graduate programs and to be found in larger, doctorate-granting departments.

Despite these differences in organizational locations, there are only some aspects in which producers and nonproducers differ with respect to their perceptions of their organizational conditions. Producers, on average, feel that they have more research opportunities, policy-influencing opportunities and resources available compared to nonproducers; nonproducers, on average, feel that the organization places more value on service, and that the student quality and faculty morale are better compared to that perceived by the producers. In addition, nonproducers feel more strongly than producers that their teaching loads are heavier compared to their colleagues, while producers feel more strongly than nonproducers that their administrative loads are heavier compared to their colleagues.

There are many significant differences between producers and nonproducers with respect to aspects of their professional selves. On average, compared to nonproducers, producers express lower interest and value for teaching and administration, higher interest and value for research activities, place less importance on the local environment as their locus of attachment and as their source of self-esteem, and more importance on the discipline as their source of self-esteem. On average, compared to nonproducers, producers spend less time on teaching, much more time on research activities, a lower percentage of their time on consulting activities, and have more journal subscriptions.

Finally, faculty members who have published in the past are more likely to continue publishing in the present. On average, producers have published almost four times as

many books and articles in the past 3 years than have the nonproducers in the same time period.

In summary, although nonproducers and producers are homogeneous with respect to their perceptions of many aspects of organizational conditions, they are quite different with respect to their career backgrounds, their locations, their individual interests, values, attachments, and the effort they expend at various academic activities. While there is nothing unexpected about these differences, what is clear is that producers differ from nonproducers in ways which are both numerous and significant; what this suggests is that producers and nonproducers are better conceptualized as belonging to two *separate* groups rather than seen as simply differing from each other in their productivity levels or other factors merely in terms of degrees.

This finding suggests that to identify the determinants of *variation* in faculty productivity (as opposed to the causes of differences between those who have never produced anything and those who have at least one scholarly product), the analysis needs to focus on those who vary in actual productivity. In other words, the analysis needs to be restricted to producers; inclusion of nonproducers in the sample would likely lead to an overestimation of those factors which are causes of differences between producers and nonproducers.

CHAPTER SIX

FINDINGS: (B) MULTIVARIATE ANALYSES

The central tasks of this project were (i) to determine, from among those aspects of interest to this study, the critical variables influencing productivity for faculty as a whole and for faculty at different career stages, and (ii) to compare how the strengths of the relationships specifically between the various aspects of organizational features and the various facets of the professional self differ across career stages.

In brief, it had been hypothesized that productivity would be a result of the socializing influence of the organizational environment on individuals' orientations and attitudes towards their professional roles, which would subsequently determine the efforts they expend at various academic activities. Further, it had been hypothesized that the strength of the socialization effects would depend on career stage, and would be strongest for those individuals anticipating promotions or tenure.

To fulfill the analytical tasks, multiple regression in the form of the path analysis method was conducted on seven models, one for the entire sample of faculty members, and one for faculty members divided into each of the six career stages. In each case, the sample was restricted only to those faculty members who had produced at least one scholarly article or book in their careers prior to the past three years. This was done in order to minimize the possibility of overestimating the effects of those factors which are also causes of differences between producers and nonproducers. Elimination of

nonproducers results in a decrease in sample size by just under 20% for each of the analyses.[22]

The selection of variables for the path analyses was based on theoretical and empirical grounds, and guided by the need for parsimony. The analyses reported in the previous chapter helped identify key variables empirically associated with productivity and with career stage. Of these, some were eliminated because they were strongly correlated with other similar measures. Some of the correlated variables, were combined into single measures if it appeared that eliminating them would result in loss of information. After testing them via factor analyses, these were redefined into a slightly broader concept. Finally, some variables were included even though they appeared to have little empirical association with productivity because they were of essence to the test of the theoretical model.

Based on these criteria, the following variables were selected: Of the sociodemographic characteristics, gender and age; of the career background variables, highest degree earned, discipline, experience and cumulative past performance; of the organizational location variables, the highest degree offered by department as a measure of the department's academic calibre; of the various aspects of organizational conditions, departmental climate,[23] value placed on teaching, value placed on research, opportunities

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[22] This decision is acceptable because it eliminates part of the sample based on its value (zero) for an independent variable (past performance), and in no way affects the range of scores for the dependent variable (current productivity). In addition, the decision is found to be supported when the results of path analyses are compared for samples in which nonproducers are excluded and those in which they are included: Although the R-square values were higher when the nonproducers were included in the samples (by up to about 8%), the standard errors of regression also increased (by about 10%), suggesting that, as suspected, inclusion of the nonproducers in the analyses led to a less accurate causal model. (See Chapter 5, page 66, for differences in organizational locations, perceptions and individual characteristics between producers and nonproducers which suggest that they are better conceptualized as belonging to two separate groups rather than treated as simply differing from each other in terms of degrees.)

[23] Sum of perception of department's (i) intellectual atmosphere, and (ii) faculty morale (r:0.563).

for teaching, opportunities for research and resources available; of the professional-self variables, teaching orientation,[24] research orientation,[25] importance of the local environment for self-esteem and importance of the discipline for self-esteem; of activities, time spent on teaching, time spent on research and number of journal subscriptions. The dependent variable was current productivity, measured as the total number of articles produced in the past 3 years.

The empirical model used for the analysis is shown in Figure 6.1 (next page).[26]

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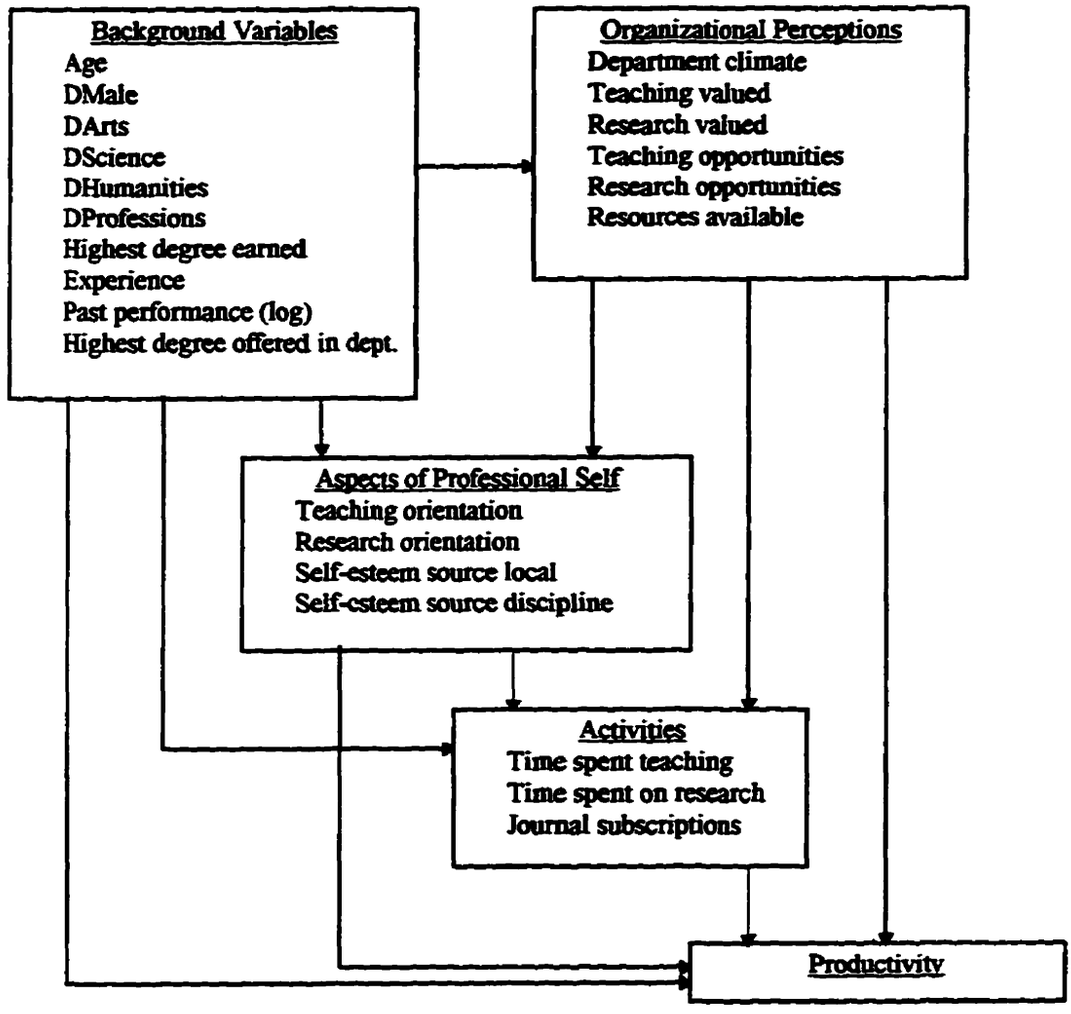
[24] Sum of (i) value of teaching and (ii) interest in teaching. Both load on same factor (Eigenvalue: 1.43).

[25] Sum of (i) value of research and (ii) interest in research. Both load on same factor (Eigenvalue: 1.38).

[26] Refer to Chapter Four for detailed information on definitions and measurement of variables. Variables prefixed "D" are dummy coded.

Figure 6.1: Empirical Model for Path Analysis



The key underlying assumptions were that the model is causal, additive and linear. The career and sociodemographic variables were all placed exogenously. This was done for two reasons: First, from a technical perspective, path analysis requires that all endogenous variables be measured at interval level or higher; this requirement would be violated if discipline (nominal variable), the highest degree earned and highest degree offered by department (ordinal variables) were placed endogenously. Second, and more important, although there are causal relationships between sociodemographic factors and career background (and the theoretical model on which this study is based acknowledges these relationships), they are not of central interest to this study; thus, treating them as exogenous variables for this analysis resulted in an a more simplified model with no loss of information pertinent to this study and enabled technical requirements to be met. [27]

The direct effects were obtained by regressing all endogenous variables, in turn, on all specified causally antecedent variables. Variables within each set of components (e.g., the six variables measuring perceptions of the different aspects of the organizational environment), were not regressed on any other variable within their own set. Although causal relationships no doubt exist between some of these variables within each set, these causal links were not of analytic interest to this study, and were therefore neither specified nor examined. This decision, though based on theoretical grounds, also had the advantageous result of providing an over-identified system.[28]

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[27] Other key technical requirements of regression analysis are that there is no high correlation between independent variables, that the error terms are normally distributed, and of course, that the variables are linearly related. Before proceeding with the path analyses, the data were examined for these requirements and for the presence of influential outliers. No gross violations of technical assumptions were apparent. Since regression analysis is generally robust in the face of technical violations, no attempt was made to "overfit" the data, with the exception of the log transformations of the extremely skewed distributions.

[28] An over-identified model is one in which the number of parameters to be estimated is less than the information available to estimate them. It is only in such instances that the validity of the theoretical

The chapter is organized as follows. First, the path findings are presented and discussed thoroughly for the sample of all full-time faculty, with attention paid to the strongest predictors for each of the endogenous variables and to the route of effects on productivity. Second, the key predictors of productivity are compared across career stages. Third, socialization effects across career stages are studied by examining the influences of various measures of the organizational environment on the teaching and research orientations of the faculty members. Finally, additional analyses carried out to uncover possible masking or confounding effects are reported. Discussion and interpretation of findings are woven throughout the report, and briefly summarized at the end.

For each of the causal models, the significant path coefficients [29] representing the direct effects between variables are reported in tables. The path coefficients are the standardized regression coefficients (Betas) and can be interpreted as the change in the dependent variable in standard deviation units as a result of a one standard deviation change in the independent variable, when all other factors are held constant.[30] Direct, indirect and total effects of all variables on productivity are also reported. Indirect effects are computed by multiplying the path coefficients for the causal paths through which the effect flows. Only paths which are statistically significant are used for computing the indirect effects. Because of the high number of variables in the model, conventional path

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model can be assessed via how effective the path coefficients are in reproducing the original correlations between the variables (Pedhazur, 1982: 597).

[29] The sample sizes for each of the stages 1 to 5 are relatively small compared to the high number of variables. For these analyses, the level of significance is set at 0.10; for stage 6 and for the analyses of the entire sample of faculty members, the level is set at 0.05.

[30] For dummy variables, a positive path coefficient means that the effect is predicted for the category which is coded 1, while a negative path coefficient means that the effect is predicted for the reference category, i.e., the category coded 0.

diagrams which include all variables are too complex for meaningful presentation and are not attempted.

CAUSAL MODEL FOR ALL FULL-TIME FACULTY MEMBERS

Effects on productivity

Table B1 reports the significant direct effects on all endogenous variables.[31] Together, all the variables in the model account for about 41% of the observed variation in current productivity (R^2: 0.409).[32] The career background variables together with the highest degree offered by the department account for almost 37% of the variation in productivity (R^2: 0.398; R^2-change: 0.367).[33] Sociodemographic variables of age and gender contribute about 3% (R^2-change: 0.031), and professional self variables contribute 1% (R^2-change: 0.010). Activities and perceptions of organizational conditions have negligible contributions.

Taking both direct and indirect effects into consideration (Table C1), variables with the strongest total effects on productivity are past performance (0.617), experience (-0.227) and age (-0.158).[34] Other variables which have statistically significant, but relatively weak effects on productivity are research orientation (0.063), importance of the discipline as a source of self-esteem (0.069), gender (-0.044),[35] being located in the

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[31] For ease of presentation, all tables are located in the appendices; the letter suffix to the table number represents the appendix in which the table can be found, i.e., Table B1 is in Appendix B. Table E2 reports the zero-order correlation matrix for the regression variables for this sample.

[32] Adjusted R-squares are reported. This statistic corrects for the artificial inflation of R-square due to a large number of variables in the model.

[33] Obtained via hierarchical regression of productivity on each set of causally antecedent components, and noting the change in r-square as each additional set is added to the equation.

[34] Standardized beta coefficients reported unless otherwise specified. Only betas close to or greater than 0.05 will be discussed, with greater attention paid to stronger betas than to the weaker ones. Note that all effects between any two variables are those observed when all other variables are held constant.

[35] The negative sign for a dummy variable implies that the effect is predicted for the reference category, in this case, for females.

professional fields as opposed to the social sciences (0.045), highest degree earned (0.044) and time spent teaching (-0.040), all of which have largely direct effects.

Effects between other components in the model

Sociodemographic characteristics, career background variables and the highest degree offered by the department account for about 1.5% to 6% of the variation in the various aspects of organizational conditions (R^2,department climate:0.015; R^2,institution values research:0.057). The strongest predictors of perceptions of organizational conditions are the highest degree offered by the department, disciplinary context, gender and experience. Positive perceptions of departmental climate are predicted for males (0.089), natural and mathematical scientists (0.066) and faculty located in departments which offer higher degrees (0.066). The respective values placed by the institution on teaching and research are best predicted by the highest degree offered, with departments which offer higher degrees perceived as valuing research more (0.221) and teaching less (-0.163). Also, compared to men, women have stronger perceptions that the institution values research (-0.094). The availability of teaching opportunities is best predicted by disciplinary location and experience; teaching opportunities are perceived to be fewer in the pure sciences (-0.125) and the professional fields (-0.084) than in the social sciences, and greater for faculty with more experience (0.137). Research opportunities are perceived to be higher by those located in departments which offer higher degrees (0.120), by men (0.099) and by those with more experience (0.091). Resources available are also perceived to be higher by those located in departments which offer higher degrees (0.138), and by faculty who are older (0.076).[36]

The background variables and variables measuring the various aspects of the organizational environment together account for about 4% to 18% of the variation in the

[36] Most of the beta coefficients are rather weak, as are the zero-order correlations.

various aspects of the professional self (R^2,source of self-esteem local:0.043; R^2,research orientation:0.180). Teaching and research orientations of the individual are best predicted by perceptions of what is valued by the institution and by some of the career background variables. The strongest predictor of teaching orientation is the perception that the institution values research (0.190), followed by the perception that the institution values teaching (0.121)[37] and the availability of teaching opportunities (0.108). In addition, faculty in the humanities have stronger teaching orientations than do social scientists (0.101), as do faculty located in departments in which lower degrees are offered (-0.096). The strongest predictor of research orientation is past performance (0.244) and being located in institutions perceived to value teaching (0.234). Younger faculty have higher research orientations than do older members (-0.142), as do faculty with higher degrees (0.085) and faculty who feel that there are greater research opportunities available (0.088).

The importance of the local environment for the source of one's self-esteem is best predicted by the department climate (0.099) and by perceptions of how much the institution values research (0.088). The importance of the discipline for source of self-esteem is predicted by past performance (0.237), experience (-0.117), how much the institution values teaching (0.119) and the highest degree offered by the department (0.106).

The variables in the model account for about 6.5% to 17% of the variation in the 3 behavioural variables included under activities (R^2,teaching:0.065; R^2,research:0.167). Time spent on teaching is best predicted by teaching orientation (0.104) and by past performance (-0.092). Time spent on research is best predicted by perceptions of the availability of research opportunities in the institution (0.192), one's research orientation

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[37] Some of these findings are contrary to expectations and will be examined and discussed further later.

(0.128), past performance (0.114) and being located in a department which offers higher degrees (0.106). Number of journal subscriptions is predicted by past performance (0.137), the importance of the discipline for source of self-esteem (0.110) and being located in the pure sciences as opposed to the social sciences (-0.173).

Discussion

Based on the socialization framework, it was hypothesized that the impact of sociodemographic characteristics, career background and perceptions of aspects of the organizational environment would be mediated by the professional self variables. The above analysis does not support this hypothesis. The strongest determinants of productivity are the individual's past performance (0.617), experience (-0.277) and age (-0.158). These variables influence current productivity largely directly irrespective of faculty members' perceptions of their organizational environments, their personal values and interests with respect to their professional roles, or the time they spend on various academic activities. Research orientations (0.064) and the importance of the discipline as a source of self-esteem (0.064) also influence productivity but their effects are relatively weak.

The strong influence of past performance on productivity has been reported numerous times in the literature (e.g., Glaser, 1964; Clemente, 1973; Long, 1978; Long and McGinnis, 1981), but there is little evidence of how this influence is transmitted. The psychological perspective (e.g., Glaser, 1964; Blackburn and Lawrence, 1995) suggests that recognition obtained for past performance provides the motivation for continued performance. There is evidence in the present findings that past performance has a positive effect on the importance given to the discipline as the source of one's self-esteem, and that this, in turn, has positive effects on productivity. If one is to assume that the importance given to the discipline for the source of one's self-esteem is indicative of the

recognition one receives from it, then one can argue that there is some support for the psychological perspective.[38] In contrast, the sociological approach (Allison and Stewart, 1974) states that past performance is rewarded by the allocation of resources which then facilitate continued productivity. The findings of the above analysis do not provide evidence for this position. Past performance has no effects on faculty members' perceptions of their teaching and research opportunities or on their perceptions of resources available to them in the organization. The finding that past performance has a primarily direct influence on current productivity implies that its mechanism of influence involves variables other than those measured by this study. It is not possible to say what the sources of differences in past performance are since these relationships have not been addressed by this study.

Based on the empirical findings of Blackburn and Lawrence (1995), it was expected that the activities variables would have strong direct effects on productivity. This expectation is not supported. Although time spent on teaching and the effort expended at keeping abreast of developments in the field, as indicated by the number of journals subscribed to, have statistically significant effects on productivity, these effects are weak. The time allocation measures used in this study are quite broad and it is possible that the reported estimates are both vague as well as inadequate measures of the actual effort put into these activities. Fox (1992) who uses similar measures also reports weak correlations.[39]

The emphases and opportunities within the organizational environment are, as expected, largely determined by disciplinary context and the highest degree offered by the

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[38] *Some* support because although past performance does have some indirect influence via these variables, the overwhelming effect is direct.

[39] Blackburn and Lawrence (1995) use more specific indicators, e.g., the number of grant proposal submitted and the number of dissertation committees served on, in addition to time allocation estimates.

department. Departments which offer higher degrees are perceived to place less importance on teaching, more importance on research, and have more research opportunities and resources available. Such locations also have a negative effect on the teaching orientation and a positive effect on the research orientation of the faculty member. These findings are consistent with others in the extant literature (e.g., Blau, 1973, Blackburn and Lawrence, 1995).

Faculty located in the humanities, the pure sciences and the professional fields report greater perceptions that the institution values research and fewer teaching opportunities compared to social scientists. This finding is understandable for the pure scientists and the professional fields where greater emphasis on research is expected. However, the finding that humanities faculty perceive greater emphasis on research and fewer teaching opportunities than the social scientists is both puzzling and contrary to previous findings (Wanner, Lewis and Gregorio, 1981; Blackburn and Lawrence, 1995).

The finding that older and more experienced faculty perceive greater opportunities and resources available is not surprising: their seniority in the organization probably helps them to know how to navigate through the system, and the power that goes with it probably helps them to procure what they need. On the other hand, older faculty have lower research orientations, and the experienced faculty place less importance on the broader discipline for their self-esteem, both of which appear to be important contributors towards productivity. One could argue that the more experienced faculty place less emphasis on the broader discipline for recognition because they are devoting more of their attention to the local environment. However, the finding that the importance of the local environment also decreases for the more experienced faculty suggests that their sources of self-esteem lie elsewhere, perhaps in their own estimation rather than in comparison to external standards.

That age has a negative effect on research orientation and productivity is consistent with the extant literature (e.g., Lawrence and Blackburn, 1985), although the relative contribution of this variable is slight. The finding that age has a positive effect on teaching orientation and on the importance given to the local environment for source of self-esteem, is consistent with those who suggest that passing on knowledge is more important for older faculty than making further contributions to the knowledge base. Other possible explanations are that older faculty conduct less research because they feel less competent in research and are less ambitious than younger faculty (Blackburn and Lawrence, 1995) or that older faculty turn to writing books rather than articles (Blackburn, Behymer and Hall, 1978).

The finding that men perceive better departmental climates, greater research opportunities and resources than women even when departmental location and experience are controlled suggests that women may still be having difficulties making inroads in a traditionally male-dominated environment, although the coefficients are relatively low. In contrast, the finding that women have higher productivity than men when all factors are controlled suggests that given the same environments, opportunities and attitudes as men, women can at least match and slightly better the performances of their male colleagues.

As expected, aspects of the organizational environment impact upon the various facets of individuals' attitudes towards their academic role. Perceptions that the organization values or provides opportunities for a particular activity has a positive effect on the individual's orientation towards that activity. However, it is also observed that the teaching orientations of individuals are more strongly affected positively by their perceptions that the institution values research than by their perceptions that the institution values teaching. Similarly, research orientations are more strongly affected positively by perceptions that teaching is valued than by perceptions that research is valued. It is possible that faculty members' perceptions of their institutional demands are coloured by

their own orientations, i.e., that faculty members feel that the organization does not adequately value those activities which they personally do. The fact, however, that we do not find simple negative associations between these variables suggests that the explanation is more complex. Blackburn and Lawrence (1995) also report that interest in research did not predict research output but was a strong predictor for effort given to teaching. These findings are puzzling and need to be examined further. It is clear, however, that perceptions of organizational conditions do not have simple, predictable effects on aspects of the professional self of academics.

In contrast, the relationships between research and teaching orientations and the time spent on these respective activities are in the expected directions. However, the observed effects are weak. Lawrence and Blackburn (1985) also report weak correlations between time spent on various activities and personal values. It is possible that preference for a particular activity does not get translated into time spent on it because of other conflicting demands and constraints. The relationships between time spent on various activities and ultimate productivity are also very weak (cf. Fox, 1992). Simply spending more time on an activity clearly is not indicative of one's success in being productive, attention must also be paid to whether those activities are effective. Blackburn and Lawrence (1995), for example, show that serving on dissertation committees and writing grant proposals are very effective in increasing productivity.

In summary, the model accounts for about 40% of the variation in productivity, with past performance being by far the best predictor of current productivity. Its effects are largely independent of any of the other components of the model, all of which have relatively weak or negligible effects. In the next section, I compare how the key determinants of productivity vary with career stage.

CAUSAL MODELS OF PRODUCTIVITY COMPARED ACROSS CAREER STAGES

Tables B2 to B7 report the path coefficients for the effects on all endogenous variables for samples of faculty divided by career stage. Tables C2 to C7 summarize the direct, indirect and total effects of all variables on productivity. Zero-order correlation matrices can be found in Tables E3 to E8.

The variables in the model account for 34% to 40% of the variation in current productivity depending on career stage. Close examination of all the causal models for each of the career stages makes it apparent that there are few differences across stages in the predictors of productivity. The most striking finding is that, irrespective of career stage, past performance remains by far the strongest predictor for current productivity with effects between three to five times stronger than its nearest rivals, which are usually experience, age and the highest degree earned. Experience and age both have negative effects on productivity while highest degree earned has positive effects, all largely direct. Other variables which have relatively important effects of about the same magnitude as experience, age and highest degree earned are: time spent teaching, which has a negative effect for faculty in stage one; importance of the discipline as a source of self-esteem, which has a positive effect for faculty in stage three; teaching opportunity, which has a positive effect for faculty in stage 4; and being located in the humanities and the professional fields as opposed to the social sciences, which have positive effects for faculty in stage 5.

The second striking finding, which is related to the first, is that, contrary to the expectations from a socialization framework, the organizational aspects variables and the professional self variables contribute almost negligibly to the model, and the activities variables have weak effects at best. In other words, although there is strong evidence that faculty members in different career stages have different current productivity rates (Chapter 5), these differences are overwhelmingly a reflection of their differences in past

productivity. This finding, though contrary to theoretical expectations, is not altogether surprising given the fact that examination of mean scores had found few differences across stages in faculty members' perceptions of their organizational conditions, their various facets of the professional self or in the activities they engage in (Chapter 5).

Thus, current productivity of faculty members is not due to the transmission of organizational influences via their impact on aspects of the professional self. However, based on the path coefficients observed, it does seem that perceptions of the organizational conditions do have a socializing influence, to varying degrees, on the teaching and research orientations of the faculty members, even though these influences do not get transmitted to ultimate productivity. In order to test whether these influences do vary as predicted by the career stage contingency framework of socialization, the effects of various organizational features on teaching and research orientations of faculty members were examined and compared across career stages. The findings are presented in the next section.

COMPARISON OF SOCIALIZATION EFFECTS ACROSS CAREER STAGES

Tables D1 and D2 report the standardized and the unstandardized regression coefficients for the effects of various organizational features on the teaching and research orientations of faculty members for each career stage, holding constant all sociodemographic and career background factors as well as disciplinary context.[40] The effects of past performance and the highest degree earned are also included so that these can be compared to the effects of the perceptions of the organizational conditions. The standardized coefficients (Betas) allow one to determine which are the strongest effects

[40] Disciplinary context is not included as part of the organizational features because it is a rather diffuse and broad measure of context, and for this analysis, I am specifically interested in the effects of the immediate work environment.

for a particular career stage, and the unstandardized coefficients (b's) allow one to compare the strength of effects for a given variable across career stages.

On the basis of Schein's (1971) argument that the influence of the organization on the individual would be greatest for those most eager to be accepted into the organization and for those eager to be promoted to the next stage, it had been hypothesized that socialization effects would be strongest for faculty in the early career stages, i.e., in stages 1 and 2, and for those anticipating promotion to full professor ranks in the near future, i.e., faculty in stage 4. In contrast, it was hypothesized that faculty in stages 3, 5 and 6 would be the least vulnerable to socialization effects.

The findings provide little support for these expectations.

Examining effects on teaching orientations (Table D1), first, we note that more of the organizational aspects (four) impact on faculty in stages 4 and 6 than on faculty in other stages (three or less). This finding is as expected for faculty in stage 4, who had been hypothesized to be one of the groups vulnerable to socialization pressures, but it is a surprising finding for faculty in stage 6.

Second, closer examination of the relative effects across career stages of each of the organizational features separately shows that the strongest effects are not obtained consistently for any particular career stages.[41] For example, highest degree offered by department impacts most strongly on faculty in stage 1; the perception that the institution values teaching has no effect on faculty in stage 1 but impacts most strongly on faculty in stage 3; and perception that the institution values research impacts most strongly on faculty in stage 2.

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[41] Comparing the unstandardized coefficients across stages for a given organizational variable.

Third, there is no single organizational feature which consistently has the strongest effects on the teaching orientations for all faculty members.[42] For example, the strongest predictor of teaching orientation of faculty in stage 1 is the highest degree offered by the department, for faculty in stages 2, 3, 4 and 6 it is the perception that the institution values research, and for faculty in stage 5 it is the availability of resources.

Similar findings are obtained upon examination of the effects on the research orientations of faculty in various stages. First, more of the organizational aspects (four) again impact on faculty in stage 6 than on faculty in other stages (three or less). This finding is again contrary to expectations.

Second, it is once again observed that there is no consistency as to which of the stages are most strongly affected by all the organizational features. However, it is also noted that for those organizational features which impact on most of the career stages, i.e., perceptions that the institution values teaching, perceptions that the institution values research and perceptions of research opportunities available, the strongest impacts are on faculty in stage 2. This is as expected since it had been hypothesized that faculty in stage 2 would be responsive to organizational pressures in order to get out their transitory stage and attain either tenure (for untenured associate professors) or promotion (for the tenured assistant professors).

Third, it is observed again that faculty in different stages have different sets of predictors for research orientation. However, out of all the organizational features, the strongest predictor for each stage is the perceived value of teaching in the institution, which in this case, has (puzzling as before) positive effects on the research orientations of the faculty members. In comparison, for faculty in stages 2 and 3, past performance is a stronger predictor of research orientation than any of the organizational features.

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[42] Comparing the standardized betas across organizational variables within a given stage.

In summary, this analysis provides no support for the expectation that faculty members in certain career stages will be consistently more vulnerable to the socializing effects of their organizational environments than individuals in other stages. The relative strength of the effect of a particular feature of the organization depends partly on career stage but also on the actual feature itself; some are more important for faculty in particular stages than they are for faculty in other stages. In addition, teaching orientations and research orientations depend on different sets of organizational conditions, and these vary depending on career stage. This examination has shown that separate analyses by career stage are important for unraveling the relationships between perceptions of organizational conditions and their effects on work orientations. However, this analysis has also shown that the observed differences in the effects of organizational features at each career stage cannot be explained simply by the incentives or anxieties of boundary passages as theorized by Schein (1971).

UNCOVERING MASKING AND CONFOUNDING EFFECTS

All analyses conducted so far have persistently shown that, in the face of past performance and other career background aspects such as experience and academic qualifications, organizational features have little influence on the productivity of faculty members. This finding is not only contrary to theoretical expectations, but goes against convincing longitudinal evidence in the literature of the effects of organizational context on productivity (e.g., Long, 1978; Long, Allison and McGinnis, 1979; Long and McGinnis, 1981).

One possibility is that the effects of organizational influences on productivity are being masked by some variable which has not been controlled for in these analyses. The socialization literature states that socialization influences are strong within organizations which have clear norms and expectations (Wheeler, 1966), and conversely, weaker in

organizations unable to transmit their norms clearly. The measures available in the current dataset did not allow me to differentiate among organizations on this basis. However, using academic reputation as a proxy for an organization's degree of norm clarity, faculty members were separated into two samples, those located in universities which their members felt had very high academic reputations across Canada (N = 396), and those located in universities which their members felt had poor reputations across Canada (N = 301). The assumption was that highly reputable universities would be determined to maintain their status and so would be more clear about their expectations and demands on their faculty members than universities with less at stake. Thus, socialization effects should be stronger in the former locales than the latter.

Comparison of the mean scores of the two samples (Table A6) indicates that there are significant differences among them of the career backgrounds of the faculty, their perceptions of organizational conditions, aspects of their professional self, the time they spend on teaching and their current productivity. Compared to their colleagues in universities with poor reputations, individuals located in the very highly reputable universities, on average, are older, more experienced, have stronger past performance records, are more likely to be located in departments which offer doctoral education, have more positive evaluations of their departmental climates, have stronger perceptions that their institutions value research, feel that there are more teaching and research opportunities and resources available, have higher teaching and research orientations, place greater importance on both the local environment and the discipline for self-esteem, spend more time on teaching, and have higher productivity. The only variables on which the two groups are similar are their academic qualifications, their perceptions of their institution's value of teaching, the time they spend on research and the number of journals they subscribe to.

Path analysis results (Tables B8 and B9)[43] and comparisons of direct and indirect effects (Tables C8 and C9) show that the key determinants of productivity are the same for both groups. Past performance has the strongest total effect for both groups (0.582 for faculty in high reputation universities and 0.640 for faculty in low reputation universities), followed by experience (-0.299 for faculty in high reputation universities and -0.291 for faculty in low reputation universities), both of which have largely direct effects.

Examination of the organizational influences on the teaching and research orientations of faculty members, however, showed that the socialization influences were indeed more numerous and generally stronger for faculty located in the highly reputable universities than for the faculty located in the lesser universities (Table D3). The highest degree offered by the department, the perceived department climate, and perception that the institution values teaching had no significant effects on the teaching orientations of faculty in low reputation universities but were significant for faculty in high reputation universities. Similarly, perception that the institution values teaching, perception that the institution values research and availability of research opportunities all had more significant and stronger effects on the research orientations of faculty in high reputation universities than on those in low reputation universities.[44] The only exception to this general pattern was the findings that perceptions that the institution values research had stronger effects on the teaching orientations of faculty located in low reputation universities than for faculty in highly reputable universities.

This test provides support for the argument that, to some extent at least, organizational effects are being masked because strong effects in some organizations are

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[43] Zero-order correlation matrix is in Tables E9 and E10.

[44] Comparison of unstandardized coefficients across samples.

being cancelled out by weak effects in other organizations which differ in theoretically important ways.

Another reason why organizational effects are so ineffectual is that it was not possible in this study to separate out past performance from the organizational context. Comparison of mean scores for seniority and experience for this sample (Chapter 5 and Table A2) had indicated that there is little mobility among Canadian faculty members. Thus, for most of the sample, much of the past performance had occurred within the current location. Examination of the variables measuring faculty members' perceptions of departmental changes in the past five years (Table A2) had indicated that, although there was some perception of a slight increase in student demands and emphasis on research performance and a slight decrease in faculty morale in the past five years, by and large, there were few changes in departmental context. Hence, if the departmental context in the past was not much different from the current context, and if most of one's past performance had occurred in the same location, then the two measures are surely confounded. Statistically, this means that the effects of past performance on current productivity would be overestimated while those of organizational context would be attenuated. Long (1978) warns against this possibility.

Two of the ways in which such confounding effects can be separated are by, either (i) separating out past performance into that component which occurred prior to joining the present organization, and that which occurred while in the present organization, or (ii) by restricting the sample to those individuals who have not been in the present organization for more than 3 years.[45] The former was not possible given the measures available in the study; however, the latter exercise was attempted by separating faculty

[45] Since past performance is measured by the total number of articles written prior to the past 3 years, and current productivity is measured as the total number of articles written during the past 3 years.

with less than three years in the present organization ("newcomers") from the rest of the sample. The effects of past performance on current productivity, teaching and research orientations were compared for the newcomers and the entire sample of full-time faculty, controlling for all sociodemographic, career background, organizational context, professional self and activities variables. If confounding effects are present, the findings should indicate a lower influence of past performance on current productivity and orientation variables for the newcomers (since no influences of the current organizational environment are present in it) than for all the full-time faculty.

The findings (Table D4) showed that the effects of past performance on current productivity were still strong for both samples,[46] but were slightly lower for the newcomers (0.683) than for the sample of all full-time faculty (0.761). More salient results were obtained for the effects on teaching and research orientations. For teaching orientations, past performance had no significant effect (0.174) but was significant for the sample of all full-time faculty (-0.342). For research orientation, the effect of past performance was almost half the size for the newcomers (0.570) and less highly significant ($p<0.05$) than for the sample of all full-time faculty (1.313, $p<0.001$).

Thus, this exercise suggests that at least some of the effects of past performance that were observed in the above analyses could have been due to the confounding effects of past performance and organizational environment.

SUMMARY

The results indicate that there are few differences across career stages in the causal models of productivity, with productivity in all cases overwhelmingly being determined by past performance, experience, and academic qualifications, with almost negligible influences due to perceptions of organizational environment, aspects of the professional

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[46] Comparing unstandardized coefficients (b) across samples.

self and activities engaged in. Organizational environment aspects were found to have significant influences on teaching and research orientations of faculty members in all career stages but these effects did not follow any apparent pattern and were not as hypothesized. The findings did not provide support for either the broad socialization framework or for the more specific career stage contingency thesis of socialization. The results are contrary to convincing longitudinal studies which demonstrate the causal effect of organizational context on productivity. Additional analyses suggest that masking and confounding of effects may explain at least partly why organizational effects are not observed in the present study.

CHAPTER SEVEN

CONCLUSIONS

SUMMARY

The purpose of this study was to examine and compare the relative saliencies and relationships of key factors impacting on the publication activity of Canadian faculty members at different stages in their academic careers in 1985. The literature provides convincing evidence through longitudinal studies that organizational context has a causal impact on faculty productivity (Long, 1978; Long, Allison and McGinnis, 1979; Long and McGinnis, 1981), and that individuals' behaviours depend on their assessments of organizational demands and expectations (Blackburn and Lawrence, 1995; Corcoran and Clark, 1984; Lawrence and Blackburn, 1985; Blau, 1973; Glaser, 1964), and the nature of social interaction opportunities provided within organizations (Blau, 1973; Reskin, 1979; Pelz and Andrews, 1976). Much of this evidence provides indirect support for the thesis that socialization is a key mechanism by which organizations impact on faculty behaviour. However, apart from research examining the impact of one's graduate school, there are no systematic tests of the applicability and the utility of the socialization thesis in understanding variations in faculty productivity across all stages of the academic career process.

For the present study, the central propositions of socialization theorists (Brim and Wheeler, 1966; Schein, 1971) were synthesized and integrated with key empirical findings from the faculty productivity literature to provide a conceptual framework for the causal analysis of faculty productivity which takes into account the sociodemographic and career

backgrounds of faculty members, their perceptions of their organizational environments, their professional role orientations and interests, and the behaviours they engage in.

Based on the socialization framework, the general hypothesis was that faculty members' sociodemographic and career backgrounds, and their perceptions of their organizational environments would influence their professional role orientations and attitudes, which in turn, would determine the activities they chose to engage in, and thereby influence their productivity. In addition, based on the career stage contingency thesis of organizational socialization, it was hypothesized that the strength of the organizational environment's influence on the faculty members' professional self would depend on career stage, and would be stronger for individuals in early stages of their careers or for those anticipating tenure or promotion in the near future.

The findings, based on the results of path analyses, provide no support for either the socialization thesis or its career stage contingency component as tested by the measures included in this study.

Although the causal model accounted for a relatively impressive 40% of the variation in faculty productivity, only a handful of career background variables were responsible for the bulk of the effect. In particular, past performance was by far the strongest influence, followed generally by experience, academic qualifications and age. Differences in perceptions of organizational environment, aspects of the professional self and activities made negligible contributions towards explaining variations in current productivity. Although socializing influences of the organizational environment on professional role orientations were present, they had neither any ultimate impact on productivity, nor did they vary in any consistent, predictable manner across career stages.

These findings are not only contrary to theoretical expectations, but go against much convincing evidence in the literature which indirectly suggests that socialization is a mechanism worthy of considering when examining how organizational contexts impact on

individual behaviour. In light of this evidence from the literature, and the fact that (i) this study is the first attempt in the faculty productivity literature to use multivariate analysis and causal modeling to test the socialization thesis, and (ii) that the measures included in the study are constrained by the use of secondary data, one should strongly hesitate to conclude that the applicability and the utility of the socialization thesis in understanding faculty productivity ought to be discarded on the basis of this study.

In the ensuing discussion, by critically examining the findings of this study, its limitations are uncovered, and the question is raised of whether the socialization thesis has been fairly tested by this study. This exploration is interwoven with suggestions for how the empirical study could be improved as well as areas in which further theoretical elaboration is required. The chapter concludes with the implications of this study for the future theoretical and empirical agenda for research in faculty productivity.

A Critical Examination of the Findings

The apparent lack of socialization effects on faculty productivity raises a host of questions that deserve further exploration. First, with career background factors controlled, why did perceptions of the organizational context have no impact on productivity? Additional analyses undertaken in this study indicate that one of the reasons may be the inability to control for differences in theoretically important organizational characteristics. The degree of clarity of organizational norms and the organizations' capacities to transmit them clearly are explicitly stated as being important conditions for socialization to be effective (Wheeler, 1966). Due to the limitations of the measures available in the secondary dataset utilized for this study, it was not possible to control for such differences, and this may have partly contributed to the lack of observed effects. The empirical task, thus, is to ensure that such theoretically important differences are adequately measured and incorporated as controls in the research design. Blau (1973)

states that faculty work is organized more along the professional model than the bureaucratic model. It is plausible that performance norms in academic institutions are more likely implicit than formally stated or written, although the extent to which this is true would also depend on particular locations. Thus, uncovering and measuring these differences may be more of a challenge in researching academic institutions than other locales.

A related limitation is the possibility that the measures of organizational conditions used in this study were inadequate. Most of the literature which examines the influence of context on productivity is American, and uses as its measure of context the prestige rating of the department. This particular variable could not be included in the present study because such ratings do not exist for Canadian academic institutions. The other problem is that prestige is a rather gross measure subsuming a whole host of contextual variables such as physical resources, affluence, student quality, enrollments, and reputation, to name a few. Unfortunately few studies actually test the degree to which prestige is related to any of these factors, and the extent to which any of them impact on productivity. It is possible that the range of measures of organizational context included in this study was not broad enough.

It is also possible that the measures were, to some degree, inappropriate. For example, the measures of teaching and research opportunities used in this study were based on respondents' reports of their satisfactions with each of these opportunities in their organization; Pelz and Andrews (1976) report that the actual provision of opportunities may not reflect satisfaction with those opportunities. It had also been noted in the present study that there were some puzzling relationships between perceptions of the institutional value of a particular activity and the personal value attached to those activities. The possibility was raised that individuals' reports of institutional values might have been coloured by their own biases towards a particular activity (Chapter 6).

The empirical implication of this is, as always, for researchers to rigorously ensure the validity of all measures. One of the ways in which this can be accomplished is by statistical triangulation. For example, aggregate scores of individuals[47] from the same institution on a particular variable may be used as a measure of that variable in addition to individual scores (cf. Blau, 1973). Wildly divergent individual scores may then be identified, and one can test whether the relationships for these individuals are different in a theoretically meaningful way, or whether they are simply aberrant anomalies.

The other way of increasing the validity of measures and findings is through methodological triangulation (Denzin, 1989). Perhaps survey research is not the best way of collecting data on people's socialization influences and motivational forces. Much of the faculty productivity literature with a lean towards a socialization explanation have utilized in-depth interview techniques (e.g., Lawrence and Blackburn, 1985; Corcoran and Clark, 1984; Braskamp, Fowler and Ory, 1982).

Another reason unearthed by the additional analyses undertaken in the study for the observed lack of effects of organizational context on productivity is the possible attenuation of organizational effects, and the simultaneous overestimation of past performance effects, to some degree at least, due to a confounding relationship between the two. Long (1978) cautioned against this possibility in cross-sectional research, and both advised, and himself undertook, longitudinal analyses. Given the constraints of conducting longitudinal research, a more feasible solution would be to ensure that any measures of past performance can be accurately partitioned into those components which occurred prior to joining the current organization and those which have occurred during

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[47] Or sub-group of individuals if such sub-grouping is theoretically required, for example, in the present study, by career stages.

one's tenure there. In this study it was not possible to do so because such breakdowns were not available in the secondary dataset used.

In sum, the main reason why organizational effects on productivity were not observed is due to the empirical limitations of the current study, imposed on it primarily by the constraints of using secondary data. Possible masking of effects due to the inability to adequately control for theoretically important variables, having a restricted number of measures of organizational context, some of which may be of questionable validity, and some degree of attenuation of effects due to the possible confounding of relationships may all have contributed, at least in some part, to the lack of observed effects.

The second question which arises is: Why were the differences in the socialization influences of perceived organizational conditions on the orientations of individuals across career stages not as predicted by Schein's (1971) conceptual scheme of motivations arising from boundary passage events?

One of the salient findings of this study was that, in addition to their own standards, faculty members place great importance on, at least, both the local environment and the discipline at large for their sources of self-esteem. Thus, it is very likely that although faculty members in specific career stages may be vulnerable to organizational demands when anticipating promotion or tenure, these are not the only forces driving their orientations and attitudes to their professional activities. Hence, there is no simple, predictable relationship between career stage and socialization effects if prediction is based on Schein's conceptual scheme which focuses solely on the motivating power of attaining tenure and promotion without paying due attention to other sources of recognition which evidently play an important role in motivating faculty members. This appears to be true for at least faculty members, and probably for other professionals for whom other important sources of motivation and recognition exist besides those offered by the organizational career ladder.

The socialization thesis states that socialization effects depend on the locus of attachment of the individual (Wheeler, 1966). For the sample of academics used in this study, the findings indicate that they are all, for the most past, very strongly attached to their discipline and quite strongly attached to their local environments (Table A2, variable: locus of attachment). Thus, the lack of support for the career stage contingency thesis appears to be due to a limitation of the applicability of Schein's boundary passage model to the special case of academics, who are clearly highly "cosmopolitan" individuals as well as "organizational men (and women)." The theoretical challenge is to further elaborate Schein's model by taking these special conditions into account.

The third question is: Although faculty members do, to varying degrees, respond to their perceptions of organization demands by holding appropriate values, why is it that these role orientations have little impact on their ultimate productivity?

One of the reasons for this may be that there are other demands on the individual, for example, family and domestic responsibilities, which conflict with professional demands. Similarly, there may be external constraints both on the individual as well as the organization which have restrictive results. Such constraints may include, for example, the external funding available or the number of outlets available for publishing; these in turn, may be determined by, among a host of other factors, disciplinary field, and the societal priority and relevance of one's research topic.[48]

Theoretically, thus, it is important to consider the relationship between the organization and the individual as part of the broader structure of relationships, connecting not just individuals with others both within and outside the organization, but also

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[48] For example, at the time that the data for this study was collected, federal funding available through NSERC (Natural Sciences and Engineering Research Council) was just over $309M, compared to just under $60M through SSHRC (Social Sciences and Humanities Research Council) (Government of Canada, 1988). The science and technology fields, as opposed to the liberal arts, also receive much funding from private industry (Gregor and Jasmin, 1992).

connecting both individuals and organizations with societal institutions of which the academic institution and enterprise form only one particular aspect.[49]

The above discussion suggests that hypothesized relationships were not found due, in part at least, to some important empirical limitations of the present study. Given these limitations, it is fair to say that although no support for the socialization thesis was found, as tested by this study, there is also no evidence to refute the possibility that socialization may still be the key mechanism by which organizational contexts influence faculty productivity. A fairer test is clearly deserved.

IMPLICATIONS FOR THE FACULTY PRODUCTIVITY RESEARCH AGENDA

The above exploration indicates that certain aspects of the organizational socialization thesis, at least as understood by this author, need further elaboration to increase the applicability of the thesis to the study of academics in academic institutions. One such necessity is to specify how much influence an academic organization can have through its powers to bestow local awards on academics given that their affiliations and sources of recognition extend beyond the confines of the organizational locales.

Furthermore, it is necessary to identify other relevant sources of socialization and to elaborate under which conditions the organizational influences will be salient and when influences from other sources will dominate. For example, evidence for the continued influence of academic qualifications on the professional role orientations of faculty members even at higher stages (Chapter 6) suggests that socialization influences arising from graduate training are deep-seated and probably pose some resistance to the ability of the organization to shape its members. Thus, any influence that the organization is going

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[49] The theoretical model of Blackburn and Lawrence (1995) makes an important contribution in this regard. Unfortunately, the influences of these broader aspects remain untested due to lack of data.

to have in shaping the orientations of its faculty members must be recognized as *re*-socialization in the face of earlier socialization.

These differences in prior socialization experiences may help us understand differences in past performance, a critical determinant of productivity. Some have argued that past performance results in recognition which maintains the motivation for future productivity (e.g., Blackburn and Lawrence, 1995; Glaser, 1964). Others argue that past performance results in the allocation of rewards which subsequently facilitates continued productivity (Allison and Stewart, 1974). However, there are no systematic explorations into the sources of differences in past performance or of the mechanism by which it influences current productivity. The contribution which this study makes to this particular question is that past performance does not influence productivity through any of the variables included in this study. What are the roles of the various social institutions and relationships, for example, the family, the education system and peer group relationships, to name a few, in determining the performance capacities of individuals? And, what are the relative contributions of these possible sources in contrast to the "sacred spark" ? Understanding these relationships will make a significant contribution to the faculty productivity literature, and should be given priority in the future research agenda in faculty productivity.

In summary, I call for further elaboration of the socialization thesis in order to make it more applicable to the academic context, and a more methodologically sound test of this thesis than was possible by the present study. I also call for a further understanding of prior socialization experiences and their consequences so that all these influences and their relationships can be assessed together. Anything less would be too simplistic.

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APPENDIX A

DESCRIPTIVE PROFILES

Table A1: Frequency Distributions, Sample of All Faculty Members (N = 5060)

Background Characteristics	Valid N	%*
GENDER	5033	99.5
Male	4162	82.7
Female	871	17.3
SOCIOECONOMIC STATUS OF FAMILY OF ORIGIN	4907	97.0
Poor	837	17.1
Just below average	994	20.3
About average	1519	31.0
Just above average	1167	23.8
Wealthy	390	8.0
MARITAL STATUS	5015	99.1
Married	3935	78.5
Not married	1080	21.5
DISCIPLINE	4948	97.8
Math/ Natural Sciences	1001	20.2
Social Sciences	1151	23.3
Humanities	628	12.4
Arts	196	4.0
Professions/ Applied Sciences	1972	39.9
TENURE STATUS	5060	100
Not tenured	1103	21.8
Tenured	3957	78.2
HIGHEST DEGREE EARNED	5035	99.5
Less than Bachelor's	9	0.2
Bachelor's	75	1.5
First professional degree	109	2.2
Master's	806	16.0
Graduate professional degree	258	5.1
Ph. D.	3778	75.0
RANK	5051	99.8
Professor	1801	35.7
Associate professor	1914	37.9
Assistant professor	1001	19.8
Lecturer	108	2.1
Instructor	45	0.9
Other rank	165	3.3
No rank designation	17	0.3

.... Table A1 continues on next page ....

Table A1 continued....

Organizational Context	Valid N	%*
UNIVERSITY TYPE	5054	99.9
Mostly graduate	2897	57.3
Some graduate	859	17.0
Mostly undergraduate	1298	25.7
REGION	5054	99.9
Atlantic	694	13.7
Quebec	1114	22.0
Ontario	1750	34.6
West	1496	29.6
DEPARTMENT SIZE (mean = 20.41; SD = 13.03)	5034	99.5
Less than 5	316	6.3
5 to 10	1071	21.3
11 to 20	1648	32.8
21 to 30	914	18.2
31 to 40	515	10.2
More than 40	570	11.3
HIGHEST DEGREE OFFERED BY DEPARTMENT	5029	99.4
Minor only	47	0.9
Bachelor's	993	19.7
First professional	172	3.4
Master's	1196	23.8
Graduate professional diploma	170	3.4
Doctorate	2451	48.7

*For the *variable* as a whole, percentage reported = (Valid N/total sample size) x 100%. For each of the *categories* of a variable, the percentage reported = (count for category/valid N) x 100%.

Table A2: Means and Standard Deviations, Sample of all Faculty Members (N = 5060)

	Valid N (%)*	Mean	SD	Mode	Range
BACKGROUND					
Age	5060 (100)	45.82	8.17	46	23 - 70
Experience	4944 (97.7)	14.30	8.24	16.00	0 - 41
Seniority	5060 (100)	12.57	7.53	17.00	0 - 41
Past performance	5060 (100)	18.54	24.21	0.00	0 - 196
Past performance rate	5060 (100)	1.524	2.28	0.00	0 - 37
ORGANIZATIONAL VALUES					
Teaching effectiveness	4796 (94.8)	4.29	1.71	4.00	1 - 7
Scholarly publications	4801 (94.9)	6.04	1.29	7.00	1 - 7
Service	5060 (100)	11.18	3.62	12	3 - 21
RESOURCES AVAILABLE	5060 (100)	38.57	9.73	38.00	10 - 70
					high = better rating
DEPARTMENTAL CLIMATE					high = more positive
Student quality	4828 (95.4)	4.39	1.41	5.00	1 - 7
Intellectual atmosphere	5037 (99.5)	4.16	1.54	4.00	1 - 7
Faculty morale	4989 (98.6)	3.71	1.58	3.00	1 - 7
UNIVERSITY CLIMATE					high = more positive
Sense of institutional pride	4848 (95.8)	4.15	1.62	4.00	1 - 7
Sense of identity	4819 (95.2)	4.06	1.74	5.00	1 - 7
Faculty involvement	4526 (89.4)	4.26	1.55	4.00	1 - 7
Faculty loyalty	4725 (93.4)	4.81	1.35	5.00	1 - 7
Administrative quality	5060 (100)	19.13	6.08	20.00	5 - 35
OPPORTUNITIES AVAILABLE					high = greater
Teaching	4939 (97.6)	5.25	1.64	6.00	1 - 7
Research	4921 (97.3)	4.62	1.95	6.00	1 - 7
Policy-influencing	5060 (100)	8.58	2.34	9.00	3 - 15
COMPARATIVE WORKLOADS					high = higher
Teaching	4982 (98.5)	3.14	0.71	3.00	1 - 5
Administrative	4896 (96.8)	3.26	1.16	3.00	1 - 5
DEPARTMENTAL CHANGES IN PAST FIVE YEARS	4040 (100) [1]				high = increase over past five years
Student demands	3017 (74.7) [2]	18.49	3.13	16.00	4 - 28
Faculty morale	4017 (99.4)	3.17	1.32	3.00	1 - 7
Emphasis on teaching performance	4038 (99.9)	4.14	1.13	4.00	1 - 7
Emphasis on research performance	4008 (99.2)	4.99	1.25	4.00	1 - 7

... Table A2 continues on next page ...

* May not be exact due to rounding. Percentage reported = (Valid N/total sample size) x 100%.

1 Only 4040 out of 5060 respondents have been in their current organization for at least 5 years.

2 As a percentage of 4040. This applies to all of the four dimensions included within this concept.

Table A2 continued ....

	Valid N (%)*	Mean	SD	Mode	Range
PERSONAL VALUES					high = more important
Teaching effectiveness	4868 (96.2)	5.83	1.08	6.00	1 - 7
Scholarly publications	4862 (96.1)	5.82	1.07	6.00	1 - 7
Service	5060 (100)	13.01	3.25	12.00	3 - 21
INTERESTS					high = more important
Teaching	5002 (98.9)	5.85	1.17	6.00	1 - 7
Research	5060 (100)	11.75	2.19	14.00	2 - 14
Administration	5060 (100)	7.91	2.99	8.00	2 - 14
SOURCE OF SELF-ESTEEM					high = more important
Own standards	5013 (99.1)	6.65	0.90	7.00	1 - 7
Local environment	5060 (100)	17.56	3.06	18.00	3 - 21
Discipline	5060 (100)	15.44	4.44	21.00	3 - 21
LOCUS OF ATTACHMENT					high = stronger
Local	5060 (100)	10.25	2.68	12.00	2 - 14
Cosmopolitan	5021 (99.2)	6.20	1.05	7.00	1 - 7
CAREER EVALUATION	5060 (100)	9.53	3.16	14.00	high = more positive 2 - 14
VIEW OF UNIVERSITY	5027 (99.3)	5.79	1.13	6.00	high = more positive 1 - 7
ACTIVITIES					
Teaching (hrs/week)	5060 (100)	23.43	13.28	20.00	0 - 133
Research (hrs/ week)	5060 (100)	12.73	10.58	10.00	0 - 90
Administrative Duties (hrs/week)	5060 (100)	6.98	8.55	2.00	0 - 60
Consulting (% of work time)	5060 (100)	8.45	10.14	5.00	0 - 70
Journal subscriptions	5060 (100)	4.50	3.15	3.00	0 - 45
CURRENT PRODUCTIVITY					
Articles in past 3 years	5060 (100)	5.47	6.96	0.00	0 - 96
Books in past 3 years	5060 (100)	0.50	1.24	0.00	0 - 36

* May not be exact due to rounding. Percentage reported = (Valid N/total sample size) x 100%.

Table A3: Frequency Distributions of Faculty by Career Stage

	Stage 1 (N=839)		Stage 2 (N = 462)		Stage 3 (N = 509)		Stage 4 (N = 717)		Stage 5 (N = 482)		Stage 6 (N = 1774)	
	Valid N	% *	Valid N	% *	Valid N	% *	Valid N	% *	Valid N	% *	Valid N	% *
GENDER	836	99.6	460	99.6	505	99.2	713	99.4	480	99.6	1762	99.3
Male	575	68.8	328	71.3	395	78.2	593	83.2	437	91.0	1639	93.0
Female	261	31.2	132	28.7	110	21.8	120	16.8	43	9.0	123	7.0
uncertainty coefficient, u (dependent=career stage) = 0.208; chi-square = 325.7, df (5), p = .00000												
FAMILY'S SES	813	96.9	447	96.8	494	97.1	698	97.4	466	96.7	1725	97.2
Poor	24	3.0	17	3.8	21	4.3	31	4.4	30	6.4	112	6.5
Just below average	230	28.3	134	30.0	178	36.0	236	33.8	148	31.8	565	32.8
About average	255	31.4	152	34.0	130	26.3	219	31.4	128	27.5	546	31.7
Just above average	294	36.2	144	32.2	161	32.6	204	29.2	159	34.1	491	28.5
Wealthy	9	1.1	0	0	4	0.8	8	1.1	1	0.2	11	0.6
somer's d (dependent=career stage) = -0.060; chi-square = 80.64, df (35), p = 0.00002												
HIGHEST DEGREE	839	100	459	99.4	507	99.6	713	99.4	477	99.0	1764	99.4
Less than bachelor's	3	0.4	2	0.4	0	0	2	0.3	1	0.2	1	0.1
Bachelor's degree	25	3.0	8	1.7	3	0.6	7	1.0	7	1.5	9	0.5
First professional	32	3.8	21	4.6	4	0.8	11	1.5	6	1.3	29	1.6
Master's degree	187	22.3	123	26.8	83	16.4	114	16.0	68	14.3	133	7.5
Graduate professional	70	8.3	39	8.5	21	4.1	37	5.2	10	2.1	60	3.4
Ph. D.	522	62.2	266	58.0	396	78.1	542	76.0	385	80.7	1532	86.8
somer's d (dependent = career stage)= 0.285; chi-square = 326.67, df (25), p = .00000												
MARITAL STATUS	835	99.5	457	98.8	502	98.6	712	99.3	477	99.0	1756	99.0
Married	559	66.9	345	75.5	376	74.9	568	79.8	383	80.3	1509	85.9
Not married	276	33.1	112	24.5	126	25.1	144	20.2	94	19.7	247	14.1
uncertainty coefficient, u (dependent=career stage) = 0.0083; chi-square = 132.84, df (35), p = 0.00000												

... Table A3 continues on next page ...

* For *variable*, percentage reported = (Valid N/sample size) x 100%. For *categories*, percentage reported = (count for category/valid N) x 100%.

Table A3 continued ...

	Stage 1 (N=839)		Stage 2 (N = 462)		Stage 3 (N = 509)		Stage 4 (N = 717)		Stage 5 (N = 482)		Stage 6 (N = 1774)	
	Valid N	% *	Valid N	% *	Valid N	% *	Valid N	% *	Valid N	% *	Valid N	% *
UNIVERSITY TYPE	838	99.9	462	100	509	100	717	100	482	100	1769	99.7
Mostly graduate	468	55.8	228	49.4	281	55.2	368	51.3	256	53.1	1207	68.2
Some graduate	132	15.8	81	17.5	93	18.3	140	19.5	119	24.7	242	13.7
Mostly undergraduate	238	28.4	153	33.1	135	26.5	209	29.1	107	22.2	320	18.1
tau-b = -0.109; chi-square = 135.48, df (10), p = .00000												
DEPARTMENT SIZE	832	99.2	461	99.8	509	100	713	99.4	482	100	1763	99.4
Less than 5	65	10.2	44	9.5	39	7.7	55	7.7	25	5.2	72	4.1
5 to 10	202	24.3	107	23.2	113	22.2	175	24.5	112	23.2	301	17.1
11 to 20	259	31.1	149	32.3	166	32.6	232	32.5	145	30.1	621	35.2
21 to 30	138	16.6	63	13.7	84	16.5	124	17.4	86	17.8	369	20.9
31 to 40	76	9.1	46	10.0	55	10.8	54	7.6	52	10.8	197	11.2
More than 40	92	11.1	52	11.3	52	10.2	73	10.2	62	12.9	203	11.5
tau-b = 0.069; chi-square = 94.12, df (35), p = .00000												
HIGHEST DEGREE	837	99.8	460	99.6	505	99.2	713	99.4	480	99.6	1766	99.5
Minor only	16	1.9	8	1.7	6	1.2	8	1.1	2	0.4	2	0.1
Bachelor's	205	24.5	124	27.0	106	21.0	165	23.1	105	21.9	217	12.3
First professional	40	4.8	19	4.1	23	4.6	23	3.2	12	2.5	47	2.7
Master's	188	22.5	140	30.4	116	23.0	199	27.9	109	22.7	346	19.6
Grad. prof. diploma	48	5.7	26	5.7	15	3.0	21	2.9	13	2.7	37	2.1
Doctorate	340	40.6	143	31.1	239	47.3	297	41.7	239	49.8	1117	63.3
tau-b = 0.171; chi-square = 296.27, df (25), p = .0000												
REGION	838	99.9	462	100	509	100	717	100	482	100	1769	99.7
Atlantic	147	17.5	90	19.5	77	15.1	121	16.9	63	13.1	180	10.2
Quebec	127	15.2	65	14.1	137	26.9	151	21.1	74	15.4	397	22.4
Ontario	343	40.9	139	30.1	157	30.8	230	32.1	219	45.4	610	34.5
West	221	26.4	168	36.4	138	27.1	215	30.0	126	26.1	582	32.9
uncertainty coefficient, U = 0.008; chi-square = 129.79, df (15), p = .00000												

* For *variable*, percentage = (Valid N/sample size) x 100%. For *categories*, the percentage = (count for category/valid N) x 100%.

Table A4: Means and Standard Deviations of Faculty by Career Stage

	Stage 1 [839]		Stage 2 [462]		Stage 3 [509]		Stage 4 [717]		Stage 5 [482]		Stage 6 [1774]	
	mean	SD	mean	SD	mean	SD	mean	SD	mean	SD	mean	SD
AGE	37.64	6.51	43.23	7.17	41.87	5.42	45.76	5.37	50.88	5.52	50.52	6.89
somer's d (dependent=career stage) = 0.417; F = 585.6, df (5, 4777), p = .0000												
EXPERIENCE	4.30	3.31	10.24	5.61	9.90	4.36	14.30	4.42	20.33	4.76	20.10	6.99
somer's d (dependent = career stage)= 0.534; F = 1150.5, df (5, 4680), p = .0000												
SENIORITY	3.29	2.72	8.56	5.67	8.83	4.07	13.15	3.98	18.84	4.12	17.65	6.30
somer's d (dependent = career stage)= 0.525; F = 1214.7, df (5, 4777), p = .0000												
PAST PERFORMANCE	5.71	8.71	8.81	11.20	13.87	17.62	13.78	15.13	11.86	14.38	33.55	30.62
somer's d (dependent = career stage)= 0.329; F = 272.7, df (5, 4777), p = .0000												
PAST PERF. RATE	1.804	3.19	1.218	2.10	1.735	2.48	1.080	1.33	0.641	0.870	1.891	2.17
somer's d (dependent = career stage) = 0.126; F = 35.42, df (5, 4690), p = .000												
INSTITUTION VALUES												
Teaching effectiveness	4.28	1.80	4.14	1.78	4.33	1.72	4.09	1.73	3.95	1.70	4.49	1.59
scale: 1 - 7; somer's d = 0.044; F = 11.24, df (5, 4535), p = .0000; eta = 0.111; eta squared = 0.012												
Scholarly publications	6.11	1.31	6.22	1.13	6.03	1.28	6.05	1.29	6.25	1.21	6.00	1.25
scale: 1 - 7; somer's d = -0.042; F = 4.35, df (5, 4540), p = .0006; eta = 0.069; eta squared = 0.005												
Service	11.44	3.47	11.15	3.75	11.19	3.76	10.76	3.79	10.65	3.73	11.25	3.56
scale: 3 - 21; somer's d = -0.009; F = 4.76, df (5, 4777), p = .0003; eta = 0.070; eta squared = 0.005												
DEPT. CLIMATE												
Student quality	4.56	1.45	4.47	1.42	4.26	1.41	4.27	1.41	4.38	1.36	4.44	1.37
scale: 1 - 7; somer's d = -0.012; F = 4.81, df (5, 4535), p = .0002; eta = 0.072; eta squared = 0.005												
Intellectual atmosphere	4.26	1.60	4.06	1.56	4.03	1.51	3.95	1.48	4.01	1.59	4.32	1.51
scale: 1 - 7; somer's d = 0.030; F = 9.15, df (5, 4755), p = .0000; eta = 0.098; eta squared = 0.010												
Faculty morale	4.03	1.63	3.58	1.50	3.64	1.52	3.43	1.51	3.52	1.59	3.79	1.57
scale: 1 - 7; somer's d = -0.016 F = 14.36, df (5, 4713), p = .0000; eta = 0.123; eta squared = 0.015												
Sense of identity	4.30	1.76	4.08	1.69	3.90	1.69	3.92	1.75	3.95	1.76	4.11	1.72
scale: 1 - 7; somer's d = -0.014; F = 5.22, df (5, 4551), p = .0001; eta = 0.076; eta squared = 0.006												
Faculty involvement	4.36	1.49	4.26	1.47	4.16	1.55	4.17	1.57	4.24	1.58	4.29	2.54
scale: 1 - 7; somer's d = -0.001; F = 1.41, df (5, 4278), p = .2174; eta = 0.041; eta squared = 0.002												

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Table A4 continued ...

	Stage 1 [839]		Stage 2 [462]		Stage 3 [509]		Stage 4 [717]		Stage 5 [482]		Stage 6 [1774]	
	mean	SD	mean	SD	mean	SD	mean	SD	mean	SD	mean	SD
UNIVERSITY CLIMATE												
Institutional pride	4.35	1.64	4.06	1.56	3.98	1.60	4.06	1.60	4.10	1.67	4.23	1.61
scale: 1 - 7; somer's d = 0.000; F = 5.05, df (5, 4582), p = .0001; eta = 0.074; eta squared = 0.006												
Faculty loyalty	4.78	1.36	4.70	1.36	4.70	1.39	4.83	1.36	4.75	1.40	4.87	1.32
scale: 1 - 7; somer's d = 0.025; F = 2.06, df (5, 4462), p = .0673; eta = 0.048; eta squared = 0.002												
Administrative quality	19.45	5.51	18.67	5.72	18.84	6.06	18.55	6.10	18.93	6.33	19.55	6.26
scale: 5 - 35; somer's d = 0.021; F = 4.36, df (5, 4777), p = .0006; eta = 0.067; eta squared = 0.005												
RESOURCES	38.82	10.27	37.50	9.84	36.83	9.62	37.68	9.25	39.14	9.15	39.76	9.68
scale: 10 - 70; somer's d = 0.055; F = 11.28, df (5, 4777), p = .0000; eta = 0.108; eta squared = 0.012												
OPPORTUNITIES												
Teaching	4.95	1.66	4.96	1.70	5.03	1.71	5.29	1.65	5.33	1.63	5.52	1.52
scale: 1 - 7; somer's d = 0.119; F = 20.10, df (5, 4677), p = .0000; eta = 0.145; eta squared = 0.021												
Research	4.38	1.95	4.22	1.99	4.48	1.94	4.39	1.98	4.58	1.89	5.01	1.88
scale: 1 - 7; somer's d = 0.119; F = 23.01, df (5, 4665), p = .0000; eta = 0.155; eta squared = 0.024												
Policy-influencing	7.52	2.17	8.28	2.21	8.54	2.14	8.85	2.23	8.53	2.43	9.14	2.33
scale: 3 - 15; somer's d = 0.189; F = 61.70, df (5, 4777), p = .0000; eta = 0.246; eta squared = 0.061												
WORKLOADS												
Teaching	3.20	0.73	3.28	0.71	3.14	0.65	3.18	0.69	3.19	0.64	3.04	0.73
scale: 1 - 5; somer's d = -0.068; F = 11.86, df (5, 4712), p = .0000; eta = 0.112; eta squared = 0.012												
Administrative	2.76	1.12	3.27	1.07	3.38	1.06	3.43	1.12	3.28	1.09	3.41	1.19
scale: 1 - 5; somer's d = 0.126; F = 42.31, df (5, 4635), p = .0000; eta = 0.209; eta squared = 0.044												

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Table A4 continued ...

	Stage 1 [839]		Stage 2 [462]		Stage 3 [509]		Stage 4 [717]		Stage 5 [482]		Stage 6 [1774]	
	mean	SD	mean	SD	mean	SD	mean	SD	mean	SD	mean	SD
DEPT'L CHANGES												
Student demands	18.61	3.00	18.54	3.09	18.83	3.33	18.56	3.12	18.61	3.09	18.34	3.08
scale: 4 - 28; somer's d = -0.041; F = 1.62, df (5, 2880), p = .1514; eta = 0.053; eta squared = 0.003												
Faculty morale	3.08	1.37	3.08	1.35	3.15	1.32	3.07	1.31	3.11	1.30	3.25	1.32
scale: 1 - 7; somer's d = 0.042; F = 2.86, df (5, 3821), p = .0140; eta = 0.061; eta squared = 0.004												
Emphasis on teaching	4.09	1.22	4.04	1.22	4.21	1.09	4.04	1.15	3.94	1.19	4.24	1.07
scale: 1 - 7; somer's d = 0.049; F = 7.77, df (5, 3842), p = .0000; eta = 0.100; eta squared = 0.010												
Emphasis on research	5.19	1.34	5.11	1.32	5.11	1.15	5.09	1.26	5.12	1.30	4.82	1.21
scale: 1 - 7; somer's d = -0.092 F = 10.45, df (5, 3821), p = .0000; eta = 0.116; eta squared = 0.014												
PERSONAL VALUES												
Teaching	5.90	1.06	5.95	0.98	5.76	1.11	5.87	1.02	6.00	1.02	5.73	1.14
scale: 1 - 7; somer's d = -0.044; F = 7.70, df (5, 4602), p = .0000; eta = 0.091; eta squared = 0.008												
Research	5.92	1.03	5.60	1.11	5.99	0.98	5.66	1.14	5.61	1.06	5.95	1.04
scale: 1 - 7; somer's d = 0.029; F = 19.51, df (5, 4596), p = .0000; eta = 0.144; eta squared = 0.021												
Service	13.42	3.11	13.62	3.03	13.96	3.24	13.05	3.30	12.99	3.31	12.52	3.33
scale: 3 - 21; somer's d = -0.091; F = 13.62, df (5, 4777), p = .0000; eta = 0.119; eta squared = 0.014												
PERSONAL INTERESTS												
Teaching	5.87	1.19	5.94	1.15	5.74	1.13	5.85	1.11	5.98	1.09	5.82	1.21
scale: 1 - 7; somer's d = -0.007; F = 2.95, df (5, 4729), p = .01117; eta = 0.056; eta squared = 0.003												
Research	11.93	2.09	11.45	2.41	11.82	2.12	11.60	2.25	11.13	2.42	12.02	2.06
scale: 2 - 14; somer's d = 0.032; F = 16.73, df (5, 4777), p = .0000; eta = 0.131; eta squared = 0.017												
Administration	7.64	2.75	8.10	2.98	7.91	2.80	7.93	3.02	7.93	3.04	7.99	3.11
scale: 2 - 14; somer's d = 0.031; F = 1.97, df (5, 4777), p = .0801; eta = 0.045; eta squared = 0.002												

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Table A4 continued ...

	Stage 1 [839]		Stage 2 [462]		Stage 3 [509]		Stage 4 [717]		Stage 5 [482]		Stage 6 [1774]	
	mean	SD	mean	SD	mean	SD	mean	SD	mean	SD	mean	SD
SELF-ESTEEM: Own stds	6.76	0.70	6.70	0.67	6.62	0.99	6.59	0.92	6.60	0.88	6.62	0.99
scale: 1 - 7; somer's d = -0.021; F = 4.36, df (5, 4734), p = .0006; eta = 0.068; eta squared = 0.005												
- Local environment	17.81	2.71	17.75	2.81	17.35	3.00	17.51	2.87	17.35	3.20	17.49	3.33
scale: 3 - 21; somer's d = -0.009; F = 2.62, df (5, 4777), p = .0226; eta = 0.052; eta squared = 0.003												
- Discipline	15.82	4.26	14.94	4.54	15.87	4.08	15.06	4.42	13.75	4.76	16.17	4.19
scale: 3 - 21; somer's d = 0.039; F = 28.92, df (5, 4777), p = .0000; eta = 0.171; eta squared = 0.029												
LOCUS OF ATTACHMENT: Local	9.75	2.72	10.08	2.53	9.79	2.82	10.28	2.56	10.27	2.83	10.72	2.54
scale: 2 - 14; somer's d = 0.121; F = 20.85, df (5, 4777), p = .0000; eta = 0.146; eta squared = 0.021												
Cosmopolitan	6.25	1.01	6.22	1.02	6.15	1.08	6.14	1.05	6.03	1.19	6.26	1.02
scale: 1 - 7; somer's d = 0.011; F = 4.93, df (5, 4739), p = .0002; eta = 0.172; eta squared = 0.029												
CAREER EVALUATION	9.10	3.05	8.72	3.14	9.67	2.95	8.98	3.16	7.92	3.13	10.60	2.92
scale: 2 - 14; somer's d = 0.159; F = 86.24, df (5, 4777), p = .0000; eta = 0.288; eta squared = 0.083												
ACTIVITIES : Teaching	25.69	14.02	25.26	12.79	22.27	11.91	23.91	13.21	25.10	12.90	21.79	12.70
somer's d = -0.087; F = 15.23, df (5, 4777), p = .0000; eta = 0.125; eta squared = 0.016												
- Research	13.01	11.84	10.82	9.57	12.90	9.96	12.02	10.30	10.49	8.71	13.99	10.59
somer's d = 0.070; F = 13.52, df (5, 4777), p = .0000; eta = 0.118; eta squared = 0.014												
- Administrative duties	4.08	5.07	6.43	7.52	6.49	6.85	7.46	8.36	7.04	8.49	8.49	10.23
somer's d = 0.126; F = 32.24, df (5, 4777), p = .0000; eta = 0.181; eta squared = 0.033												
- Consulting	8.61	11.60	10.48	12.49	8.00	8.48	8.74	10.01	6.51	8.63	8.29	9.40
somer's d = 0.002; F = 7.73, df (5, 4777), p = .0000; eta = 0.090; eta squared = 0.008												
- Journal subscriptions	4.10	3.09	4.36	2.78	4.52	2.91	4.54	3.40	4.21	2.97	4.88	3.15
somer's d = 0.079; F = 9.04, df (5, 4777), p = .0000; eta = 0.097; eta squared = 0.009												
Books in past 3 years	0.267	1.432	0.297	0.722	0.552	1.425	0.537	1.429	0.322	0.773	0.691	1.234
somer's d = 0.116; F = 18.85, df (5, 4777), p = .0000; eta = 0.139; eta squared = 0.019												
Articles in past 3 years	4.190	5.037	4.242	4.773	6.346	6.315	4.862	6.418	3.193	6.180	7.260	8.241
somer's d = 0.118; F = 47.13, df (5, 4777), p = .0000; eta = 0.217; eta squared = 0.047												

Table A5: Comparison of Distributions and Means for Non-Producers and Producers

- Two-tailed significance of t-test of mean difference (interval variables) or Pearson's chi-square (nominal variables); only $p < 0.01$ reported.
- Producers: At least one article published in lifetime upto past 3 years.

Frequency Distributions (nominal variables)	Non-Producers [966] N	%	Producers [4094] N	%	p
Gender	952	18.9	4081	81.1	0.000
Male	665	16.0	3497	84.0	
Female	287	33.0	584	67.0	
Discipline	925	18.7	4023	81.3	0.000
Math/ natural sciences	126	12.6	875	87.4	
Social sciences	141	12.3	1010	87.7	
Humanities	77	12.3	551	87.7	
Arts	101	51.5	95	48.5	
Professions	480	24.3	1492	75.5	
Career Stage	862	18.0	3921	82.0	0.000
One	302	36.0	537	64.0	
Two	128	27.7	334	72.3	
Three	81	15.9	428	84.1	
Four	126	17.6	591	82.4	
Five	80	16.6	402	83.4	
Six	145	8.2	1629	91.8	
Mean Scores (interval variables)	**Mean**	**SD**	**Mean**	**SD**	**p**
Age	44.01	9.06	46.25	7.89	0.000
Family SES	3.85	1.29	3.80	1.31	ns
Highest degree earned	2.36	0.64	2.79	0.46	0.000
Experience	11.34	8.20	14.98	8..09	0.000
Seniority	10.32	7.66	13.10	7.40	0.000
University type	1.90	0.909	1.63	0.834	0.000
Department Size	18.95	12.97	20.76	13.01	0.000
Highest degree offered by dept.	1.94	0.807	2.32	0.803	0.000
Organizational Conditions					
Teaching valued	4.34	1.76	4.28	1.69	ns
Research valued	5.96	1.41	6.06	1.27	ns
Service valued	11.65	3.67	11.07	3.61	0.000
Student quality	4.52	1.40	4.36	1.40	0.003
Intellectual atmosphere	4.25	1.52	4.14	1.55	ns
Faculty morale	3.84	1.56	3.68	1.58	0.003
Sense of institutional pride	4.20	1.62	4.14	1.61	ns
Sense of identity	4.09	1.75	4.06	1.73	ns
Faculty loyalty	4.84	1.37	4.80	1.35	ns
Faculty involvement	4.35	1.57	4.23	1.55	ns
Administrative quality	19.35	5.83	19.07	6.13	ns
Teaching opportunity	5.22	1.65	5.26	1.64	ns
Research opportunity	4.32	1.95	4.68	1.94	0.000

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Table A5 continued ...

Frequency Distributions (nominal variables)	Non-Producers [966] N	%	Producers [4094] N	%	p
Policy-influencing opportunity	8.33	2.26	8.64	2.35	0.000
Resources available	37.58	9.61	38.80	9.74	0.000
Comparative teaching load	3.22	0.74	3.12	0.70	0.000
Comparative administrative load	3.13	1.18	3.29	1.15	0.000
Changes in student demands	18.52	3.13	18.49	3.13	ns
Changes in faculty morale	3.25	1.37	3.15	1.31	ns
Changes in emphasis on teaching	4.14	1.21	4.14	1.12	ns
Changes in emphasis on research	5.01	1.33	4.99	1.24	ns
Perceptions of Professional Self					
Teaching interest	6.08	1.05	5.80	1.19	0.000
Research interest	11.11	2.42	11.90	2.10	0.000
Administrating interest	8.21	3.00	7.84	2.99	0.001
Value teaching	6.15	0.925	5.76	1.10	0.000
Value research	5.52	1.18	5.89	1.04	0.000
Value service	14.01	2.98	12.76	3.26	0.000
Self-esteem source own standards	6.65	0.84	6.65	0.91	ns
Self-esteem source local environ.	18.01	2.77	17.46	3.12	0.000
Self-esteem source discipline	13.86	4.81	15.82	4.26	0.000
Locus of attachment local	10.40	2.57	10.22	2.70	ns
Locus of attachment discipline	6.23	1.05	6.19	1.06	ns
Career evaluation	9.34	3.07	9.57	3.18	ns
View of the university	5.76	1.14	5.80	1.13	ns
Activities					
Total time teaching	24.47	14.40	23.19	12.99	0.01
Total time research	9.44	8.78	13.50	10.81	0.000
Total time administration	6.51	8.57	7.09	8.55	ns
Percentage of time consulting	10.38	12.43	8.00	9.46	0.000
Journal subscribed	3.84	2.70	4.66	3.22	0.000
Productivity					
Articles produced in past 3 years	1.62	5.17	6.38	7.01	0.000
Books produced in past 3 years	0.165	0.617	0.577	1.33	0.000

Table A6: Comparison of Means for Faculty Members Located in Universities with Very High Reputations and Faculty Members Located in Universities with Low Reputations

	High Reputation (N=560)		Low Reputation (N=441)		t-test sig.*
	Mean	SD	Mean	SD	
Age	46.38	8.08	42.94	7.78	0.000
Highest degree earned	5.45	1.02	5.43	0.99	ns
Experience	15.24	8.81	11.88	7.41	0.000
Cumulative past performance	22.16	29.0	14.21	21.24	0.000
Highest degree offered by dept.	5.37	1.19	3.64	1.63	0.000
Department climate	9.30	2.68	5.88	2.47	0.000
Institution's value of teaching	4.33	1.69	4.17	1.86	ns
Institution's value of research	6.55	0.96	5.17	1.79	0.000
Teaching opportunities	5.65	1.59	4.81	1.88	0.000
Research Opportunities	5.03	1.93	4.00	2.03	0.000
Resources available	41.63	10.44	33.79	9.54	0.000
Personal teaching orientation	12.06	1.90	11.12	2.18	0.000
Personal research orientation	18.42	2.57	17.18	2.96	0.000
Source of self-esteem local	18.30	2.96	17.00	3.38	0.000
Source of self-esteem discipline	16.41	4.28	14.96	4.94	0.000
Time spent on teaching	21.49	13.34	25.04	14.50	0.000
Time spent on research	12.81	10.72	13.74	11.15	ns
Journal subscriptions	4.80	3.38	4.54	3.53	ns
Current productivity	6.43	8.91	5.26	6.85	0.024

* t-test of mean differences, 2-tailed significance level; only $p<0.05$ reported.

APPENDIX B

PATH EFFECTS

(n = 3537)	ORGANIZATIONAL PERCEPTIONS						PROFESSIONAL SELF				ACTIVITIES			PRODUCTIVITY
	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Background														
1.DMale	.089c		-.094c		.099c	.068c	-.034a	-.057c		-.041a		.036a	-.034a	-.036b
2.age						.076b	.082c	-.142c	.066b	-.055a				-.145c
3.DArts							.066c	.072c		.050b			-.039a	
4.DScience	.066b		.057b	-.125c	-.050a			-.078c					-.173c	
5.DHumanities		.040a	.063c	-.042a		.073c	.101c		.074c		.077c		-.038a	
6.DProfessionals			.042a	-.084c		.067b	.067c	-.082c			-.083c	-.056b		.047b
7.highest degree earned		.080c	.046b				-.089c	.085c		.048b				.033a
8.experience				.137c	.091c			-.058a	-.054a	-.117c				-.216c
9.past performance (log)		.058b	-.056b				-.088c	.244c	-.038a	.237c	-.092c	.114c	.137c	.574c
10.dept.degree offered	.066c	-.163c	.221c	.056b	.120c	.138c	-.096c	.050b	-.055b	.106c	-.061	.106c		
Organizational Perceptions														
11.dept climate									.099c					
12.values teaching							.121c	.234c	.064c	.119c				
13.values research							.190c	.073c	.088c			-.047b	-.042a	
14.teaching opportunities							.108c	.045b	.049b			-.048b		
15.research opportunities							-.037a	.088c			-.077c	.192c	-.064c	
16.resources available							.044b				-.057b		-.038a	
Professional Self														
17.teaching orientation											.104c	-.092c		
18.research orientation												.128c	.059b	.060c
19.self-esteem - local												-.075c		
20.self esteem - discipline												.094c	.110c	.064c
Activities														
21.time spent teaching														-.040b
22.time spent research														
23.journal subscriptions														.047c
24.Current Productivity (log)														
Constant	6.63	3.23	5.82	5.17	3.33	28.56	9.52	12.56	14.68	10.59	28.00	4.41	2.76	.298
R-square	.018	.030	.059	.031	.041	.039	.143	.184	.047	.101	.071	.171	.074	.413
Adjusted R-square	.015	.028	.057	.028	.038	.036	.139	.180	.043	.097	.065	.167	.069	.409
Std. Error of Estimate	2.76	1.66	1.22	1.60	1.90	9.60	1.78	2.41	3.04	4.00	12.37	9.69	3.09	.505

Significant standardized regression coefficients reported only. (a: p<=0.05; b: p<=0.01; c: p<=0.001)

Table B1: Path Effects for Entire Sample of Full-Time Faculty

(n = 422)	ORGANIZATIONAL PERCEPTIONS						PROFESSIONAL SELF				ACTIVITIES			PRODUCTIVITY
	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Background														
1.DMale	.102a		-.121a		.114a		-.094a							
2.age			.113a									-.099a		-.114a
3.DArts		.087											-.102a	
4.DScience			.111	-.119	-.172b								-.260c	
5.DHumanities	.121a	.105	.105			.107	.100		.114a		.140a			-.088
6.DProfessionals			.115			.113								
7.highest degree earned		.223		.121a	.087		-.132a	.110a			.152b	.117a		.099a
8.experience	-.135a									-.097				
9.past performance (log)								.180c	.132a	.223c	-.113a	.155b	.132a	.494c
10.dept.degree offered	.106a	-.108	.235c		.153b	.168b	-.175b		-.173b	.089				.077
Organizational Perceptions														
11.dept climate												-.090	.117a	
12.values teaching								.232c		.118a				.076
13.values research							.136b		.128a	-.095	-.100a			
14.teaching opportunities							.087							
15.research opportunities								.097		.092	-.129a	.194c	-.163b	
16.resources available								.095				.131b		
Professional Self														
17.teaching orientation											.143b	-.131		
18.research orientation												.128		
19.self-esteem - local														
20.self esteem - discipline														
Activities														
21.time spent teaching														-.107a
22.time spent research														
23.journal subscriptions														
24.Current Productivity (log)														
Constant	5.81	2.12	4.46	4.63	3.54	28.83	11.40	13.17	15.11	12.19	21.53	3.73	6.10	.289
R-square	.048	.070	.103	.041	.094	.055	.165	.195	.074	.130	.183	.256	.091	.402
Adjusted R-square	.025	.047	.081	.017	.072	.032	.132	.163	.037	.096	.142	.219	.046	.367
Std. Error of Estimate	2.87	1.73	1.27	1.61	1.88	10.33	1.83	2.18	2.83	3.48	12.56	10.83	2.94	.392

Significant standardized regression coefficients reported only. (a: p<=0.05; b: p<=0.01; c: p<=0.001)

Table B2: Path Effects for Full-Time Faculty in Stage One

(n = 273)	ORGANIZATIONAL PERCEPTIONS						PROFESSIONAL SELF				ACTIVITIES			PRODUCTIVITY
	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Background														
1.DMale					.225c									
2.age									.195b					
3.DArts	-.152a										.126			
4.DScience														
5.DHumanities														
6.DProfessionals				-.183a	-.158				.183a	.136				
7.highest degree earned								.233c		.169b				.096
8.experience	-.227b				-.131			-.198b		-.192b				-.166b
9.past performance (log)								.273		.268c			.147a	.517c
10.dept.degree offered		-.283c	.191b	.172b	.172b	.171b			-.114	.169a		.149a	.133	
Organizational Perceptions														
11.dept climate									.210b					
12.values teaching							.106	.259c			.136a			
13.values research							.241c	.138c	.180b					
14.teaching opportunities										-.106				
15.research opportunities								.119				.274c		
16.resources available									-.106				-.108	
Professional Self														
17.teaching orientation												-.117		
18.research orientation														
19.self-esteem - local														
20.self esteem - discipline												.185a	.132	
Activities														
21.time spent teaching														
22.time spent research														
23.journal subscriptions														
24.Current Productivity (log)														
Constant	9.30	6.17	5.52	5.50	4.52	20.09	9.11	6.13	11.59	5.68	26.63	3.53	3.05	.012
R-square	.086	.097	.067	.071	.121	.072	.133	.299	.158	.210	.139	.309	.139	.448
Adjusted R-square	.051	.062	.030	.036	.088	.037	.079	.255	.103	.161	.070	.254	.071	.397
Std. Error of Estimate	2.76	1.77	1.06	1.71	1.87	9.87	1.77	2.64	2.66	3.69	12.70	8.55	2.70	.477

Significant standardized regression coefficients reported only. (a: p<=0.05; b: p<=0.01; c: p<=0.001)

Table B3: Path Effects for Full-Time Faculty in Stage Two

(n = 384)	ORGANIZATIONAL PERCEPTIONS						PROFESSIONAL SELF				ACTIVITIES			PRODUCTIVITY
	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Background														
1.DMale	.179c			.118a	.122a	.091								-.114b
2.age		.144a												
3.DArts		.161b		-.099				.104a			.096			
4.DScience	.104	.105		-.140a							.117			
5.DHumanities				-.097		.134a	.127a				.110			
6.DProfessionals				-.109										
7.highest degree earned		.151b	-.138a				-.131a	.211c		.107	.154b			.136b
8.experience		-.118a				-.104		.114a			.153a		-.156a	
9.past performance (log)				-.149b			-.125a	.233c		.169b			.136a	.534c
10.dept.degree offered		-.170b	.239a			.162b					-.127a	.094		
Organizational Perceptions														
11.dept climate									.114	-.099			.136a	
12.values teaching							.198c	.177c	.147b	.110a				-.077
13.values research							.250c	.140b						
14.teaching opportunities														
15.research opportunities								.126a	-.109			.244c		
16.resources available							.091							
Professional Self														
17.teaching orientation												-.109a	.140a	
18.research orientation												.102		
19.self-esteem - local													-.145a	
20.self esteem - discipline												.201c	.145a	.125a
Activities														
21.time spent teaching														
22.time spent research														
23.journal subscriptions														.073
24.Current Productivity (log)														
Constant	7.50	.645	6.73	5.92	4.45	33.99	10.20	8.79	14.21	8.77	2.55	3.67	2.58	.071
R-square	.058	.087	.070	.061	.032	.050	.181	.201	.062	.091	.125	.217	.106	.410
Adjusted R-square	.033	.060	.045	.036	.006	.025	.146	.166	.021	.051	.077	.174	.057	.372
Std. Error of Estimate	2.62	1.64	1.22	1.69	1.93	9.59	1.81	2.19	2.95	3.85	10.96	9.30	2.93	.436

Significant standardized regression coefficients reported only. (a: p<=0.05; b: p<=0.01; c: p<=0.001)

Table B4: Path Effects for Full-Time Faculty in Stage Three

(n = 522)	ORGANIZATIONAL PERCEPTIONS						PROFESSIONAL SELF				ACTIVITIES			PRODUCTIVITY
	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Background														
1.DMale	.093a		-.110a		.081	.105a		-.135b		-.131b		.077		
2.age							.086	-.112a		-.121b				-.086a
3.DArts							.096a	.086a						
4.DScience				-.106a									-.158b	
5.DHumanities							.120a		0.09					.071
6.DProfessionals				-.114a			.093							
7.highest degree earned						-.088		.073						.062
8.experience			.120a				.077				.163c			-.130b
9.past performance (log)					.147b			.211c		.228c		.097a	.094a	.502c
10.dept.degree offered		-.251c	.229c				-.111a			.112a		.170c		
Organizational Perceptions														
11.dept climate							.118a		.191c					
12.values teaching							.081	.239c		.177c				
13.values research							.215c	.075						
14.teaching opportunities								.130b						.090a
15.research opportunities											-.100	.178c		
16.resources available														
Professional Self														
17.teaching orientation														
18.research orientation												.111a	.117a	
19.self-esteem - local												-.135b		
20.self esteem - discipline													.112a	
Activities														
21.time spent teaching														
22.time spent research														
23.journal subscriptions														.087a
24.Current Productivity (log)														
Constant	7.43	4.93	5.29	6.40	3.64	33.01	8.05	13.90	18.14	13.70	22.65	-.916	2.29	-.054
R-square	.019	.072	.088	.030	.038	.025	.158	.189	.084	.156	.071	.159	.114	.395
Adjusted R-square	.000	.054	.070	.011	.019	.006	.131	.163	.055	.130	.034	.126	.078	.367
Std. Error of Estimate	2.61	1.67	1.23	1.62	1.96	9.33	1.69	2.56	2.73	3.81	12.70	9.77	3.40	.504

Significant standardized regression coefficients reported only. (a: p<=0.05; b: p<=0.01; c: p<=0.001)

Table B5: Path Effects for Full-Time Faculty in Stage Four

(n = 358)	ORGANIZATIONAL PERCEPTIONS						PROFESSIONAL SELF				ACTIVITIES			PRODUCTIVITY
	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Background														
1.DMale		-.120a			.126a									
2.age						.161b		-.109	.101					
3.DArts		-.089						.136a						
4.DScience				-.141a				-.143a		-.156a	-.135a		-.219c	.094
5.DHumanities						.109								.158b
6.DProfessionals				-.255c							-.135a			.113a
7.highest degree earned							-.114a							.078
8.experience			.121a						-.107					
9.past performance (log)	-.095			-.150b	-.093	-.089	-.150b	.195c	-.147b	.183c	-.110	.118a		.507c
10.dept.degree offered	.146a	-.174b	.273c	.157b	.098	.225c				.109				
Organizational Perceptions														
11.dept climate														
12.values teaching								.222c						
13.values research							.143b		.140a					
14.teaching opportunities														
15.research opportunities								.100				.147a		
16.resources available							.167b		.108		-.128a		-.138a	
Professional Self														
17.teaching orientation											.097			
18.research orientation												.106		
19.self-esteem - local											-.137a			
20.self esteem - discipline											.117		.113	
Activities														
21.time spent teaching														
22.time spent research														
23.journal subscriptions														.083
24.Current Productivity (log)														
Constant	4.11	3.67	6.19	7.36	4.39	21.34	9.54	14.68	11.34	10.65	40.77	7.77	2.45	-.870
R-square	.039	.069	.096	.088	.038	.119	.192	.152	.115	.089	.122	.139	.125	.379
Adjusted R-square	.012	.042	.070	.062	.010	0.094	.154	.113	.073	.046	.070	.088	.073	.336
Std. Error of Estimate	2.85	1.66	1.05	1.58	1.85	8.84	1.66	2.64	3.14	4.70	11.97	8.34	2.94	.632

Significant standardized regression coefficients reported only. (a: p<=0.05; b: p<=0.01; c: p<=0.001)

Table B6: Path Effects for Full-Time Faculty in Stage Five

(n = 1450)	ORGANIZATIONAL PERCEPTIONS						PROFESSIONAL SELF				ACTIVITIES			PRODUCTIVITY
	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Background														
1.DMale			-.081b			.107c		-.054a					-.078b	
2.age							.076a	-.134c			.097b		.064a	-.108c
3.DArts							.061a	.062a					-.073b	-.049a
4.DScience	.067a		.085b	-.151c				-.093b			-.068a		-.220c	
5.DHumanities			.088b			.074a	.102c		.070a		.083b			
6.DProfessionals			.083a			.101b	.120c	-.114c			-.108b		-.086a	
7.highest degree earned			-.055a				-.069b							
8.experience			.066a	.068a	.082a						-.098b			-.154c
9.past performance (log)							-.052a	.220c	-.057a	.176c	-.080b	.138c	.111c	.532c
10.dept.degree offered	.056a	-.125c	.196c		.132c	.125c	-.109c	.057a		.088b	-.073a	.069a		
Organizational Perceptions														
11.dept climate									.063a					
12.values teaching							.165c	.249c	.056a	.112c				
13.values research							.182c	.084c	.101c			-.057a	-.083b	
14.teaching opportunities							.159c		.070a					
15.research opportunities								.079b				.172c	-.065a	
16.resources available														-.056a
Professional Self														
17.teaching orientation											.112c	-.072a		
18.research orientation												.130c		.075b
19.self-esteem - local											-.072a	-.104c		
20.self esteem - discipline												.106c	.111c	.063a
Activities														
21.time spent teaching														-.049a
22.time spent research														
23.journal subscriptions														
24.Current Productivity (log)														
Constant	7.94	4.80	5.63	6.57	3.45	26.69	8.80	13.14	14.13	11.83	27.97	-.057	3.85	.362
R-square	.011	.023	.057	.024	.030	.044	.160	.178	.048	.065	.076	.150	.091	.409
Adjusted R-square	.004	.016	.051	.018	.023	.037	.151	.169	.037	.054	.063	.138	.078	.400
Std. Error of Estimate	2.76	1.56	1.19	1.49	1.86	9.48	1.83	2.31	3.27	3.99	11.84	9.85	3.03	.509

Significant standardized regression coefficients reported only. (a: p<=0.05; b: p<=0.01; c: p<=0.001)

Table B7: Path Effects for Full-Time Faculty in Stage Six

(n = 396)	ORGANIZATIONAL PERCEPTIONS						PROFESSIONAL SELF				ACTIVITIES			PRODUCTIVITY
	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Background														
1.DMale	0.124				0.171						-0.112	0.093		
2.age									.142		0.133			
3.DArts							0.086				0.201			
4.DScience			0.117	-0.137				-0.176					-0.263	0.095
5.DHumanities			0.101				0.196				0.117		-0.163	
6.DProfessionals							0.184	-0.134	0.122				-0.178	
7.highest degree earned							-0.152	0.229	0.145	0.211	0.145			
8.experience				0.323	0.151			-0.242						-0.299
9.past performance (log)		.0101			0.104			0.302	-0.112	0.168		0.196	0.164	0.553
10.dept.degree offered		-0.132	0.119	-0.120			-0.130							
Organizational Perceptions														
11.dept climate							-0.122		0.098					
12.values teaching							0.293	0.249		0.103				
13.values research							0.094	0.194			-0.185	-0.232		
14.teaching opportunities												-0.088		
15.research opportunities								0.132				0.128		
16.resources available									0.116				-0.112	
Professional Self														
17.teaching orientation											0.119			
18.research orientation												0.138		
19.self-esteem - local														-0.097
20.self esteem - discipline														
Activities														
21.time spent teaching														
22.time spent research														
23.journal subscriptions														0.110
24.Current Productivity (log)														
Constant	8.97	3.220	6.309	5.848	3.536	35.59	12.256	6.811	13.779	5.898	36.080	7.502	3.190	0.213
R-square	0.027	0.0384	0.031	0.103	0.072	0.020	0.226	0.350	0.074	0.125	0.184	0.233	0.100	0.427
Adjusted R-square	0.002	0.0135	0.006	0.079	0.048	0.006	0.194	0.322	0.035	0.088	0.141	0.192	0.052	0.391
Std. Error of Estimate	2.719	1.638	0.923	1.485	1.862	10.398	1.715	1.996	2.919	3.762	12.063	9.838	3.408	0.489

Significant standardized regression coefficients reported only, $p<0.10$

Table B8: Path Effects for Full-Time Faculty in High Reputation Universities

(n = 301)	ORGANIZATIONAL PERCEPTIONS						PROFESSIONAL SELF				ACTIVITIES			PRODUCTIVITY
	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Background														
1.DMale			-0.219		0.120							0.096		-0.085
2.age					-0.183			-0.163			0.150	-0.143		
3.DArts								0.112						
4.DScience			0.125		-0.190								-0.192	
5.DHumanities									0.106		0.118			
6.DProfessionals	0.133			-0.128	-0.128	0.145		-0.140						0.114
7.highest degree earned									-0.158					
8.experience			0.21		0.208						-0.187			-0.289
9.past performance (log)	-0.189		-0.165					0.250		0.182		0.109	0.267	0.621
10.dept.degree offered	-0.182	-0.189	0.216					0.158	-0.111	0.146		0.143		
Organizational Perceptions														
11.dept climate									0.113		0.188		0.189	
12.values teaching														
13.values research							0.179			-0.111				
14.teaching opportunities														
15.research opportunities								0.118					-0.131	
16.resources available											-0.191	0.138		
Professional Self														
17.teaching orientation											0.169			
18.research orientation												0.158		
19.self-esteem - local												-0.110		
20.self esteem - discipline												0.120	0.109	0.093
Activities														
21.time spent teaching														
22.time spent research														
23.journal subscriptions														
24.Current Productivity (log)														
Constant	6.920	4.134	5.513	4.902	6.070	31.80	10.57	16.08	17.830	13.494	7.927	3.621	3.120	0.397
R-square	0.097	0.060	0.146	0.034	0.067	0.044	0.108	0.170	0.085	0.138	0.130	0.213	0.147	0.492
Adjusted R-square	0.066	0.028	0.117	0.001	0.035	0.011	0.058	0.123	0.034	0.089	0.068	0.157	0.087	0.450
Std. Error of Estimate	2.393	1.862	1.620	1.868	2.017	9.099	2.155	2.586	3.44	4.606	13.83	10.35	3.355	0.493

Significant standardized regression coefficients reported only, $p<0.10$

Table B9: Path Effects for Full-Time Faculty in Low Reputation Universities

APPENDIX C

DECOMPOSITION OF EFFECTS

Table C1: Direct, Indirect and Total Effects on Productivity: All Full-Time Faculty

Computed using significant std. direct paths only ($p<0.05$)

(n = 3537)	DIRECT	INDIRECT	TOTAL
(A) Background			
1.DMale	-0.0360	-0.0075	-0.0435
2.age	-0.1450	-0.0130	-0.1580
3.DArts	0.0000	0.0059	0.0059
4.DScience	0.0000	-0.0135	-0.0135
5.DHumanities	0.0000	-0.0044	-0.0044
6.DProfessionals	0.0470	-0.0022	0.0448
7.highest degree earned	0.0330	0.0109	0.0439
8.experience	-0.2160	-0.0109	-0.2269
9.past performance (log)	0.5740	0.0434	0.6174
10.dept.highest degree offered	0.0000	0.0109	0.0109
(B) Organizational Perceptions			
11.dept climate	0.0000	0.0000	0.0000
12.values teaching	0.0000	0.0224	0.0224
13.values research	0.0000	0.0018	0.0018
14.teaching opportunities	0.0000	0.0024	0.0024
15.research opportunities	0.0000	0.0057	0.0057
16.resources available	0.0000	0.0003	0.0003
(C) Professional Self			
17.teaching orientation	0.0000	-0.0042	-0.0042
18.research orientation	0.0600	0.0028	0.0628
19.self-esteem - local	0.0000	0.0000	0.0000
20.self esteem - discipline	0.0640	0.0052	0.0692
(D) Activities			
21.time spent teaching	-0.0400	0.0000	-0.0400
22.time spent research	0.0000	0.0000	0.0000
23.journal subscriptions	0.0470	0.0000	0.0470

Table C2: Direct, Indirect and Total Effects on Productivity: Full-Time Faculty in Stage One

Computed using significant std. direct paths only ($p<0.10$)

(n = 422)	DIRECT	INDIRECT	TOTAL
(A) Background			
1.DMale	0.0000	0.0020	0.0020
2.age	-0.1140	0.0010	-0.1130
3.DArts	0.0000	0.0066	0.0066
4.DScience	0.0000	-0.0013	-0.0013
5.DHumanities	-0.0880	-0.0076	-0.0956
6.DProfessionals	0.0000	0.0010	0.0010
7.highest degree earned	0.0990	0.0037	0.1027
8.experience	0.0000	0.0000	0.0000
9.past performance (log)	0.4940	0.0121	0.5061
10.dept.highest degree offered	0.0770	-0.0014	0.0756
(B) Organizational Perceptions			
11.dept climate	0.0000	0.0000	0.0000
12.values teaching	0.0760	0.0000	0.0760
13.values research	0.0000	0.0086	0.0086
14.teaching opportunities	0.0000	-0.0013	-0.0013
15.research opportunities	0.0000	0.0138	0.0138
16.resources available	0.0000	0.0000	0.0000
(C) Professional Self			
17.teaching orientation	0.0000	-0.0153	-0.0153
18.research orientation	0.0000	0.0000	0.0000
19.self-esteem - local	0.0000	0.0000	0.0000
20.self esteem - discipline	0.0000	0.0000	0.0000
(D) Activities			
21.time spent teaching	-0.1070	0.0000	-0.1070
22.time spent research	0.0000	0.0000	0.0000
23.journal subscriptions	0.0000	0.0000	0.0000

Table C3: Direct, Indirect and Total Effects on Productivity; Full-Time Faculty in Stage Two

Computed using significant std. direct paths only ($p<0.10$)

(n = 273)	DIRECT	INDIRECT	TOTAL
(A) Background			
1.DMale	0.0000	0.0000	0.0000
2.age	0.0000	0.0000	0.0000
3.DArts	0.0000	0.0000	0.0000
4.DScience	0.0000	0.0000	0.0000
5.DHumanities	0.0000	0.0000	0.0000
6.DProfessionals	0.0000	0.0000	0.0000
7.highest degree earned	0.0960	0.0000	0.0960
8.experience	-0.1660	0.0000	-0.1660
9.past performance (log)	0.5170	0.0000	0.5170
10.dept.highest degree offered	0.0000	0.0000	0.0000
(B) Organizational Perceptions			
11.dept climate	0.0000	0.0000	0.0000
12.values teaching	0.0000	0.0000	0.0000
13.values research	0.0000	0.0000	0.0000
14.teaching opportunities	0.0000	0.0000	0.0000
15.research opportunities	0.0000	0.0000	0.0000
16.resources available	0.0000	0.0000	0.0000
(C) Professional Self			
17.teaching orientation	0.0000	0.0000	0.0000
18.research orientation	0.0000	0.0000	0.0000
19.self-esteem - local	0.0000	0.0000	0.0000
20.self esteem - discipline	0.0000	0.0000	0.0000
(D) Activities			
21.time spent teaching	0.0000	0.0000	0.0000
22.time spent research	0.0000	0.0000	0.0000
23.journal subscriptions	0.0000	0.0000	0.0000

Table C4: Direct, Indirect and Total Effects of All Variables on Productivity;
Full-Time Faculty in Stage Three

Computed using significant std. direct paths only ($p<0.10$)

(n = 384)	DIRECT	INDIRECT	TOTAL
(A) Background			
1.DMale	-0.1140	-0.0006	-0.1146
2.age	0.0000	-0.0089	-0.0089
3.DArts	0.0000	-0.0099	-0.0099
4.DScience	0.0000	-0.0070	-0.0070
5.DHumanities	0.0000	0.0014	0.0014
6.DProfessionals	0.0000	0.0000	0.0000
7.highest degree earned	0.1360	0.0035	0.1395
8.experience	0.0000	-0.0042	-0.0042
9.past performance (log)	0.5340	0.0316	0.5656
10.dept.highest degree offered	0.0000	0.0112	0.0112
(B) Organizational Perceptions			
11.dept climate	0.0000	-0.0047	-0.0047
12.values teaching	-0.0770	0.0154	-0.0616
13.values research	0.0000	0.0026	0.0026
14.teaching opportunities	0.0000	0.0000	0.0000
15.research opportunities	0.0000	0.0012	0.0012
16.resources available	0.0000	0.0009	0.0009
(C) Professional Self			
17.teaching orientation	0.0000	0.0102	0.0102
18.research orientation	0.0000	0.0000	0.0000
19.self-esteem - local	0.0000	-0.0106	-0.0106
20.self esteem - discipline	0.1250	0.0106	0.1356
(D) Activities			
21.time spent teaching	0.0000	0.0000	0.0000
22.time spent research	0.0000	0.0000	0.0000
23.journal subscriptions	0.0730	0.0000	0.0730

Table C5: Direct, Indirect and Total Effects on Productivity: Full-Time Faculty in Stage Four

Computed using significant std. direct paths only ($p<0.10$)

(n = 522)	DIRECT	INDIRECT	TOTAL
(A) Background			
1.DMale	0.0000	-0.0027	-0.0027
2.age	-0.0860	-0.0023	-0.0883
3.DArts	0.0000	0.0009	0.0009
4.DScience	0.0000	-0.0234	-0.0234
5.DHumanities	0.0710	0.0000	0.0710
6.DProfessionals	0.0000	-0.0104	-0.0104
7.highest degree earned	0.0620	0.0007	0.0627
8.experience	-0.1300	0.0001	-0.1299
9.past performance (log)	0.5020	0.0125	0.5145
10.dept.highest degree offered	0.0000	0.0002	0.0002
(B) Organizational Perceptions			
11.dept climate	0.0000	0.0000	0.0000
12.values teaching	0.0000	0.0042	0.0042
13.values research	0.0000	0.0008	0.0008
14.teaching opportunities	0.0900	0.0013	0.0913
15.research opportunities	0.0000	0.0000	0.0000
16.resources available	0.0000	0.0000	0.0000
(C) Professional Self			
17.teaching orientation	0.0000	0.0000	0.0000
18.research orientation	0.0000	0.0102	0.0102
19.self-esteem - local	0.0000	0.0000	0.0000
20.self esteem - discipline	0.0000	0.0097	0.0097
(D) Activities			
21.time spent teaching	0.0000	0.0000	0.0000
22.time spent research	0.0000	0.0000	0.0000
23.journal subscriptions	0.0870	0.0000	0.0870

Table C6: Direct, Indirect and Total Effects on Productivity: Full-Time Faculty in Stage Five

Computed using significant std. direct paths only ($p<0.10$)

(n = 358)	DIRECT	INDIRECT	TOTAL
(A) Background			
1.DMale	0.0000	0.0000	0.0000
2.age	0.0000	-0.0018	-0.0018
3.DArts	0.0000	0.0000	0.0000
4.DScience	0.0940	-0.0196	0.0744
5.DHumanities	0.1580	-0.0012	0.1568
6.DProfessionals	0.1130	0.0000	0.1130
7.highest degree earned	0.0780	0.0000	0.0780
8.experience	0.0000	0.0000	0.0000
9.past performance (log)	0.5070	0.0027	0.5097
10.dept.highest degree offered	0.0000	-0.0016	-0.0016
(B) Organizational Perceptions			
11.dept climate	0.0000	0.0000	0.0000
12.values teaching	0.0000	0.0000	0.0000
13.values research	0.0000	0.0000	0.0000
14.teaching opportunities	0.0000	0.0000	0.0000
15.research opportunities	0.0000	0.0000	0.0000
16.resources available	0.0000	-0.0115	-0.0115
(C) Professional Self			
17.teaching orientation	0.0000	0.0000	0.0000
18.research orientation	0.0000	0.0000	0.0000
19.self-esteem - local	0.0000	0.0000	0.0000
20.self esteem - discipline	0.0000	0.0094	0.0094
(D) Activities			
21.time spent teaching	0.0000	0.0000	0.0000
22.time spent research	0.0000	0.0000	0.0000
23.journal subscriptions	0.0830	0.0000	0.0830

Table C7: Direct, Indirect and Total Effects on Productivity; Full-Time Faculty in Stage Six

Computed using significant std. direct paths only ($p<0.05$)

(n = 1450)	DIRECT	INDIRECT	TOTAL
(A) Background			
1.DMale	0.0000	-0.0105	-0.0105
2.age	-0.1080	-0.0152	-0.1232
3.DArts	-0.0490	0.0043	-0.0447
4.DScience	0.0000	-0.0031	-0.0031
5.DHumanities	0.0000	-0.0080	-0.0080
6.DProfessionals	0.0000	-0.0091	-0.0091
7.highest degree earned	0.0000	0.0001	0.0001
8.experience	-0.1540	0.0056	-0.1484
9.past performance (log)	0.5320	0.0316	0.5636
10.dept.highest degree offered	0.0000	0.0058	0.0058
(B) Organizational Perceptions			
11.dept climate	0.0000	0.0002	0.0002
12.values teaching	0.0000	0.0250	0.0250
13.values research	0.0000	0.0057	0.0057
14.teaching opportunities	0.0000	-0.0006	-0.0006
15.research opportunities	0.0000	0.0059	0.0059
16.resources available	-0.0560	0.0000	-0.0560
(C) Professional Self			
17.teaching orientation	0.0000	-0.0055	-0.0055
18.research orientation	0.0750	0.0000	0.0750
19.self-esteem - local	0.0000	0.0035	0.0035
20.self esteem - discipline	0.0630	0.0000	0.0630
(D) Activities			
21.time spent teaching	-0.0490	0.0000	-0.0490
22.time spent research	0.0000	0.0000	0.0000
23.journal subscriptions	0.0000	0.0000	0.0000

Table C8: Direct, Indirect and Total Effects on Productivity: Faculty in High Reputation Universities (N=396)

Computed using significant coefficients only (p<0.10)

b:metric; beta: standardized		DIRECT	INDIRECT	TOTAL
(A) Background				
1.DMale	beta	0.0000	-0.0012	-0.0012
	b	0.0000	-0.0022	-0.0022
2.age	beta	0.0000	-0.0138	-0.0138
	b	0.0000	-0.0011	-0.0011
3.DArts	beta	0.0000	0.0000	0.0000
	b	0.0000	0.0000	0.0000
4.DScience	beta	0.0950	-0.0289	0.0661
	b	0.1430	-0.0440	0.0990
5.DHumanities	beta	0.0000	-0.0179	-0.0179
	b	0.0000	-0.0363	-0.0363
6.DProfessionals	beta	0.0000	-0.0314	-0.0314
	b	0.0000	-0.0404	-0.0404
7.highest degree earned	beta	0.0000	-0.0141	-0.0141
	b	0.0000	-0.0188	-0.0188
8.experience	beta	-0.2990	0.0000	-0.2990
	b	-0.0210	0.0000	-0.0210
9.past performance (log)	beta	0.5530	0.0289	0.5819
	b	0.6870	0.0366	0.7236
10.dept.highest degree offered	beta	0.0000	0.0000	0.0000
	b	0.0000	0.0000	0.0000
(B) Organizational Perceptions				
11.dept climate	beta	0.0000	-0.0095	-0.0095
	b	0.0000	-0.0022	-0.0022
12.values teaching	beta	0.0000	0.0000	0.0000
	b	0.0000	0.0000	0.0000
13.values research	beta	0.0000	0.0000	0.0000
	b	0.0000	0.0000	0.0000
14.teaching opportunities	beta	0.0000	0.0000	0.0000
	b	0.0000	0.0000	0.0000
15.research opportunities	beta	0.0000	0.0000	0.0000
	b	0.0000	0.0000	0.0000
16.resources available	beta	0.0000	-0.0236	-0.0236
	b	0.0000	-0.0015	-0.0015
(C) Professional Self				
17.teaching orientation	beta	0.0000	0.0000	0.0000
	b	0.0000	0.0000	0.0000
18.research orientation	beta	0.0000	0.0000	0.0000
	b	0.0000	0.0000	0.0000
19.self-esteem - local	beta	-0.0970	0.0000	-0.0970
	b	-0.0210	0.0000	-0.0210
20.self esteem - discipline	beta	0.0000	0.0000	0.0000
	b	0.0000	0.0000	0.0000
(D) Activities				
21.time spent teaching	beta	0.0000	0.0000	0.0000
	b	0.0000	0.0000	0.0000
22.time spent research	beta	0.0000	0.0000	0.0000
	b	0.0000	0.0000	0.0000
23.journal subscriptions	beta	0.1100	0.0000	0.1100
	b	0.0200	0.0000	0.0200

Table C9: Direct, Indirect and Total Effects on Productivity; Faculty in Low Reputation Universities (N=301)

Computed using significant coefficients only (p<0.10)

b: metric; beta: standardized		DIRECT	INDIRECT	TOTAL
(A) Background				
1.DMale	beta	-0.085	0.0023	-0.0827
	b	-0.1540	0.0042	-0.1498
2.age	beta	0.0000	0.0000	0.0000
	b	0.0000	0.0000	0.0000
3.DArts	beta	0.0000	0.0000	0.0000
	b	0.0000	0.0000	0.0000
4.DScience	beta	0.0000	-0.0013	-0.0013
	b	0.0000	-0.0021	-0.0021
5.DHumanities	beta	0.0000	0.0000	0.0000
	b	0.0000	0.0000	0.0000
6.DProfessionals	beta	0.1140	0.0000	0.1140
	b	0.1680	0.0000	0.1680
7.highest degree earned	beta	0.0000	0.0000	0.0000
	b	0.0000	0.0000	0.0000
8.experience	beta	-0.2890	-0.0022	-0.2912
	b	-0.0260	-0.0002	-0.0262
9.past performance (log)	beta	0.6210	0.0186	0.6396
	b	0.7940	0.0242	0.8182
10.dept.highest degree offered	beta	0.0000	0.0113	0.0113
	b	0.0000	0.0092	0.0092
(B) Organizational Perceptions				
11.dept climate	beta	0.0000	0.0000	0.0000
	b	0.0000	0.0000	0.0000
12.values teaching	beta	0.0000	0.0000	0.0000
	b	0.0000	0.0000	0.0000
13.values research	beta	0.0000	-0.0103	-0.0103
	b	0.0000	-0.0041	-0.0041
14.teaching opportunities	beta	0.0000	0.0000	0.0000
	b	0.0000	0.0000	0.0000
15.research opportunities	beta	0.0000	0.0000	0.0000
	b	0.0000	0.0000	0.0000
16.resources available	beta	0.0000	0.0000	0.0000
	b	0.0000	0.0000	0.0000
(C) Professional Self				
17.teaching orientation	beta	0.0000	0.0000	0.0000
	b	0.0000	0.0000	0.0000
18.research orientation	beta	0.0000	0.0000	0.0000
	b	0.0000	0.0000	0.0000
19.self-esteem - local	beta	0.0000	0.0000	0.0000
	b	0.0000	0.0000	0.0000
20.self esteem - discipline	beta	0.0930	0.0000	0.0930
	b	0.0130	0.0000	0.0130
(D) Activities				
21.time spent teaching	beta	0.0000	0.0000	0.0000
	b	0.0000	0.0000	0.0000
22.time spent research	beta	0.0000	0.0000	0.0000
	b	0.0000	0.0000	0.0000
23.journal subscriptions	beta	0.0000	0.0000	0.0000
	b	0.0000	0.0000	0.0000

APPENDIX D

SOCIALIZATION EFFECTS

Table D1: Socialization Effects on Teaching Orientation Across Career Stages

(betas in parentheses)	1	2	3	4	5	6
[N]	[537]	[334]	[428]	[591]	[402]	[1629]
Past performance (log)	ns	ns	-0.579a	ns	-0.638c	-0.231b
			(-0.125)		(-0.150)	(-0.052)
Highest degree earned	-0.502a	ns	-0.691a	ns	-0.549b	-0.363c
	(-0.132)		(-0.131)		(-0.114)	(-0.069)
Highest degree offered by department	-0.413c	ns	ns	-0.242b	ns	-0.298d
	(-0.175)			(-0.111)		(-0.109)
Department climate	ns	ns	ns	0.082b	ns	ns
				(0.118)		
Institution values teaching	ns	ns	0.228d	0.085a	ns	0.207d
			(0.198)	(0.081)		(0.165)
Institution values research	0.201c	0.413d	0.392d	0.304d	0.237c	0.295d
	(0.073)	(0.241)	(0.250)	(0.215)	(0.143)	(0.182)
Teaching opportunities	0.106a	ns	ns	ns	ns	0.210d
	(0.087)					(0.159)
Research opportunities	ns	ns	ns	ns	ns	ns
Resources available	ns	ns	0.018a	ns	0.033c	ns
			(0.091)		(0.167)	

Significant coefficients only. Level of significance at $p<0.10$ for stage 1 - 5, and at $p<0.05$ for stage 6.
a: $p<0.10$; b: $p<0.05$; c: $p<0.01$; d: $p<0.001$

Table D2: Socialization Effects on Research Orientation Across Career Stages

(betas in parentheses)	1	2	3	4	5	6
[N]	[537]	[334]	[428]	[591]	[402]	[1629]
Past performance (log)	1.043d	1.855d	1.333d	1.431d	1.288d	1.242d
	(0.180)	(0.273)	(0.233)	(0.211)	(0.195)	(0.220)
Highest degree earned	0.505b	1.221d	1.367d	0.463a	ns	ns
	(0.109)	(0.233)	(0.211)	(0.073)		
Highest degree offered by department	ns	ns	ns	ns	ns	0.197b
						(0.057)
Department climate	ns	ns	ns	ns	ns	ns
Institution values teaching	0.311d	0.433d	0.251d	0.390d	0.368d	0.400d
	(0.232)	(0.259)	(0.177)	(0.239)	(0.223)	(0.249)
Institution values research	ns	0.393b	0.269c	0.163a	ns	0.173d
		(0.138)	(0.140)	(0.074)		(0.084)
Teaching opportunities	ns	ns	ns	0.224c	ns	ns
				(0.130)		
Research opportunities	0.118a	0.186a	0.156b	ns	0.151a	0.106c
	(0.097)	(0.119)	(0.126)		(0.100)	(0.079)
Resources available	0.022a	ns	ns	ns	ns	ns
	(0.095)					

Significant coefficients only. Level of significance at $p<0.10$ for stage 1 - 5, and at $p<0.05$ for stage 6.
a: $p<0.10$; b: $p<0.05$; c: $p<0.01$; d: $p<0.001$

Table D3: Socialization Effects on Research and Teaching Orientations Across Academic Locations with High Reputations (N=396) and Low Reputations (N=301)

(betas in parentheses)	Teaching Orientation		Research Orientation	
Academic Reputation of University	High Rep.	Low Rep.	High Rep.	Low Rep.
Past performance (log)	ns	-0.523a	1.472d	1.711d
		(-0.123)	(0.302)	(0.319)
Highest degree earned	-0.613c	ns	1.086d	ns
	(-0.153)		(0.215)	
Highest degree offered by department	-0.427b	ns	ns	0.481b
	(-0.123)			(0.145)
Department climate	-0.083b	ns	ns	ns
	(-0.117)			
Institution values teaching	0.345d	ns	0.377d	0.160a
	(0.297)		(0.257)	(0.107)
Institution values research	0.181b	0.226c	0.502d	ns
	(0.088)	(0.171)	(0.194)	
Teaching opportunities	ns	ns	ns	ns
Research opportunities	ns	ns	0.159c	ns
			(0.126)	
Resources available	ns	0.026a	ns	ns
		(0.107)		

Significant coefficients only. a: $p<0.10$; b: $p<0.05$; c: $p<0.01$; d: $p<0.001$

Table D4: Effects of Past Performance on Current Productivity, Research and Teaching Orientations: Faculty with less than 3 years Seniority (Newcomers, N=390) vs. All Full-Time Faculty (N=3537)

betas in parentheses		Current Productivity		Teaching Orientation		Research Orientation	
		Newcomers	All	Newcomers	All	Newcomers	All
Past Performance (log)	b	0.683d	0.761d	0.174 (ns)	-0.342d	0.570b	1.313d
	(beta)	(0.543)	(0.574)	(0.040)	(-0.088)	(0.110)	(0.244)

Level of significance at $p<0.10$ for newcomers; $p<0.05$ for entire sample.
a: $p<0.10$; b: $p<0.05$; c: $p<0.01$; d: $p<0.001$; (ns): not significant

APPENDIX E

ZERO-ORDER ASSOCIATIONS

Table E1: Measures of Associations with Current Productivity (N = 5060)

	N	NO. OF ARTICLES IN PAST 3 YEARS	Coefficient	p *
Age	5060	r	-0.020	
Gender	5033	U	0.004	<0.001
Family SES	4913	d	0.019	
Marital status	5015	U	0.003	<0.001
Discipline	4948	U	0.016	<0.001
Highest degree earned	5035	d	0.351	<0.001
Experience	4944	r	0.014	
Seniority	5060	r	0.001	
Cumulative past performance	5060	r	0.592	<0.001
Annual past performance rate	4959	r	0.517	<0.001
University type	5054	d	-0.192	<0.001
Department size	5034	r	0.072	<0.001
Regional location	5054	U	0.007	0.002
Highest degree offered in department	5029	d	0.228	<0.001
Institution values teaching effectiveness	4796	r	0.011	
Institution values research	4801	r	-0.011	
Institution values service	5060	r	-0.017	
Student quality	4828	r	-0.005	
Intellectual atmosphere	5037	r	0.018	
Faculty morale	4989	r	-0.001	
Institutional pride	4848	r	0.009	
Sense of identity	4819	r	0.004	
Faculty involvement	4526	r	-0.025	
Faculty loyalty	4725	r	-0.000	
Administrative quality	5060	r	-0.021	
Resources available	5060	r	0.020	
Teaching opportunities	4939	r	-0.006	
Research opportunities	4921	r	0.101	<0.000
Comparative teaching load	4982	r	-0.075	<0.000
Comparative administration load	4896	r	0.018	
Policy-influencing opportunities	5060	r	-0.000	
Changes in student demands	3017	r	-0.042	
Changes in faculty morale	4017	r	-0.021	
Changes in emphasis on teaching	4038	r	0.042	0.008
Changes in emphasis on research	4008	r	-0.048	0.002

... Table E1 continues on next page ...

* Level of significance only reported if at least 0.01

Table E1 continued...

	N	NO. OF ARTICLES IN PAST 3 YEARS Coefficient		p *
PROFESSIONAL SELF				
Value teaching	5002	r	- 0.085	<0.000
Value research	5060	r	0.202	<0.000
Value service	5060	r	- 0.064	<0.000
Interest in teaching	4868	r	- 0.111	<0.000
Interest in research	4862	r	0.156	<0.000
Interest in service	5060	r	- 0.092	<0.000
Self-esteem source own standards	5013	r	0.023	
Self-esteem source local environment	506o	r	- 0.039	0.006
Self-esteem source discipline	5060	r	0.235	<0.000
Locus of attachment local	5060	r	- 0.006	
Locus of attachment cosmopolitan	5021	r	0.043	0.003
Career evaluation	5060	r	0.090	<0.000
View of university	5027	r	0.037	0.008
Time spent teaching	5060	r	- 0.098	<0.000
Time spent on research	5060	r	0.240	<0.000
Time spent on administrative duties	5060	r	0.026	
Time spent on consulting	5060	r	0.033	0.02
Journal subscriptions	5060	r	0.152	<0.000

* Level of significance only reported if at least 0.05

[N = 3537]	Means	SD	1	2	3	4	5	6	7	8	9	10	11
1.Dmale	.866	.341	1.000										
2.age	46.31	7.782	0.098	1.000									
3.DScience	.219	.414	0.136	-0.035	1.000								
4.DProfessionals	.358	.480	-0.077	0.026	-0.396	1.000							
5.DArts	.023	.151	-0.010	0.015	-0.082	-0.116	1.000						
6.DHumanities	.138	.345	-0.073	0.073	-0.212	-0.299	-0.062	1.000					
7.highest degree earned	2.816	.437	0.079	-0.002	0.156	-0.264	-0.101	0.058	1.000				
8.experience	15.196	8.012	0.160	0.726	0.034	-0.110	-0.005	0.101	0.083	1.000			
9.past performance (log)	2.131	.495	0.177	0.244	0.135	0.010	-0.075	-0.069	0.183	0.312	1.000		
10.dept.degree offered	2.330	.802	0.086	0.089	0.152	0.047	-0.115	-0.128	0.221	0.122	0.305	1.000	
11.dept climate	7.825	2.785	0.091	0.007	0.062	0.008	-0.032	-0.007	0.004	-0.008	0.024	0.073	1.000
12.instit.values teaching	4.268	1.684	0.030	0.028	-0.014	-0.020	0.022	0.049	0.049	0.013	0.027	-0.130	0.188
13.instit. values research	6.062	1.253	-0.079	0.057	0.033	0.027	-0.034	0.024	-0.009	0.055	0.01	0.196	0.172
14.teaching opportunities	5.281	1.626	0.037	0.081	-0.072	-0.037	0.029	0.014	0.015	0.125	0.009	0.043	0.283
15.research opportunities	4.696	1.936	0.119	0.051	-0.007	0.009	-0.035	-0.005	0.054	0.098	0.102	0.143	0.307
16.resources available	38.711	9.780	0.078	0.107	0.007	0.036	-0.034	0.036	0.025	0.092	0.047	0.142	0.311
17.teaching orientation	11.554	1.922	-0.075	0.100	-0.116	0.055	0.080	0.118	-0.143	0.055	-0.121	-0.125	0.105
18.research orientation	17.813	2.662	-0.013	-0.105	-0.003	-0.069	0.054	0.008	0.150	-0.054	0.214	0.098	0.123
19.self-esteem - local	17.464	3.104	-0.048	0.027	-0.033	0.014	0.027	0.074	-0.040	-0.017	-0.064	-0.064	0.129
20.self esteem - discipline	15.907	4.206	-0.010	-0.072	0.008	0.027	0.018	-0.040	0.096	-0.074	0.22	0.144	0.030
21.time spent teaching	23.434	12.791	-0.061	-0.002	-0.053	-0.097	0.055	0.132	-0.011	-0.025	-0.135	-0.141	-0.062
22.time spent research	13.608	10.613	0.093	-0.066	0.075	-0.047	-0.037	-0.066	0.120	-0.024	0.214	0.201	0.036
23.journal subscriptions	4.696	3.206	-0.030	0.049	-0.140	0.060	-0.017	-0.004	-0.009	0.043	0.149	0.028	-0.010
24.current productivity (log)	1.517	.657	0.019	-0.172	0.046	0.072	-0.070	-0.081	0.128	-0.151	0.52	0.186	0.016

	12	13	14	15	16	17	18	19	20	21	22	23	24
12.instit.values teaching	1.000												
13.values research	-0.100	1.000											
14.teaching opportunities	0.080	0.107	1.000										
15.research opportunities	0.102	0.068	0.383	1.000									
16.resources available	0.076	0.114	0.183	0.300	1.000								
17.teaching orientation	0.129	0.189	0.144	0.025	0.086	1.000							
18.research orientation	0.246	0.063	0.110	0.160	0.071	0.013	1.000						
19.self-esteem - local	0.085	0.098	0.077	0.020	0.051	0.303	0.106	1.000					
20.self esteem - discipline	0.111	0.004	-0.004	0.056	0.003	-0.049	0.444	0.359	1.000				
21.time spent teaching	0.019	-0.038	-0.039	-0.120	-0.093	0.110	-0.024	0.013	-0.037	1.000			
22.time spent research	0.016	-0.042	0.013	0.218	0.070	-0.175	0.224	-0.083	0.183	-0.147	1.000		
23.journal subscriptions	0.008	-0.039	0.017	-0.033	-0.041	-0.017	0.112	0.004	0.141	0.047	0.036	1.000	
24.Current Productivity (log)	0.014	-0.014	-0.020	0.058	-0.008	-0.121	0.246	-0.030	0.253	-0.121	0.188	0.137	1.000

Table E2: Zero-Order Correlations, Means and Standard Deviations: All Full-Time Faculty

[N = 422]	Means	SD	1	2	3	4	5	6	7	8	9	10	11
1.Dmale	0.732	0.443	1.000										
2.age	37.813	6.064	-.057	1.000									
3.DScience	0.209	0.407	.152	-.089	1.000								
4.DProfessionals	0.434	0.496	.065	.082	-.449	1.000							
5.DArts	0.024	0.152	-.011	-.009	-.080	-.136	1.000						
6.DHumanities	0.104	0.306	-.091	.099	-.175	-.299	-.053	1.000					
7.highest degree earned	2.720	0.518	.087	-.071	.198	-.313	-.187	.109	1.000				
8.experience	4.647	3.395	-.112	.435	-.055	.033	.021	.097	-.060	1.000			
9.past performance (log)	1.765	0.413	.129	.121	.216	-.047	-.053	-.089	.169	.115	1.000		
10.dept.degree offered	2.216	0.835	.079	-.080	.126	.032	-.171	-.172	.299	-.042	0.265	1.000	
11.dept climate	8.213	2.905	.107	.012	-.014	.025	-.054	.068	.049	-.108	.021	.100	1.000
12.instit.values teaching	4.258	1.777	.076	-.020	-.019	-.055	.048	.112	.182	-.044	0.052	-.050	.222
13.instit. values research	6.111	1.329	-.098	.089	.054	.071	-.130	.024	.045	.000	0.098	.231	.210
14.teaching opportunities	4.924	1.626	-.041	-.020	-.156	.106	.017	.025	.045	.030	-0.05	-.026	.295
15.research opportunities	4.514	1.955	.135	-.120	-.057	.012	-.049	-.078	.138	-.104	0.075	.204	.324
16.resources available	39.127	10.497	.059	.003	-.043	.085	-.056	.035	.050	.059	0.077	.173	.293
17.teaching orientation	11.555	1.969	-.151	.082	-.165	.074	.115	.148	-.199	.021	-0.095	-.238	.104
18.research orientation	18.426	2.388	.080	-.064	.007	-.122	.057	.079	.221	-.072	0.2	.100	.113
19.self-esteem - local	17.619	2.886	-.032	.067	-.056	.006	.075	.118	-.049	.033	0.082	-.136	.046
20.self esteem - discipline	16.605	3.663	.101	-.057	.068	-.058	.047	-.048	.152	-.087	0.247	.142	-.026
21.time spent teaching	25.514	13.561	-.102	.032	-.094	-.135	.102	.245	.072	.026	-0.17	-.195	-.056
22.time spent research	14.912	12.251	.154	-.141	.173	-.101	-.074	-.115	.155	-.050	0.259	.280	.018
23.journal subscriptions	4.451	3.013	-.012	.030	-.179	.049	-.060	.052	-.057	.030	0.045	-.073	.060
24.current productivity (log)	1.595	0.493	.077	-.106	.118	.043	-.116	-.174	.208	-.076	0.547	.288	.013

	12	13	14	15	16	17	18	19	20	21	22	23	24
12.instit.values teaching	1.000												
13.values research	-0.079	1.000											
14.teaching opportunities	.037	.147	1.000										
15.research opportunities	.105	.093	.301	1.000									
16.resources available	.088	.137	.142	.295	1.000								
17.teaching orientation	.066	.112	.130	-.072	.026	1.000							
18.research orientation	.295	-.015	.103	.199	.163	.020	1.000						
19.self-esteem - local	.042	.101	.024	.038	.003	.374	.134	1.000					
20.self esteem - discipline	.144	-.082	-.016	.119	.019	-.045	.408	.266	1.000				
21.time spent teaching	.071	-.129	-.026	-.184	-.133	.186	.031	.070	-.059	1.000			
22.time spent research	.024	.021	.016	.284	.200	-.239	.217	-.079	.150	-.333	1.000		
23.journal subscriptions	-.047	.012	.064	-.103	-.040	.023	-.029	-.007	-.043	.096	-.068	1.000	
24.Current Productivity (log)	.099	.078	.035	.137	.116	-.089	.183	.007	.215	-.226	.244	.044	1.000

Table E3: Zero-Order Corelations, Means and Standard Deviations: Faculty in Stage One

{N = 273}	Means	SD	1										
1.Dmale	.773	.420	1.000	2									
2.age	41.904	6.245	-.026	1.000	3								
3.DScience	.172	.378	.155	-.172	1.000	4							
4.DProfessionals	.462	.499	-.094	.187	-.422	1.000	5						
5.DArts	.033	.179	.100	.025	-.084	-.171	1.000	6					
6.DHumanities	.121	.327	-.121	.058	-.169	-.343	-.068	1.000	7				
7.highest degree earned	2.645	.583	.045	-.244	.212	-.331	-.028	.091	1.000	8			
8.experience	9.425	5.003	.050	.525	-.097	.010	.005	.108	-.107	1.000	9		
9.past performance (log)	1.880	.450	.182	.037	.146	.096	-.108	-.163	.125	.150	1.000	10	
10.dept.degree offered	20.84	.816	.045	-.068	.084	.103	-.145	-.080	.179	-.043	0.271	1.000	11
11.dept climate	7.601	2.836	.072	-.152	.040	.009	-.141	-.023	.016	-.235	.001	.048	1.000
12.instit.values teaching	4.121	1.828	.022	-.119	.023	.007	.033	-.025	.013	-.118	-0.076	-.253	.167
13.instit. values research	6.194	1.076	-.114	.066	-.019	.017	-.110	.100	.011	.034	-0.003	.174	.062
14.teaching opportunities	4.912	1.743	.018	-.108	.068	-.160	.080	.019	.070	-.127	-0.047	.132	.258
15.research opportunities	4.275	1.954	.224	-.155	.040	-.123	.027	-.006	.086	-.154	0.011	.161	.249
16.resources available	37.121	10.050	.043	.081	-.110	.118	-.037	.002	.061	.029	0.089	.192	.179
17.teaching orientation	11.714	1.849	-.084	.110	-.103	.084	.029	.088	-.152	.053	-0.127	-.111	.064
18.research orientation	17.334	3.057	.077	-.177	.041	-.006	-.020	-.084	.275	-.230	0.247	.088	.171
19.self-esteem - local	17.722	2.811	-.091	.184	-.034	.121	-.026	.033	-.076	.044	-0.082	-.101	.157
20.self esteem - discipline	15.981	4.024	.014	-.082	.008	.121	-.035	-.064	.191	-.167	0.294	.257	.097
21.time spent teaching	25.015	13.173	-.049	.005	.059	-.147	.140	.126	-.075	.026	-0.081	-.217	.024
22.time spent research	12.128	9.909	.188	-.192	.185	-.125	-.027	-.071	.218	-.157	0.158	.263	.074
23.journal subscriptions	4.553	2.801	.004	-.007	-.090	.134	-.037	-.039	-.046	-.040	0.199	.140	.012
24.current productivity (log)	1.486	.615	.155	-.172	.050	.102	-.075	-.122	.198	-.164	0.556	.196	.024

	12	13	14	15	16	17	18	19	20	21	22	23	24
12.instit.values teaching	1.000												
13.values research	-0.148	1.000											
14.teaching opportunities	.171	.007	1.000										
15.research opportunities	.186	-.085	.359	1.000									
16.resources available	.120	-.038	.074	.218	1.000								
17.teaching orientation	.108	.217	-.002	.036	.021	1.000							
18.research orientation	.282	.078	.152	226	.104	-.031	1.000						
19.self-esteem - local	.004	.193	-.060	-.007	-.066	.351	.073	1.000					
20.self esteem - discipline	.012	.061	-.033	.087	.056	-.111	.506	.292	1.000				
21.time spent teaching	.156	-.046	-.020	-.079	-.117	.126	-.009	.095	-.012	1.000			
22.time spent research	.076	-.078	.102	.363	.131	-.200	.288	-.081	.298	-.204	1.000		
23.journal subscriptions	-.026	-.044	-.001	-.045	-.062	-.065	.161	.076	.250	.026	.102	1.000	
24.Current Productivity (log)	-.012	-.041	.058	.134	.008	-.154	.337	-.006	.349	-.080	.215	.223	1.000

Table E4: Zero-Order Corelations, Means and Standard Deviations: Faculty in Stage Two

[N = 384]	Means	SD	1										
1.Dmale	.807	.395	1.000	2									
2.age	41.472	5.155	-.076	1.000	3								
3.DScience	.190	.393	.203	-.206	1.000	4							
4.DProfessionals	.349	.477	-.086	.069	-.355	1.000	5						
5.DArts	.026	.159	-.003	.092	-.079	-.120	1.000	6					
6.DHumanities	.138	.345	-.053	.115	-.194	-.293	-.065	1.000	7				
7.highest degree earned	2.844	.371	.061	-.101	.097	-.208	-.196	.067	1.000	8			
8.experience	9.714	4.134	-.112	.479	-.153	-.136	.015	.233	-.053	1.000	9		
9.past performance (log)	2.042	.420	.071	-.061	.131	.144	-.144	-.115	.087	-.096	1.000	10	
10.dept.degree offered	2.289	.816	.076	-.061	.130	.129	-.098	-.225	.262	-.096	0.264	1.000	11
11.dept climate	7.651	2.666	.199	-.082	.116	.018	.034	-.061	.016	-.102	.002	.030	1.000
12.instit.values teaching	4.263	1.694	.068	.082	.054	-.040	.129	.058	.078	-.056	0.028	-.119	.248
13.instit. values research	6.057	1.248	-.041	.003	.004	.080	-.021	-.115	-.077	-.030	0.041	.209	.173
14.teaching opportunities	4.964	1.719	.086	.039	-.083	-.058	-.044	-.005	.003	.078	-0.158	-.046	.290
15.research opportunities	4.552	1.932	.112	-.035	-.039	.077	-.072	-.001	.022	-.055	0.004	.071	.295
16.resources available	37.110	9.711	.095	.002	-.016	.031	.040	.060	-.019	-.078	0.034	.128	.273
17.teaching orientation	11.333	1.955	-.011	.088	-.103	.018	.089	.129	-.166	.066	-0.154	-.098	.100
18.research orientation	18.048	2.402	.046	-.050	.079	-.077	.044	-.048	.234	.017	0.246	.152	.072
19.self-esteem - local	17.215	2.978	.031	.052	-.002	.014	.027	.014	-.024	.047	-0.029	-.035	.153
20.self esteem - discipline	16.194	3.949	.064	-.040	.077	.026	.018	-.073	.133	-.073	0.211	.150	-.044
21.time spent teaching	22.766	11.405	-.093	.118	.025	-.109	.075	.156	.098	.200	-0.052	-.128	-.066
22.time spent research	14.094	10.233	.123	-.097	.091	.024	-.077	-.100	.140	-.099	0.22	.195	-.004
23.journal subscriptions	4.612	3.014	.029	-.049	.001	.056	-.044	-.049	-.036	-.147	0.154	-.004	.094
24.current productivity (log)	1.653	.551	-.048	-.145	.007	.156	-.120	-.117	.162	-.161	0.573	.212	.043

	12	13	14	15	16	17	18	19	20	21	22	23	24
12.instit.values teaching	1.000												
13.values research	-0.043	1.000											
14.teaching opportunities	.087	.180	1.000										
15.research opportunities	.090	.078	.351	1.000									
16.resources available	.053	.062	.200	.332	1.000								
17.teaching orientation	.188	.236	.138	.027	.113	1.000							
18.research orientation	.191	.131	.052	.147	.096	.082	1.000						
19.self-esteem - local	.168	.045	.082	-.019	.086	.239	.139	1.000					
20.self esteem - discipline	.098	.000	-.048	-.035	.031	-.077	.383	.407	1.000				
21.time spent teaching	.011	-.083	-.053	-.126	-.075	.057	.053	.048	.072	1.000			
22.time spent research	.025	-.067	-.059	.216	.042	-.191	.226	-.013	.265	-.189	1.000		
23.journal subscriptions	.071	-.003	.022	-.032	-.014	.081	.102	-.030	.114	.075	.084	1.000	
24.Current Productivity (log)	-.048	.039	-.045	.039	.072	-.147	.159	-.010	.222	-.092	.163	.163	1.000

Table E5: Zero-Order Corelations, Means and Standard Deviations: Faculty in Stage Three

[N = 522]	Means	SD	1										
1.Dmale	.845	.362	1.000	2									
2.age	45.409	5.179	-.059	1.000	3								
3.DScience	.167	.373	.149	-.083	1.000	4							
4.DProfessionals	.314	.465	-.086	.126	-.303	1.000	5						
5.DArts	.040	.197	-.047	.075	-.092	-.139	1.000	6					
6.DHumanities	.157	.364	-.048	.046	-.193	-.292	-.088	1.000	7				
7.highest degree earned	2.810	.439	.080	-.181	.111	-.263	-.067	.031	1.000	8			
8.experience	14.301	4.212	-.005	.386	.011	-.123	.071	.131	.027	1.000	9		
9.past performance (log)	2.056	.413	.104	-.120	.039	.023	-.046	-.113	.116	-.112	1.000	10	
10.dept.degree offered	2.142	.835	-.029	-.062	.016	.048	-.058	.002	.147	-.034	.227	1.000	11
11.dept climate	7.341	2.611	.095	-.012	.062	.022	-.012	-.020	-.029	-.071	.009	.004	1.000
12.instit.values teaching	1.082	1.718	.054	-.041	.038	-.020	.030	-.002	.031	-.060	-.045	-.240	.235
13.instit. values research	6.048	1.280	-.120	.082	.007	.039	-.061	.033	-.035	.122	-.001	.218	.108
14.teaching opportunities	5.331	1.627	.009	-.045	-.069	-.097	.084	.045	.005	.047	-.016	.013	.274
15.research opportunities	4.372	1.982	.086	-.050	-.050	-.008	-.019	.036	-.005	-.022	.153	.047	.284
16.resources available	37.816	9.359	.031	.115	.015	-.035	.009	.034	-.080	.062	-.027	.019	.313
17.teaching orientation	11.632	1.815	-.040	.175	-.062	.055	.090	.108	-.124	.147	-.129	-.112	.164
18.research orientation	17.426	2.801	-.101	-.180	-.019	-.083	.094	-.038	.125	-.115	.220	.059	.056
19.self-esteem - local	17.514	2.812	-.072	-.037	.007	-.002	.053	.071	-.056	.022	-.073	-.009	.197
20.self esteem - discipline	15.525	4.086	-.104	-.179	-.042	-.004	.038	-.052	.097	-.127	.264	.144	-.029
21.time spent teaching	24.345	12.919	-.017	.054	-.027	-.099	.071	.081	.005	.177	-.105	-.072	-.020
22.time spent research	12.305	10.454	.081	-.009	-.065	-.013	.003	-.010	.067	-.015	.222	.211	-.016
23.journal subscriptions	4.726	3.540	-.079	-.068	-.169	.127	.060	-.088	-.040	-.069	.136	-.002	-.014
24.current productivity (log)	1.473	.633	.020	-.216	-.060	.047	-.049	-.022	.128	-.225	.565	.196	-.008

	12												
12.instit.values teaching	1.000	13											
13.values research	-.196	1.000	14										
14.teaching opportunities	.078	.086	1.000	15									
15.research opportunities	.064	.006	.437	1.000	16								
16.resources available	.040	.100	.216	.345	1.000	17							
17.teaching orientation	.090	.213	.109	.022	.095	1.000	18						
18.research orientation	.215	.029	.163	.099	-.006	.045	1.000	19					
19.self-esteem - local	.104	.088	.114	.020	.000	.238	.119	1.000	20				
20.self esteem - discipline	.120	.008	.010	.064	-.056	-.032	.489	.245	1.000	21			
21.time spent teaching	.001	-.007	-.004	-.110	-.062	.089	.022	.034	-.002	1.000	22		
22.time spent research	-.057	-.047	.047	.198	.026	-.114	.149	-.140	.142	-.028	1.000	23	
23.journal subscriptions	-.005	.010	-.044	.000	-.007	.005	.185	.055	.206	-.031	-.028	1.000	24
24.Current Productivity (log)	-.042	.002	.064	.106	.006	-.123	.227	-.035	.239	-.089	.156	.186	1.000

Table E6: Zero-Order Corelations, Means and Standard Deviations: Faculty in Stage Four

[N = 358]	Means	SD	1										
1.Dmale	.916	.277	1.000	2									
2.age	50.374	5.119	-.063	1.000	3								
3.DScience	.229	.421	.069	-.084	1.000	4							
4.DProfessionals	.257	.438	-.007	.190	-.321	1.000	5						
5.DArts	.020	.139	.043	-.081	-.077	-.083	1.000	6					
6.DHumanities	.198	.399	-.153	.040	-.271	-.293	-.070	1.000	7				
7.highest degree earned	2.863	.375	-.030	-.062	.128	-.229	-.056	-.061	1.000	8			
8.experience	20.190	4.597	.032	.479	.106	-.109	-.076	.004	.038	1.000	9		
9.past performance (log)	1.969	.425	.077	.031	-.048	.113	-.076	.036	.113	-.077	1.000	10	
10.dept.degree offered	2.335	.802	.013	.052	.187	.041	-.235	-.147	.199	.093	.191	1.000	11
11.dept climate	7.469	2.866	.053	.089	.038	-.032	-.037	.009	.023	.085	-.061	.132	1.000
12.instit.values teaching	3.899	1.692	-.137	.078	-.034	-.052	-.051	.050	.049	.054	-.104	-.153	.212
13.instit. values research	6.330	1.094	-.084	.007	.061	-.078	.013	.049	.049	.119	-.050	.234	.130
14.teaching opportunities	5.330	1.632	.030	-.052	.000	-.178	-.016	-.006	-.018	.035	-.151	.097	.357
15.research opportunities	4.701	1.855	.125	-.017	-.002	-.016	-.010	-.048	.022	.064	-.070	.083	.382
16.resources available	38.797	9.290	-.050	.156	.124	-.098	-.138	.081	.064	.119	-.044	.233	.385
17.teaching orientation	11.891	1.811	-.074	.129	-.066	-.071	.053	.138	-.125	.105	-.208	-.031	.214
18.research orientation	16.888	2.801	-.068	-.078	-.130	-.052	.107	.073	.059	-.048	.153	.011	.098
19.self-esteem - local	17.119	3.259	-.051	.062	-.036	-.098	.013	.134	.037	-.012	-.164	-.038	.152
20.self esteem - discipline	13.910	4.809	-.031	-.053	-.127	.059	-.023	-.007	.082	-.098	.210	.106	-.017
21.time spent teaching	24.816	12.412	-.065	.035	-.117	-.072	.033	.077	-.069	.087	-.127	-.147	-.063
22.time spent research	11.092	8.738	.137	-.128	-.014	-.019	-.011	-.095	.135	-.077	.188	.123	.031
23.journal subscriptions	4.367	3.053	-.074	.015	-.220	.058	-.043	.032	.070	-.011	.135	.020	-.075
24.current productivity (log)	1.084	.775	-.030	-.076	-.040	.059	.010	.114	.130	-.110	.560	.074	-.084

	12	13	14	15	16	17	18	19	20	21	22	23	24
12.instit.values teaching	1.000												
13.values research	-.099	1.000											
14.teaching opportunities	.048	.163	1.000										
15.research opportunities	.132	.114	.399	1.000									
16.resources available	.101	.207	.309	.318	1.000								
17.teaching orientation	.117	.198	.195	.135	.260	1.000							
18.research orientation	.223	-.011	.076	.142	.083	.081	1.000						
19.self-esteem - local	.093	.160	.126	.049	.176	.339	.125	1.000					
20.self esteem - discipline	.050	.003	-.048	-.022	-.029	-.012	.419	.313	1.000				
21.time spent teaching	.036	.042	-.060	-.125	-.152	.078	-.064	-.049	.011	1.000			
22.time spent research	-.075	-.074	-.007	.135	-.007	-.135	.141	-.061	.110	-.083	1.000		
23.journal subscriptions	.012	-.043	-.060	-.094	-.158	-.050	.131	-.055	.171	.068	.028	1.000	
24.Current Productivity (log)	-.072	-.043	-.077	-.036	-.052	-.150	.200	-.047	.217	-.121	.140	.166	1.000

Table E7: Zero-Order Corelations, Means and Standard Deviations: Faculty in Stage Five

[N = 1450]	Means	SD	1										
1.Dmale	.937	.243	1.000	2									
2.age	50.347	6.899	-.012	1.000	3								
3.DScience	.261	.439	.095	-.057	1.000	4							
4.DProfessionals	.356	.479	-.051	.037	-.441	1.000	5						
5.DArts	.017	.130	-.031	.056	-.079	-.098	1.000	6					
6.DHumanities	.129	.335	-.070	.054	-.228	-.286	-.051	1.000	7				
7.highest degree earned	2.877	.376	.013	-.103	.174	-.250	-.112	.066	1.000	8			
8.experience	20.154	6.904	.061	.586	-.007	-.112	.032	.109	-.035	1.000	9		
9.past performance (log)	2.394	.450	.082	.007	.152	.004	-.078	-.072	.134	.076	1.000	10	
10.dept.degree offered	2.514	.730	.093	.023	.195	.037	-.079	-.155	.163	.036	.281	1.000	11
11.dept climate	8.099	2.762	.054	.002	.059	.000	-.020	.014	-.026	.007	.017	.063	1.000
12.instit.values teaching	4.456	1.576	-.010	.026	-.047	-.031	.009	.081	-.028	.016	-.017	-.133	.140
13.instit. values research	6.017	1.226	-.064	.065	.044	.035	.011	.023	-.033	.076	.042	.183	.203
14.teaching opportunities	5.524	1.505	-.029	.001	-.125	.031	.038	.005	-.047	.040	-.050	-.005	.259
15.research opportunities	5.012	1.887	.039	.042	-.021	.042	-.032	.008	.010	.081	.062	.136	.278
16.resources available	39.791	9.667	.109	.090	-.010	.063	-.030	.025	.005	.082	.003	.124	.309
17.teaching orientation	11.475	1.986	-.080	.113	-.127	.099	.078	.102	-.146	.063	-.108	-.139	.075
18.research orientation	18.099	2.535	-.037	-.114	-.003	-.091	.049	.045	.093	-.028	.222	.086	.120
19.self-esteem - local	17.432	3.338	-.053	.045	-.037	.028	.015	.068	-.031	-.005	-.078	-.057	.108
20.self esteem - discipline	16.358	4.105	-.034	-.045	.029	.001	.028	-.014	.038	-.036	.191	.114	.038
21.time spent teaching	22.037	12.228	.007	.043	-.071	-.084	-.002	.142	-.011	-.029	-.124	-.140	-.085
22.time spent research	14.530	10.611	.011	-.034	.070	-.058	-.031	-.036	.097	.014	.235	.165	.043
23.journal subscriptions	4.925	3.156	-.080	.056	-.160	.032	-.041	.032	-.022	.043	.118	.030	-.038
24.current productivity (log)	1.602	.657	.020	-.212	.084	.059	-.097	-.106	.087	-.190	.568	.190	.010

	12	13	14	15	16	17	18	19	20	21	22	23	24
12.instit.values teaching	1.000												
13.values research	-.058	1.000											
14.teaching opportunities	.082	0.099	1.000										
15.research opportunities	.083	0.086	.379	1.000									
16.resources available	.057	0.126	.158	.256	1.000								
17.teaching orientation	.187	0.182	.188	.040	.078	1.000							
18.research orientation	.251	0.093	.099	.138	.036	-.010	1.000						
19.self-esteem - local	.076	0.115	.098	.033	.070	.312	.095	1.000					
20.self esteem - discipline	.102	0.02	.015	.063	-.014	-.027	.408	.464	1.000				
21.time spent teaching	-.001	-0.048	-.044	-.093	-.062	.093	-.059	-.022	-.052	1.000			
22.time spent research	.016	-0.037	-.001	.188	.036	-.154	.220	-.087	.156	-.115	1.000		
23.journal subscriptions	-.003	-0.076	.018	-.036	-.043	-.042	.102	-.004	.124	.067	.067	1.000	
24.Current Productivity (log)	-.007	-.010	-.054	.025	-.069	-.089	.224	-.046	.194	-.123	.152	.098	1.000

Table E8: Zero-Order Corelations, Means and Standard Deviations: Faculty in Stage Six

[N = 396]	Means	SD	1										
1.Dmale	.869	.338	1.000	2									
2.age	46.862	7.849	.162	1.000	3								
3.DScience	.225	.418	.156	-.054	1.000	4							
4.DProfessionals	.444	.498	-.134	.060	-.482	1.000	5						
5.DArts	.013	.112	.044	.083	-.061	-.101	1.000	6					
6.DHumanities	.111	.315	-.029	.079	-.190	-.316	-.040	1.000	7				
7.highest degree earned	2.785	.479	.076	-.015	.178	-.312	.003	0.091	1.000	8			
8.experience	16.320	8.751	.200	.747	.038	-.208	.077	0.131	.085	1.000	9		
9.past performance (log)	2.208	.505	.187	.300	.169	-.061	-.044	-.087	.173	.362	1.000	10	
10.dept.degree offered	2.742	.555	.089	.028	.130	-.107	-.151	-.010	.344	.094	.300	1.000	11
11.dept climate	9.207	2.721	.131	.048	.035	-.044	.008	.032	-.055	.046	.053	-.001	1.000
12.instit.values teaching	4.351	1.649	.078	.106	-.045	.010	.031	.037	.028	.099	.095	-.081	.189
13.instit. values research	6.573	.926	-.026	-.041	.072	-.010	-.070	.050	-.007	-.048	.009	.106	.113
14.teaching opportunities	5.664	1.548	.090	.183	-.087	-.033	.025	.035	.019	.274	.077	-.077	.309
15.research opportunities	5.096	1.910	.196	.057	.040	-.016	-.041	.050	.053	.135	.161	.085	.356
16.resources available	41.630	10.368	.032	.082	.046	-.003	-.006	.024	-.053	.044	.035	.040	.251
17.teaching orientation	11.919	1.910	-.103	.036	-.142	.160	.076	.133	-.221	.001	-.092	-.235	-.030
18.research orientation	18.253	2.424	.054	-.051	-.008	.083	-.049	.020	.303	-.052	.306	.217	.148
19.self-esteem - local	17.011	2.971	-.063	.101	-.012	.046	.021	.013	.068	.045	-.060	-.029	.092
20.self esteem - discipline	21.904	3.939	.046	-.017	.003	-.032	-.012	.009	.253	.021	.203	.179	.054
21.time spent teaching	13.904	13.013	-.113	.068	-.088	-.077	.241	.150	.073	.033	-.106	-.139	-.072
22.time spent research	4.942	10.944	.174	-.010	.091	-.048	-.030	-.083	.187	.022	.295	.174	.068
23.journal subscriptions	1.599	3.501	.006	.113	-.147	.025	-.005	-.065	-.044	.070	.129	-.036	-.025
24.current productivity (log)	1.602	.626	.079	-.151	.137	.043	-.129	-.109	.125	-.168	.496	.216	.014

	12	13	14	15	16	17	18	19	20	21	22	23	24
12.instit.values teaching	1.000												
13.values research	-.064	1.000											
14.teaching opportunities	.118	.060	1.000										
15.research opportunities	.185	.010	.359	1.000									
16.resources available	.171	.106	.176	.216	1.000								
17.teaching orientation	.287	.061	.048	.029	.078	1.000							
18.research orientation	.279	.194	.122	.233	.080	-.053	1.000						
19.self-esteem - local	.100	-.020	.008	.008	.134	.218	.084	1.000					
20.self esteem - discipline	.124	.048	.080	.112	.036	-.030	.458	.438	1.000				
21.time spent teaching	-.016	-.208	.001	-.066	-.064	.111	-.124	.000	-.006	1.000			
22.time spent research	.049	-.189	-.014	.201	.068	-.165	.239	-.055	.167	-.144	1.000		
23.journal subscriptions	-.006	.029	.047	-.036	-.114	.026	.025	-.041	.034	.010	-.034	1.000	
24.Current Productivity (log)	-.021	.024	-.077	.048	-.035	-.065	.260	-.122	.149	-.093	.211	.143	1.000

Table E9: Zero-Order Corelations, Means and Standard Deviations; Faculty in High Reputation Universities

[N = 301]	Means	SD	1										
1.Dmale	.841	.367	1.000	2									
2.age	43.389	7.385	.187	1.000	3								
3.DScience	.219	.414	.209	-.043	1.000	4							
4.DProfessionals	.282	.451	-.110	.011	-.332	1.000	5						
5.DArts	.023	.151	-.053	.064	-.082	-.097	1.000	6					
6.DHumanities	.140	.347	-.060	.012	-.213	-.253	-.062	1.000	7				
7.highest degree earned	2.804	.445	.073	.073	.089	-.222	-.031	.005	1.000	8			
8.experience	13.037	7.461	.162	.765	-.032	-.057	.050	.065	.074	1.000	9		
9.past performance (log)	1.998	.520	.170	.248	.124	.037	-.058	-.099	.166	.272	1.000	10	
10.dept.degree offered	1.887	.833	-.026	.096	.024	.147	-.006	-.153	.192	.084	.336	1.000	11
11.dept climate	5.721	2.476	-.012	-.063	.001	.086	.009	-.090	-.001	-.081	-.217	-.195	1.000
12.instit.values teaching	4.106	1.889	.039	-.097	.081	.012	.038	-.079	.021	-.123	-.038	-.158	.219
13.instit. values research	5.233	1.742	-.205	.123	.003	.078	-.008	.051	-.027	.165	-.060	.183	.104
14.teaching opportunities	4.801	1.869	.007	.076	-.012	-.103	.099	.007	-.023	.051	-.072	-.032	.260
15.research opportunities	4.017	2.053	.079	-.011	-.118	-.063	.063	-.008	-.007	.077	-.060	.015	.253
16.resources available	33.934	9.150	-.004	.099	-.120	.137	.055	.016	-.036	.112	-.003	-.009	.239
17.teaching orientation	10.953	2.221	-.132	.030	-.079	.033	.053	.069	-.121	.001	-.170	-.100	.073
18.research orientation	17.432	2.761	.040	-.123	.076	-.150	.104	-.003	.110	-.074	.232	.179	-.043
19.self-esteem - local	16.741	3.504	.017	-.018	.053	-.008	-.045	.093	-.161	-.067	-.031	-.147	.094
20.self esteem - discipline	15.005	4.827	.066	-.128	.046	.003	-.014	-.028	.135	-.137	.205	.169	-.079
21.time spent teaching	24.897	14.328	.021	-.027	-.029	-.026	.030	.101	-.024	-.116	-.117	-.135	.159
22.time spent research	14.419	11.271	.106	-.117	-.009	.008	.020	-.018	.085	-.063	.206	.229	-.053
23.journal subscriptions	4.575	3.510	-.071	-.028	-.108	.082	-.063	-.085	.006	-.033	.210	.070	.097
24.current productivity (log)	1.467	.665	-.050	-.192	-.010	.146	-.045	-.096	.092	-.216	.543	.186	-.099

	12	13	14	15	16	17	18	19	20	21	22	23	24
12.instit.values teaching	1.000												
13.values research	-.115	1.000											
14.teaching opportunities	.009	.068	1.000										
15.research opportunities	-.012	-.050	.390	1.000									
16.resources available	.031	.110	.227	.313	1.000								
17.teaching orientation	-.023	.205	.117	.012	.124	1.000							
18.research orientation	.069	-.091	.032	.112	-.051	-.057	1.000						
19.self-esteem - local	.029	.057	-.019	-.091	-.007	.261	-.005	1.000					
20.self esteem - discipline	.044	-.143	-.146	-.098	-.082	-.085	.376	.214	1.000				
21.time spent teaching	.067	-.045	.020	-.030	-.136	.166	.009	.098	.009	1.000			
22.time spent research	-.002	-.088	-.009	.137	.113	-.166	.284	-.135	.221	-.173	1.000		
23.journal subscriptions	.073	-.061	.000	-.087	-.040	-.017	.052	.029	.149	.118	.041	1.000	
24.Current Productivity (log)	.015	-.098	-.068	-.018	-.037	-.170	.238	-.010	.280	-.059	.196	.230	1.000

Table E10: Zero-Order Corelations, Means and Standard Deviations: Faculty in Low Reputation Universities