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Dual Commitments to Organizations and Professions: Different Motivational Pathways to Productivity

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Commitments to organizations and professions have important implications for behavior in the workplace, but little is known about how these dual commitments combine to affect organizational outcomes. We present a model proposing that commitment to professions influences productivity through a positive effect on intrinsic motivation and a negative effect on extrinsic motivation. Commitment to organizations, conversely, is hypothesized to have a negative effect on intrinsic motivation and a positive effect on extrinsic motivation. We tested the model with a sample of 237 tenured management professors and, overall, the model fit the data well and better than less parsimonious models or ones positing reverse causality. Commitment to the profession was positively related to intrinsic motivation to engage in research and, through this effect, resulted in more challenging research goals, increased commitment to those goals, more hours spent on research, and greater research productivity. Commitment to the organization (university) was positively related to extrinsic motivation and negatively related to intrinsic motivation and was unrelated to goal level, goal commitment, hours spent on research, and research productivity. Our model makes a unique theoretical contribution by revealing the differing paths by

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which commitments to organizations and professions affect work outcomes, and our results support and extend commitment theory and offer unique insights into posttenure productivity.

Keywords: *commitment; motivation; productivity*

Employee commitments are the psychological bonds that people have to workplace targets (Klein, Molloy, & Cooper, 2009; Reichers, 1985), including organizations, individuals and groups within organizations, and goals and behaviors (Becker, 1992; Neubert & Wu, 2009; Vandenberghe, 2009). There is now substantial evidence that commitments to different foci have different implications for behavior. For example, commitment to supervisors is more strongly related to job performance than is commitment to organizations, while commitment to organizations has a stronger link to certain organizational citizenship behaviors (Askew, Taing, & Johnson, 2013; Becker & Kernan, 2003; A. W. Chan, Snape, & Redman, 2011). Other examples are that, compared to commitment to other foci, commitment to customers is most strongly related to product breadth and market share, commitment to peers has the strongest tie to tardiness, and commitment to teams has the most potent links to citizenship behavior within the team and team performance (see Becker, 2009, for a review of these and related findings). Thus, multiple commitments clearly exist and play an important role in predicting and understanding many workplace behaviors and outcomes.

However, studies on multiple commitments, while demonstrating differential effects, have not adequately explained why or how such differences occur. Furthermore, to this point, there have been few attempts to explain how commitments to multiple foci combine to affect workplace phenomena. For example, with respect to motivation and motivational outcomes, do commitments to two given foci add to each other or subtract from one another and under what circumstances? In addition, it seems possible that some commitments could have different motivational paths than others; that is, they may influence behavior through different processes. If so, some motivational paths may have a stronger effect on behavior and outcomes than do others, and theories of commitment should identify and explain the corresponding mechanisms. How commitments to multiple foci combine and the potential existence of separate motivational pathways are important issues because they have direct implications for commitment theory and understanding behavior in organizations. They are also relevant to practical managerial concerns, such as which of various commitments should be encouraged or discouraged.

To investigate how commitments to multiple foci combine and the nature of their motivational pathways, we focus our attention on dual commitments to organizations and professions. We concentrate on commitments to organizations as a result of continuing widespread interest in attachment to this target and to the far-reaching implications it has for work behavior (Judge & Kammeyer-Mueller, 2012; Wasti & Önder, 2009; Wright & Kehoe, 2009). We focus on commitment to professions because of the number and relevance of professionals in today's workforce and the corresponding increase in job mobility (see Blau & Holladay, 2006; Lin, Huang, Chang, Lin, Chang, & Chen, 2013; Parry, 2008; Vandenberghe, 2009). In the following sections, we explain the context of our study and the links among commitments to professions and organizations, intrinsic and extrinsic motivation, goal level and goal

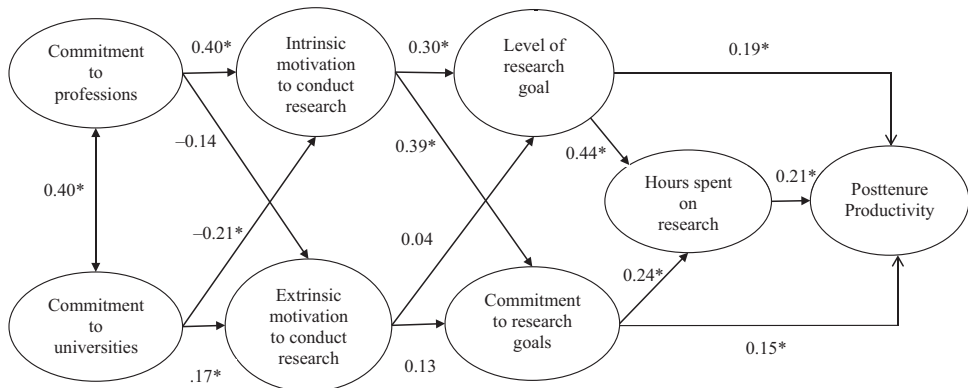
commitment, effort, and performance. We concentrate on affective commitment—employees' emotional attachment to workplace foci—because, compared to the other mind-sets within the three-component model of commitment (Meyer & Allen, 1997), affective commitment has the strongest, most consistent ties to outcomes of interest (Dunham, Grube, & Castaneda, 1994; Judge & Kammeyer-Mueller; Meyer, Stanley, Herscovitch, & Topolnytsky, 2002). For our purposes, it is desirable to include organizations and professions that value the same job task but to a different degree and that likely offer different kinds of rewards for performance of the task. Although this might be true for many positions, we decided to concentrate on knowledge workers in general and on a specific type of knowledge worker: posttenure college professors. As discussed in the following section, this approach aids in the development of concrete hypotheses and helps address limitations in the literature on faculty productivity.

Faculty Research Productivity

Although teaching and service are very important in educational institutions, research productivity is often a central component of scholarly success and institutional reputation. Thus, it is not surprising that there exists a substantial literature on the determinants of research productivity. This literature has been informative, but there are at least three important limitations to prior work. First, much of the attention to antecedents of productivity has been directed toward situational factors. These factors include resource availability (Judge, Kammeyer-Mueller, & Bretz, 2004; Kram & Isabella, 1985), status of doctoral-granting universities and of employing institutions (Cable & Murray, 1999; Long, Bowers, Barnett, & White, 1998), departmental standards and teaching loads (Stark & Miller, 1976), the availability and nature of mentors (Green & Bauer, 1995), compensation level and dispersion (Gomez-Mejia & Balkin, 1992; Pfeffer & Langton, 1993), and other contextual factors. While these variables are relevant to understanding differences in productivity among researchers, they are not particularly revealing with respect to underlying cognitive and motivational processes.

Second, it is unclear how the few personal variables that have been investigated are tied to faculty motivation. For example, the type of research conducted (Newman & Cooper, 1993), amount and nature of collaboration (Floyd, Schroeder, & Finn, 1994), and gender (Judge et al., 2004; Park & Gordon, 1996) have been linked to research productivity, but how these are tied to motivational variables, such as goals and effort, has not been adequately explained. Third, little consideration has been directed at explaining productivity posttenure. Given the evidence that tenure leads to decreased research productivity for many scholars (Davis & Patterson, 2000; Park & Gordon; Zivney, Bertin, & Gavin, 1995), understanding the reasons for this seems important. The work that has been done on this topic is limited by the prior constraint: a paucity of psychologically relevant motivational concepts. For example, Davis and Patterson (2001) conducted a 16-year longitudinal study of determinants of economists' publication rates. They examined several situational and personal predictors, but the processes by which those factors operate are unclear. Furthermore, more proximal motivational factors may be even better predictors of faculty research productivity than distal historical and demographic ones. This was recognized by Judge et al., who, in their longitudinal model of the career success of industrial-organizational psychologists, recommended that future research include psychological variables, such as personality and ability. Williamson and Cable (2003) similarly recommended greater attention to individual level determinants of faculty productivity.

Figure 1
Parameter Estimates for the Hypothesized Model



Note: Pretenure publication impact, years of pretenure experience, and existence of a doctoral program were included as exogenous control variables. See text for explanation and results. Values are standardized coefficients. $N = 237$. * $p < .05$.

Given these considerations, we develop a model tying commitments to professions and organizations (universities) to research productivity and explicitly include proximal individual level factors to identify the intervening mechanisms. We decided to focus on tenured professors because there is greater variety in the internal and external rewards motivating research activities after tenure. Thus, in addition to explicating the nature and effects of commitments to professions and universities, this model may enhance the prediction and management of post-tenure research productivity. Although faculty research productivity is an important outcome in its own right, our focus on this unique context is not without generalizability. The model we present is relevant to most work settings and the context we examine is pertinent to many other types of knowledge workers. It also has direct parallels to organizations with secure employment practices. The model is illustrated in Figure 1 and discussed in the following sections.

Dual Commitments and Goal Regulation

In developing our model, we drew upon the integrated commitment–motivation theory of Meyer, Becker, and Vandenberghe (2004), henceforth referred to as MBV theory. A key tenet of MBV theory is that commitment affects goal regulation, “a motivational mindset reflecting the reasons for and purpose of a course of action being contemplated or in progress” (Meyer et al.: 998). Thus, goal regulation includes an assessment of the locus of causality of a course of action (cf. Buss, 1978; de Charms, 1968). This perceived locus of causality refers to a person’s beliefs about why he or she is pursuing a given goal and involves a corresponding level of autonomy. It is important in this context to differentiate the source of rewards and the nature of motivation. External rewards, such as money and promotion opportunities, exist outside the individual, while internal rewards, such as self-respect and positive emotions, exist within the person. Motives always exist within the person but can involve different internal experiences and attributions.

Intrinsic motivation entails a high level of autonomy and includes individuals doing work because it is interesting, because they enjoy it, or because of other behaviors or outcomes that they find inherently rewarding. Extrinsic motivation involves a low level of autonomy and includes persons doing work because they believe they have to in order to obtain positive outcomes or avoid negative ones (Deci & Ryan, 1985; Guay, Vallerand, & Blanchard, 2000). Several authors have suggested additional types of motivation that lie along a continuum of autonomy (Ryan & Connell, 1989; Ryan & Deci, 2000), but because not enough is known about how these are differentially related to behavior, we will not hypothesize about their effects. Rather, we restrict our focus to intrinsic and extrinsic motivation.

Meyer et al. (2004) proposed that employees who have a strong affective commitment to a relevant social target are likely to share the target's values and to perceive assigned and self-set goals as autonomously regulated and as ideals to be achieved. That is, affective commitment to the target leads to a sense of intrinsic motivation directed toward activities valued by the target. The rationale for this proposition has been supported by research demonstrating that affective commitment, or commitment profiles most heavily reflecting affective commitment, are generally positively related to intrinsic motivation and negatively related to extrinsic motivation (Battistelli, Galletta, Portoghese, & Vandenberghe, 2013; Gagne, Forest, Gilbert, Aube, Morin, & Malorni, 2010; Meyer, Stanley, & Parfyonova, 2012; Stanley, Vandenberghe, Vandenberg, & Bentein, 2013).

Although we agree that commitment has implications for intrinsic and extrinsic motivation, the nature of those implications probably depends on the nature of the targets of commitments. College professors can be committed to both their professions and their universities and, indeed, there is some evidence that these dual commitments may often be positively correlated (Dwivedula & Bredillet, 2010; Enache, Sallan, Simo, & Fernandez, 2013; Morin, Morizot, Boudrias, & Madore, 2011). However, the relative commitment to professions and organizations is a matter of degree and salience. Professors who are highly committed to their profession, relative to commitment to the organization, are likely to be more intrinsically motivated and less extrinsically motivated to conduct research. Recent work by Janus (2014) lends some support to this notion. In a sample of physicians, commitment to one's professional culture was positively correlated with intrinsic motivation, while commitment to the organizational culture was negatively correlated.

Though commitment to one's profession may lead to some external rewards for research, it likely offers a larger number and variety of internal ones. These include the opportunity to develop challenging new skills and abilities (and to decide which skills and abilities to develop), to cooperate with other professionals on meaningful tasks, to receive recognition from respected professional peers, and to satisfy one's curiosity by learning more about interesting topics. Thus, consistent with MBV theory, affective commitment to the profession is likely to result in exposure to and influence by such rewards. This is less likely to be true of scholars who are highly committed to their universities, relative to commitment to their profession. While commitment to a university can result in some internal rewards for conducting research, many university-based rewards are external, particularly in contrast to those available via professions. In addition to contingent financial rewards, other external rewards for research include promotions, tenure, public recognition, course reductions, desirable committee assignments, and other favors from administrators. Furthermore, the internal rewards for research that are available to professors (e.g., enjoyment of doing research, feelings of pride for publishing great work) are often accompanied by external rewards.

Self-determination theory holds that offering external rewards for an already intrinsically motivating activity can reduce intrinsic and increase extrinsic motivation (Deci, Koestner, & Ryan, 1999; Deci & Ryan, 1985; Ryan & Deci, 2000). This occurs as a result of a process of overjustification whereby external reward prompts people to question their own motives. This can result in individuals concluding that their motives must be extrinsic since their corresponding behavior is followed by external rewards. This produces less subsequent intrinsic motivation and more extrinsic motivation than would have been the case had the activity not been externally rewarded in the first place. This “undermining effect” and much of the rest of self-determination theory has been supported empirically (for reviews, see Cerasoli, Nicklin, & Ford, 2014; Gagne, 2014; Tang & Hall, 1995; Wrzesniewski, Schwartz, Cong, Kane, Omar, & Kolditz, 2014). MBV theory recognizes that although internal and external rewards may be relatively independent and can operate simultaneously, one or the other is often more common with respect to a given task or activity. It is the relative availability and salience that determines a person’s perception of intrinsic versus extrinsic motivation. Thus, relative to commitment to the profession, scholars with high commitment to their universities should be more extrinsically motivated and less intrinsically motivated to conduct research.

In sum, our model extends MBV theory to professional knowledge workers with dual commitments. In addition, the model goes beyond MBV theory in addressing the different motivational paths through which these commitments have their effects. Specifically:

Hypothesis 1: Higher commitments to professions lead to higher levels of intrinsic motivation and lower levels of extrinsic motivation to do research.

Hypothesis 2: Higher commitments to universities lead to higher levels of extrinsic motivation and lower levels of intrinsic motivation to do research.

Dual Commitments, Goal Level, and Goal Commitment

Another central proposition of MBV theory is that commitments to social foci affect goal dynamics, such as goal level and goal commitment, via intrinsic and extrinsic motivation. We have argued that commitment to the profession is likely to result in exposure to and reinforcement by internal rewards for research productivity to a greater degree than does commitment to universities, promoting greater intrinsic and lesser extrinsic motivation to conduct research. MBV theory further holds that employees are more likely to set or accept more difficult goals and commit to them under conditions of intrinsic rather than extrinsic motivation. Some evidence for this notion exists in research demonstrating that intrinsic motivation is more strongly related to goal commitment than is extrinsic motivation (Ke & Zhang, 2009).

Accordingly, higher commitment to professions should promote the setting of challenging research goals and commitment to these goals. This logic is supported by the evidence that, *ceteris paribus*, internal rewards often have relatively greater salience than external ones because internal rewards are inherently enjoyable and fulfilling and satisfy the higher order needs of mature, employed adults (Alderfer, 1969; Arnolds & Boshoff, 2002; Meyer et al., 2004; Ryan & Deci, 2000). Commitment to universities, on the other hand, leads to greater exposure to and reinforcement by external rewards for research, promoting greater extrinsic and lesser intrinsic motivation for research productivity. On the basis of similar reasoning,

this should result in the setting of easier research goals, less commitment to higher goals, or both. This does not mean that external rewards cannot improve performance or that they always undermine intrinsic motivation. Rather, all else held constant, internal rewards often have a greater impact, particularly when they are more common, more salient, and are provided under conditions of higher autonomy.

The preceding arguments allow us to present the following hypothesis:

Hypothesis 3: The positive effects of commitments to professions and negative effects of commitments to universities on the level of research goals and commitment to research goals are fully mediated by level of intrinsic and extrinsic motivation to conduct research.

Dual Commitments and Research Productivity

MBV theory integrates ideas and findings from the commitment, self-determination, and goal-setting literatures. A fundamental proposition is that commitment to social foci determines in part whether motivation is intrinsic or extrinsic, which, in turn, affects goal choice (specificity and difficulty) and goal commitment and, subsequently, effort and behavior (Meyer et al., 2004). All consciously motivated behavior appears to be goal oriented, and numerous studies have found that specific, difficult goals lead to higher productivity (Locke & Latham, 2013). This is largely because goals increase the effort directed toward goal attainment and performance (Locke & Latham, 2002; Pinder, 1998). Through its effect on effort, goal commitment may moderate the effect of goals on performance and productivity. However, Klein, Wesson, Hollenbeck, Wright, and DeShon (2001) demonstrated that, depending on the variation in commitment and goal level, goal commitment sometimes has a main rather than interactive effect. Goals and goal commitment can also drive behavior in other ways, for example, through their effects on task strategies (Earley, Connolly, & Lee, 1989; Locke & Latham, 2013).

Time is a precious resource for employees and it is largely a zero-sum game. Although multitasking may occur, time spent on one task or set of tasks is generally time not available for other activities (A. N. Miller, Taylor, & Bedeian, 2011). Thus, especially when choice of tasks is largely at the discretion of employees, as it is with college professors, the number of hours spent on a given task or set of tasks is a marker of effort: Those who value the task or set of tasks are more apt to spend time doing it. The number of hours worked is a particularly promising predictor of productivity for professionals because the ranges of job-relevant knowledge, skills, and abilities are restricted. That is, although knowledge, skills, and ability are not irrelevant, the hours devoted to a given task or set of tasks are likely to play an important role in explaining productivity.

In sum,

Hypothesis 4: The positive effects of commitments to professions and negative effects of commitments to universities on effort (hours spent on research) are fully mediated by level of intrinsic and extrinsic motivation to conduct research and by the level of research goals and commitment to research goals.

Hypothesis 5: The positive effects of commitments to professions and negative effects of commitments to universities on research productivity are fully mediated by level of intrinsic and extrinsic motivation to do research, the level of research goals and commitment to research goals, and effort.

Method

Participants

Our target population was tenured management professors employed in business schools in the United States. As mentioned earlier, we decided to focus on tenured professors because of the considerable variance in the internal and external rewards motivating research activities after tenure. We included faculty from both doctoral-granting and non-doctoral-granting departments. To identify a representative sample of management departments that had doctoral programs, we used Peterson's (2007) *Graduate Programs in Business, Education, Health, Information Studies, Law, and Social Work 2007* to generate a list of doctoral programs in business. We then checked the Web sites of these schools to ensure that they currently granted doctoral degrees in management. We thus identified 104 doctoral programs in management. Surveys were sent to all full-time tenured faculty in these departments in the areas of human resource management, organizational behavior, international business, and strategy.

Faculty in nondoctoral management departments may generally publish less than faculty employed in more research intensive departments with doctoral programs. Thus, we took steps to identify more and less productive faculty in nondoctoral departments. To find more productive individuals, we searched top management journals for articles published by authors from management departments not listed in Peterson's (2007). The search period began 5 years prior to the study up to the time of the study (2008) and the journals were *Academy of Management Journal*, *Academy of Management Review*, *Administrative Science Quarterly*, *Journal of Applied Psychology*, *Journal of Organizational Behavior*, *Journal of Management*, *Organizational Behavior and Human Decision Processes*, *Organization Science*, and *Strategic Management Journal*.

In selecting the 9 journals, we considered prior studies of research productivity, current Social Sciences Citation Index (SSCI) ratings, and the breadth of topical coverage. The selected journals are represented in prior studies, are currently in the top 10 by journal impact factor, and all publish articles on a wide variety of topics within the management field. All except *Organization Science* are listed in Gomez-Mejia and Balkin's (1992) list of 21 "top-tier" management journals (*Organization Science* was a new journal at the time), and all are included in the SSCI's 2013 top 10 journals list in either the management or applied psychology categories. Although there are other journals that could have been chosen, we believe our sampling approach achieved the goal of including a wide variety of circumstances that are representative of the population of management faculty. Our search identified every author in these journals from a nondoctoral department. We then randomly selected another faculty member from each of these departments who had not published an article in these journals over the past 5 years and invited both the more productive and less productive individuals to participate in the study. This procedure ensured a sizable sample, varying in productivity, from nondoctoral departments.

We administered a survey through Qualtrics to the 1,539 management professors identified through the above steps. Of those invited, 64% were employed in doctoral-granting departments and the remainder were employed in non-doctoral-granting departments, and the same percentages of doctoral-granting versus non-doctoral-granting departments were observed among our respondents. After two follow-up reminders, 746 professors had

accessed the survey. We deleted 142 respondents who did not provide sufficient usable data, 16 who asked to be removed from the study, and 13 duplicate cases, resulting in a response rate of 37.3% (575/1,539). We dropped 46 administrators above the level of department chair, retired individuals, those who were not research faculty (e.g., instructors, adjuncts, clinical teaching faculty), and 168 who reported that they were not tenured professors. In order to allow sufficient time for work done posttenure to be published, we removed 51 respondents who received tenure in 2005 or later. These exclusions, along with those due to missing data, resulted in a final sample size of 237.

With respect to gender and ethnicity, 73% of respondents were men; 91% of respondents were White, 5% were Asian, and no other ethnic group composed more than 1% of the sample. Regarding rank, 62% were full professors, 32% were associate professors, and the remainder were associate or full professors with special positions, such as chaired and endowed professorships. The average age was 54.67 years, and the mean year of Ph.D. was 1992. In order to assess the representativeness of our respondents, we randomly selected nonresponders from each of our three sampling groups (faculty in doctoral-granting departments and research active and less research active faculty at non-doctoral-granting departments) until we had 30 cases from each. We then collected demographic information on these individuals from their online vitae or biographical summaries. There were no significant differences between respondents and the sample of nonrespondents on year of Ph.D., $F(1, 393) = 2.36$, n.s.; proportion of men and women, $\chi^2(1, N = 372) = 0.72$, n.s.; ethnic composition, $\chi^2(5, N = 366) = 0.13$, n.s.; or academic rank, $\chi^2(2, N = 371) = 5.46$, n.s.

Measures

The measures are described below. The reliabilities of the measures are reported in the results section. We conducted an exploratory factor analysis containing all 29 of our items, and the results exhibited simple structure for all of the multi-item measures. Details are available from the first author.

Dual commitments. We used modified versions of Meyer and Allen's Affective Commitment Questionnaire (Meyer & Allen, 1997; Meyer, Allen, & Smith, 1993) to measure commitments to the profession and organization (i.e., university). We replaced "the organization" in the original items with "the profession" and "the university," and the same six items were used for both foci. Examples of items are "I would be very happy to spend the rest of my career in my profession" and "My university has a great deal of personal meaning to me." The response scale for both ranged from 1 (*strongly disagree*) to 7 (*strongly agree*).

Intrinsic and extrinsic motivation. We adapted items from the scales of Ryan and Connell (1989) and Guay et al. (2000) to assess intrinsic motivation (five items) and extrinsic motivation (four items). We collected data on Ryan and Connell's related measures (identified regulation and introjected regulation) to explore whether finer distinctions in forms of motivation might relate to research productivity. However, confirmatory factor analyses showed a poor fit of the expanded model, and corresponding exploratory factor analyses suggested a two-factor model with many cross-loading items. Therefore, we included only intrinsic and extrinsic motivation in our model and analyses. We prefaced the items by saying, "Below

are some reasons people engage in research. Indicate the extent to which each reason corresponds to you. I engage in research because . . ." Examples of intrinsic motivation responses are "because it's fun" and "because I think this activity is interesting." Examples of extrinsic motivation responses are "because that's what I am supposed to do" and "because it is something I have to do." The response scale ranged from 1 (*does not at all correspond to me*) to 5 (*entirely corresponds to me*).

Goals and effort. To measure goal level, we told respondents to "consider your current goal with respect to refereed research publications (i.e., accepted and in-press manuscripts and published articles). Indicate how many refereed articles you intend to publish in high-quality journals *over the next three years.*" The response scale ranged from 0 to 12 or more, in 1-unit increments. To measure commitment to the respondents' current goals, we used a modified version of the Klein et al. (2001) five-item scale. For example, we changed "It's hard to take this goal seriously" to "It's hard for me to take my current publication goal seriously" (reverse-scored). Similarly, we changed "I think this is a good goal to shoot for" to "I think that the research goal I reported is a good goal to shoot for." The response scale ranged from 1 (*strongly disagree*) to 7 (*strongly agree*). The number of hours typically spent on research was assessed through the item, "How many hours per week do you typically work on research?" The response scale ranged from 0 to 40 or more in 1-hr increments.

Although there are limitations to using single-item measures, they are often an efficient and valid way of measuring unidimensional, easily understood concepts (Bergkvist & Rossiter, 2007; Wanous & Hudy, 2001; Wanous, Reichers, & Hudy, 1997). We believe that identification of a current goal and "hours worked per week" fit this description.

Posttenure research productivity. To obtain an objective measure of research productivity, we used an index of quality and quantity of published articles. Although publications of books, chapters, and other products are indicators of productivity, their value is more difficult to assess as a result of lack of a common metric. To count publications, we obtained vitae directly from respondents or located them on the Web and supplemented these with checks via ABI-Inform and the Expanded Academic ASAP Plus databases. We evaluated publication quality via the 5-year impact factors reported in the SSCI Journal Citations Reports. At the time we collected data on journal quality, the lowest impact factor for a journal in which 1 or more respondents published was 0.26. For journals that were not listed in the Journal Citations Reports, we used a value of 0.25 to index quality.

Although some previous work on research productivity has counted only publications in "premier" journals (Gomez-Mejia & Balkin, 1992; Williamson & Cable, 2003), we wanted to index quality for a wider array of publications pertinent to authors in our data set. Similar to our measure, other researchers have adjusted for quality by using SSCI journal impact factors. For example, Rodgers and Maranto (1989) used a "composite" measure of productivity designed to capture both quantity and quality—number of articles published in Science Citation Index or SSCI journals weighted by the impact factor of the journal. C. C. Miller, Glick, and Cardinal (2005) used a more complicated measure of productivity where publications were weighted by authorship position, number of authors, and journal quality. Again, journal quality was assessed by the SSCI journal impact factor. In sum, although a clear consensus on productivity indices does not exist, our approach to assessing research productivity is consistent with prior research in this area.

Most studies of scholarly research productivity have involved a sample of pretenured faculty, a group for whom time in rank is similar or the sample is a cohort with the same graduation date. These studies have thus attempted to control for the amount of time a faculty member has had to produce research outputs. However, because our study involves tenured management professors across a wide range of tenure dates, it was necessary to take into account the number of years respondents had been tenured. Otherwise, someone who had been tenured longer and continued to publish may have appeared to have been more productive than someone who had not been tenured as long but had more publications per year. Therefore, we measured posttenure productivity by summing the number of each respondent's publications weighted by impact factors beginning the year following tenure through the end of the study divided by the number of years the respondent had been tenured.

This measure is thus an index of both quantity (number of publications) and quality (impact factors of journals in which the articles were published) and indicates the average annual productivity in the years following tenure. The square roots of scores were taken in order to normalize the distribution.

Control variables. We were cautious in selecting control variables because including irrelevant controls or too many controls can lead to incorrect parameter estimates, inflation of Type 1 and Type 2 errors, unnecessary reduction of statistical power, creation of spurious suppression effects, and other kinds of misinterpretations (Atinc, Simmering, & Kroll, 2012; Becker, 2005; Breugh, 2008; Edwards, 2008; Spector & Brannick, 2011). We decided to control for pretenure research productivity and experience because we are primarily interested in the role of dual commitments when employees have considerable freedom to choose from among internal and external rewards. We suspect that pretenure productivity is heavily influenced by the external incentive of tenure and, if this is so, then partialing pretenure from posttenure productivity allows for the most relevant test of our hypotheses. Pretenure productivity has been linked to posttenure productivity in prior research and has been assessed in terms of both pretenure publication impact and pretenure experience (Bland, Center, Finstad, Risbey, & Staples, 2005; Goodwin & Sauer, 1995; Holley, 1977).

To measure pretenure research productivity, we measured pretenure publication impact by summing journal article impact factors from the year of graduation from a doctoral program through and including the year of tenure. In addition, there was variability among our respondents in number of years spent as assistant professors, and the length of pretenure experience is a plausible antecedent of posttenure productivity. For example, greater time as an assistant professor could reflect lesser research competence, fewer available relevant resources, or a culture in which a longer tenure clock reflects more demanding research and tenure standards. Therefore, we controlled for the number of pretenure years.

Finally, we controlled for whether our respondents worked in a doctoral-granting department. Access to doctoral students and the research-related resources provided by departments with doctoral programs likely increases research output among faculty in such departments (Dundar & Lewis, 1998; Park & Gordon, 1996). Among our respondents, 145 worked in departments with doctoral programs and 92 worked in non-doctoral-granting departments. We dummy-coded this variable with non-doctoral-granting departments coded 0 and doctoral-granting departments coded 1.

There are other individual differences that may affect research productivity (e.g., ability, personality), and to the extent that these differences affect productivity before tenure, our

approach controls for them by including pretenure productivity in our analyses. Because pre- and posttenure productivity were substantially correlated in our study ($r = .58, p < .01$), controlling for pretenure productivity provided a stringent test of the hypotheses.

Analysis. We tested our model by using LISREL (Version 9.1; Jöreskog & Sörbom, 2014). We created multiple indicators for commitments to the profession and university by following the partial disaggregation parceling procedures discussed by Williams and O'Boyle (2008). We allowed the commitments to correlate because prior research has shown that commitments to various foci are often related (Becker, 2009; Cooper-Hakim & Viswesvaran, 2005). We used the factorial algorithm technique to create three indicators for each latent variable (Rogers & Schmitt, 2004). This involved, first, conducting an exploratory factor analysis of the items. We used exploratory rather than confirmatory factor analysis because we modified the original items to focus on commitments to the university and profession. The differences among eigenvalues and scree plot suggested two factors clearly interpretable as commitment to the profession and commitment to the university.

Next, to ensure that the parcels (subsets of items) were equally balanced in terms of difficulty and discrimination, we used the standardized loadings to assign items to parcels: The three items with the highest loadings were the first items included in each parcel, the next three items with the next highest loadings were assigned in an inverted order, and so on until all items were assigned. The same procedure was used for intrinsic and extrinsic motivation and goal commitment, and factor analyses demonstrated that the three scales are unidimensional. Goal level, hours spent on research, and posttenure productivity were modeled via single indicators.

The control variables were modeled as exogenous variables and allowed to correlate with each other and the other exogenous variables (commitments to profession and university). To test our mediation hypotheses, we followed the guidelines of Kenny, Kashy, and Bolger (1998).

Results

Table 1 provides the descriptive statistics of and intercorrelations among the scales. LISREL corrects for unreliability in estimating the fit and parameters of models.

Model Fit and Hypothesis Tests

The results for our hypothesized model are reported in Figure 1. For aesthetic purposes, the results for the control variables are not shown in the figure, but each variable was positively associated with posttenure productivity: pretenure publication impact ($\gamma = 0.49, T = 9.82$), years of pretenure experience ($\gamma = -0.22, T = -4.71$), and existence of a doctoral program ($\gamma = 0.16, T = 3.36$). The hypothesized model fit the data well. As shown in Table 2, although the test of perfect fit was rejected, $\chi^2(169) = 289.54, p < .05$, descriptive indices suggest a good fit: The fit indices range from .91 to .96, and the test of close fit was not rejected—root-mean-square error of approximation (RMSEA) = .055, n.s. Furthermore, the model explains 49% of the variance in posttenure productivity. These findings are supportive of MBV theory in general and our model of dual commitments more specifically.

Table 1
Descriptive Statistics

Variable	1	2	3	4	5	6	7	8	9	10	11	M	SD
1. Preture quality score	—											26.12	22.31
2. Years untenured	.18**	—										6.65	3.34
3. Doctoral program	.29**	-.04	—									0.61	0.49
4. Commitment–Profession	.11	.04	.02	(.87)								5.58	0.94
5. Commitment–University	-.04	.01	.04	.35	(.91)							4.84	1.39
6. Intrinsic motivation	.13	.00	.14*	.27**	-.05	(.91)						3.66	0.73
7. Extrinsic motivation	-.10	-.04	-.07	-.07	.10	-.19**	(.75)					2.12	0.71
8. Goal level	.31**	-.07	.15*	.11	-.06	.27**	-.02	—				4.82	2.29
9. Goal commitment	.03	-.10	.04	.27**	.07	.28**	.06	.30**	(.83)			5.57	1.01
10. Hours spent on research	.21	-.11	.23**	.11	-.13	.35**	-.08	.50**	.33**	—		15.45	9.71
11. Posttenure productivity	.58**	-.18**	.37**	.20**	.00	.31**	-.10	.48**	.28**	.48**	—	1.46	0.83

Note: Listwise $N = 237$. For the multi-item measures, Cronbach's alpha values are reported within parentheses on the diagonal. The statistics are provided at the level of scales.

* $p < .05$.

** $p < .01$.

Table 2
Fit Statistics of Hypothesized and Alternative Models

Model	χ^2	<i>df</i>	χ^2/df	NFI	NNFI	CFI	AIC	BIC	RMSEA	R^2	χ^2_{diff}
Model 1 (Hypothesized)	289.54	169	1.71	.91	.95	.96	6,242.14	6,457.16	.06	.49	
Model 2 (C → G)	278.23	165	1.69	.91	.95	.96	6,238.83	6,467.72	.05	.50	11.31**a
Model 3 (M → H)	268.84	163	1.65	.91	.95	.96	6,233.43	6,469.26	.05	.50	9.39**b
Model 4 (C → H)	264.71	161	1.64	.92	.95	.96	6,233.31	6,476.07	.05	.50	4.13 ^c
Model 5 (M → P)	261.52	159	1.64	.92	.95	.97	6,234.12	6,483.82	.05	.51	3.19 ^d
Model 6 (C → P)	259.23	157	1.65	.92	.95	.97	6,235.82	6,492.46	.05	.51	2.29 ^e
Model 7 (M → C)	350.42	169	2.07	.89	.92	.94	6,300.69	6,515.71	.07**	.50	NA
Model 8 (P → C)	315.63	171	1.85	.90	.94	.95	6,262.89	6,470.97	.06†	.06/.00	NA

Note: For Models 1 through 6, each model is nested in the one above it and, except for Model 2, the degrees of freedom for the χ^2_{diff} test is 2. Model 2 degrees of freedom for the test is 4. Model 7 (reverse effect of motivation on commitment) and Model 8 (reverse effect of productivity on commitment) are not nested in other models. Therefore, χ^2_{diff} tests cannot be performed, and the AIC and BIC statistics are the most relevant for purposes of comparison. NFI = normed fit index; NNFI = nonnormed fit index; CFI = comparative fit index; AIC = Akaike information criterion; BIC = Bayesian information criterion; RMSEA = root-mean-square error of approximation; R^2 = squared multiple correlation for the structural equation for posttenure productivity; C = commitments; G = goal level and goal commitment; M = motivations; H = hours; P = productivity.

^aModel 2 vs. Model 1.

^bModel 3 vs. Model 2.

^cModel 4 vs. Model 3.

^dModel 5 vs. Model 4.

^eModel 6 vs. Model 5.

† $p < .10$.

** $p < .01$.

Standardized parameter estimates for the hypothesized model are shown in Figure 1. The path from commitment to the profession to intrinsic motivation is significantly positive ($\gamma = 0.40$, $T = 5.13$), but although the observed value for the path to extrinsic motivation is negative, it is not significantly so ($\gamma = -0.14$, $T = -1.76$). This partially supports Hypothesis 1. The path for commitment to the university to intrinsic motivation is significantly negative ($\gamma = -0.21$, $T = -2.79$), and the path to extrinsic motivation is significantly positive ($\gamma = 0.17$, $T = 2.27$). This supports Hypothesis 2.

To test Hypothesis 3, we created a model freeing the paths from the commitments to goal level and goal commitment. This model is nested within our hypothesized model and is designated Model 2 in Table 2. As shown in the table, the chi-squared difference test was significant, indicating that commitment to the profession, university, or both explain variance in goal level, goal commitment, or both beyond that accounted for by intrinsic and extrinsic motivation. Examination of the gamma matrix revealed that the only significant path was the one from commitment to the profession to goal commitment ($\gamma = 0.25$, $T = 2.88$). Thus, while the link between commitment to the profession to goal level and those from commitment to the university to goal level and goal commitment appear to be fully mediated by intrinsic and extrinsic motivation, commitment to the profession has a direct tie to goal commitment. These results support Hypothesis 3 for commitment to the university and partially support the hypothesis for commitment to the profession.

To test Hypothesis 4, we constructed a model by freeing the paths from intrinsic and extrinsic motivation to effort (hours spent on research). This is Model 3 in Table 2. (Recall that paths from goal level and goal commitment were freed previously.) We also created another model by modifying Model 3 by freeing paths from the commitments to effort: Model 4 in the table. The difference in chi-squared value between these models is thus attributable solely to the paths from commitments to the profession and university to effort. The results for Model 3 are interesting in that the connection between intrinsic motivation and hours spent on research appeared to be only partially mediated by goal level and goal commitment. That is, there was a significant direct path from intrinsic motivation to hours spent on research ($\beta = 0.20$, $T = 3.01$). As reported in Table 2, the difference in chi-squared value between Models 3 and 4 was not significant, indicating that the effects of the commitments on effort are entirely mediated by level of autonomy, goal level, and goal commitment. This supports Hypothesis 4.

Finally, to test Hypothesis 5, we created a model by freeing the paths between intrinsic and extrinsic motivation and research productivity. This is Model 5 in Table 2. We also constructed a model freeing paths from the commitments to research productivity: Model 6 in the table. Consistent with the MBV model, the results for Model 5 indicated that effects of intrinsic and extrinsic motivation on research productivity were fully mediated by effort. As reported in Table 2, the difference in chi-squared value between Models 5 and 6 was not significant, indicating that the effects of the commitments on research productivity are entirely mediated by intrinsic and extrinsic motivation, goal level, goal commitment, and effort. This supports Hypothesis 5.

Ancillary Analyses

A closer look at dual commitments and research productivity. To further compare the effects of commitments to the profession and university on research productivity, we examined the total effects of commitments to the two foci. Total effects values are available via LISREL, and, consistent with our model, the total effects for commitments to the profession and university are equal to their indirect effects (i.e., there are no direct effects).

The total effect of commitment to the profession on posttenure productivity is 0.06. This indicates that participants highly committed (+1 *SD*) to the profession could be expected to be 0.06 *SD* higher on our research productivity metric than participants with average commitment to the profession. In contrast, the total effect of commitment to the university on posttenure productivity was -0.03 , indicating that participants highly committed to the university are 0.03 *SD* lower on our research productivity metric. Thus, in terms of direction of the relationships, the total effect of commitment to the profession on our metric of research productivity is positive, while the total effect of commitment to the university is negative. With regard to the magnitude of the effects, the total effect of commitment to the profession on research productivity is 2.2 times the size of the total effect of commitment to the university (i.e., $0.06 / |-0.027|$).

The effects of control variables. Becker (2005) recommended that to determine the effects of statistical control on results, authors rerun their key analyses without the control variables. Therefore, we deleted our three control variables from the hypothesized model and

recalculated the parameter estimates and goodness-of-fit indices. As with the original model, the fit indices indicated a good fit with the data, and, in addition, the standardized parameter estimates were similar. The primary change resulting from eliminating pretenure publications, years of pretenure experience, and whether respondents' departments offered doctoral programs was that the amount of variance explained in posttenure productivity decreased from 49% to 30%. In sum, excluding the control variables did not substantively change conclusions about model fit or support for the hypotheses.

Reverse effect of intrinsic and extrinsic motivation? Our model specifies that commitments to the profession and university affect intrinsic and extrinsic motivation. This proposition is consistent with MBV theory and other theory and research treating motivation as an outcome of commitment (Becker, 2009; Klein, Molloy, & Brinsfield, 2012). However, other authors have suggested the reverse, that is, that intrinsic and extrinsic motivation affect commitment to social foci (Markovits, Ullrich, van Dick, & Davis, 2008; Neubert, Wu, & Roberts, 2013). We suspect that over time, the relationship is reciprocal. For example, commitment to the profession may, for the reasons we have offered, increase intrinsic motivation and, in turn, intrinsic motivation may enhance future commitment to the profession as a result of the association between internal rewards and attachment to the profession. Nevertheless, to explore the primacy of directionality, we constructed a model (Model 7 in Table 2) specifying that intrinsic and extrinsic motivation affect the commitments and compared it to our hypothesized model. The fit of Model 7 was somewhat worse in that the chi-squared/degree of freedom value was higher (2.07 vs. 1.71 in the hypothesized model), other descriptive fit indices were lower—normed fit index (NFI) of .89, nonnormed fit index (NNFI) of .92, and comparative fit index (CFI) of .94 for Model 7 versus .91, .95, and .96, respectively, for the hypothesized model—and the RMSEA test of close fit was rejected. Because Models 1 and 7 are not nested, the information indices may be most relevant for comparison (Akaike, 1979; Burnham & Anderson, 2002; Schwarz, 1978; Wicherts & Dolan, 2004). These indices take into account both descriptive accuracy and parsimony, and lower values reflect stronger fit. Consistent with the other statistics, the information fit indices indicate that the hypothesized model is better supported than a model reversing the relationships between commitments and motivations—Akaike information criterion (AIC) of 6,300.69 and Bayesian information criterion (BIC) of 6,515.71 for Model 7 versus AIC of 6,242.14 and BIC of 6,457.16 for Model 1.

Reverse effect of research productivity? It has also been suggested that through a sense-making process, behavior may influence commitment rather than the other way around (see, e.g., Grant, Dutton, & Rosso, 2008). MBV theory allows for bidirectionality between commitment and behavior but suggests that the primary influence is in the direction of attitudes to behavior. This proposition is supported by Riketta's (2008) meta-analysis and recent work on the temporal sequence of commitment and performance (Winkler, Koenig, & Kleinmann, 2012). To examine the issue with our data, we built a model specifying that research productivity affects commitments to the profession and university (Model 8 in Table 2). The fit of Model 8 was somewhat worse in that the chi-squared/degree of freedom value was higher (1.85 vs. 1.71 in the hypothesized model), other descriptive fit indices were slightly lower (NFI of .90, NNFI of .94, and CFI of .95 vs. .91, .95, and .96, respectively, in the

hypothesized model), and the RMSEA test of close fit was rejected (though this result was marginally significant, $p < .10$). Models 1 and 8 are not nested, so the information indices may be most relevant for comparison. Consistent with the other statistics, the information fit indices indicate that the hypothesized model is better supported than a model reversing the relationships between commitments and productivity (AIC of 6,262.89 and BIC of 6,470.97 for Model 8 vs. AIC of 6,242.14 and BIC of 6,457.16 for Model 1).

Discussion

The central purposes of this study were to explain how commitments to professions and organizations combine and to examine the differential motivational pathways connecting these commitments to productivity. Results indicated that the model illustrated in Figure 1 fit the data well and generally supported our hypotheses. In support of Hypotheses 1 and 2, commitments to professions were positively related to intrinsic motivation, while commitments to organizations (universities) were negatively related to intrinsic motivation and positively related to extrinsic motivation. However, there was no significant relation between commitments to professions and extrinsic motivation. Per Hypothesis 3, the effects of dual commitments on goal level and goal commitment were mediated by intrinsic and extrinsic motivation, though there was also a direct link from commitments to professions to goal commitment. Consistent with Hypotheses 4 and 5, the links between commitments and effort and research productivity were mediated in the manner shown in Figure 1. Though not hypothesized, there was also a direct connection between intrinsic motivation and effort. The hypothesized model also fit the data as well as less parsimonious models (Models 4–6 in Table 2) and appeared to fit better than models suggesting reverse causality between intrinsic and extrinsic motivation and commitments or between research productivity and commitments (Models 7 and 8).

These findings and the model upon which they are based go beyond MBV theory in addressing the different motivational paths through which commitments to professions and organizations have their effects. Our results also contribute to commitment theory by offering support for important components of MBV theory (Meyer et al., 2004) and suggesting several modifications. The results support the Meyer et al. propositions that commitments to social foci influence goal regulation, goal regulation affects goal choice, and effort and behavior are consequences of goal choice. Furthermore, we believe our study provides the first test of the Meyer et al. proposition that employees set or accept more difficult goals under conditions of intrinsic as opposed to extrinsic motivation. Our data support this proposition by demonstrating significant positive relationships between intrinsic motivation and goal level and goal commitment and no significant relationships between extrinsic motivation and goal level and goal commitment.

With respect to potential modifications, MBV theory holds that commitments to social foci have a direct effect on goal commitment. However, our model and results suggest that the influence of commitment to professions on commitment to research goals is partially mediated by intrinsic and extrinsic motivation and that the effect of commitment to universities on commitment to research goals is fully mediated by these variables. In addition, our model and results support direct paths from commitment to research goals to hours spent on research and posttenure productivity. MBV theory does not posit such effects, but they are consistent

with the arguments by Klein et al. (2001) discussed earlier. We believe these exceptions to MBV theory are minor and suggest correspondingly minor modifications to the theory.

In addition to contributing to MBV theory and the multiple work commitments literature, our results yield insights for several other theories and literatures. First, our study has implications for self-determination theory. The link between intrinsic motivation and research productivity is consistent with the theory in that it supports the importance of intrinsic motivation in explaining volitional behavior. However, our analysis also suggests this link is indirect, mediated by goal level and goal commitment and effort. In addition, our factor analyses supported the basic difference between intrinsic and extrinsic motivation but did not provide evidence for finer distinctions. Therefore, we recommend that theorists and researchers interested in self-determination theory more fully consider the processes through which different forms of motivation influence behavior and more thoroughly validate the corresponding measures.

Second, previous investigations of scholarly productivity have focused almost exclusively on institutional and situational predictors (e.g., Cable & Murray, 1999; Green & Bauer, 1995; Judge et al., 2004), leaving the role of psychological factors largely unexplored. Our conceptualization and research address this void by testing a model of posttenure research productivity that incorporates specific psychological determinants and explaining the motivational processes underlying them. Posttenure, professors who have higher commitment to their professions (relative to their universities) have greater intrinsic motivation to conduct research and this, in turn, results in their setting more difficult research goals and committing to these goals. This affects their research productivity both directly and through the number of hours they spend on research. Professors who are relatively more committed to their universities are less intrinsically and more extrinsically motivated to conduct research, and this has little if any impact on the level of their goals or commitment to them. Thus, holding the other variables in our model constant, professors committed to their universities will tend to spend fewer hours on research and, in general, publish fewer articles in top journals. This conclusion is supported by our ancillary analyses of the total effects of the dual commitments on research productivity. In addition, these analyses demonstrated that the total effect of commitment to the profession on research productivity is about twice as strong as that of commitment to the university.

In addition to theoretical contributions, our study has implications for research and practice. Regarding future research, in testing our hypotheses, we discovered that our original model should probably be modified by adding direct paths from commitments to professions to goal commitment and from intrinsic motivation to effort. Future research needs to replicate these relationships and determine why they exist. Perhaps commitments to professions affect motives other than purely intrinsic and extrinsic ones, for example, the identified and introjected motives described by Ryan and Connell (1989). Or perhaps there are subconscious motivational effects that we were unable to detect. Regarding intrinsic motivation's tie to effort beyond the effects of goal level and goal commitment, it could be that emotions connected to intrinsic motivation exert an influence beyond the more cognitive effects of goal level and goal commitment.

Furthermore, we need to know more about the effects of changes in the levels and foci of commitment on research productivity and other outcomes. This information would clarify the practical importance of the effect sizes reported in our study. For instance, one might argue that the indirect effects of commitments on research productivity in our study are

modest in magnitude. This conclusion may be true, but, as has been demonstrated in utility analysis, small effects can sometimes make a big difference (e.g., Lawler & Boudreau, 2015; F. L. Schmidt & Hunter, 1998). Within-person analyses of changes in dual commitments over time would be enlightening, as would an assessment of effects at different levels of analyses. For example, small effects at the individual level (as in our study) could translate into sizable effects at the team or organizational level.

A final research direction would be to broaden the model to include teaching, service, and other components of job performance. We suggested earlier that compared to commitment to the profession, commitment to the university is more strongly related to goals and effort concerning nonresearch job components. Many professors enjoy these activities and obtain internal and external rewards from them. One interesting line of inquiry would be to compare the nature of rewards across different parts of the job. For example, compared to rewards tied to other job components, many research-related rewards are less concrete (e.g., the approval of one's colleagues), less certain (e.g., the link between merit increase and research productivity), and more long term (e.g., promotion and tenure). In contrast, teaching a summer or overload course comes with a proximal, certain, and easily quantified external reward (income), and this is often true of administrative appointments as well (e.g., a faculty director receiving an additional one ninth of base pay and two course reductions). Thus, the lesser role of extrinsic motivation found in our study may reflect not only the relative importance of intrinsic motivation but also a shortage of meaningful external rewards for research. In addition, conflict among goals, such as that due to time pressure or unclear priorities, tends to decrease performance with respect to at least one of the goals (Locke, Smith, Erez, Chah, & Schaffer, 1994; A. M. Schmidt & Dolis, 2009). It is plausible, then, that objectives pertaining to different job components interfere with each other, particularly when priorities are not set or professors experience high amounts of pressure.

Regarding practical implications, in universities and R&D firms where research is a key dimension to success, taking commitment to the profession and intrinsic motivation to do research into account when hiring professionals would likely facilitate organizational success and reputation. Furthermore, administrators in such organizations should take care not to overemphasize external rewards for research. Our findings supplement past findings in demonstrating that extrinsic and intrinsic motivation are negatively correlated and, beyond this, that extrinsic motivation has no discernable connection to goal level or goal commitment. This is not to say that external rewards are irrelevant. They may enhance retention and performance of nonresearch tasks or even, as we argued above, increase research productivity if the rewards are structured effectively. However, to the extent external rewards foster extrinsic motivation, they cannot be relied upon to enhance research performance to the same degree as does intrinsic motivation.

A final implication for practice is that fanning the flame of professional commitment should be considered, especially in organizations that highly value research but where research productivity is lower than desired. This might include measuring commitment to the profession in annual surveys or during performance appraisal. This information could then be used to decide who might benefit from administrative encouragement. For example, a department chair might suggest that underperforming faculty members attend professional conferences even if they are not presenting papers because the enthusiasm of other professionals could become contagious. Communicating the importance of professional ties while not overstressing commitment to the organization would be another means toward the same end,

as would pairing junior faculty or employees with mentors who are intrinsically interested in research and highly committed to their profession. Effective attempts to raise commitment to the profession are likely to increase intrinsic motivation to do research, enhance research goals, raise hours spent on research, and augment long-term research productivity.

One limitation to our study is that a sample of tenured management professors may not be representative of other employee populations. However, because we sampled a range of research productivity in doctoral-granting and non-doctoral-granting departments, our results are unlikely to be limited to contextual attributes of one or the other. Furthermore, because professors are in the business of creating and disseminating knowledge, our model may be applicable to knowledge workers in other fields. For example, commitment to a profession is relevant to many knowledge workers in nonacademic settings, and in these settings, we suspect that it has effects similar to those we have hypothesized. We also expect that parts of our model apply to nonprofessional employees in organizations having secure employment policies. For example, civil service jobs in the United States typically come with secure employment and a dearth of external rewards. We predict that in this environment, intrinsic motivation would be important to goal setting, effort, and productivity. Future research should examine these claims to determine the generalizability of our findings.

Some of our measures were based on self-report and, thus, method variance may be a concern. However, several considerations argue against it being responsible for our results. First, the measures were formatted differently. The item measuring goal level was presented in question form (“What do you expect your 3-year goal to be 5 years from now?”) and answered via a scale where the response was number of publications; items on commitment to the profession were statements (e.g., “My profession has a great deal of meaning to me”) answered via a 7-point agree-disagree scale; and intrinsic motivation items were sentence completion (“I engage in research because . . .”) with five options from *not at all* to *entirely*. Hence, although these data were self-report, the measures were not common. Second, claims that self-report data typically lack construct validity, inflate observed correlations, and are plagued by social desirability responding may be ill founded (D. Chan, 2009; Spector, 2006).

A related concern is that we tested causal hypotheses by using correlational data. Although it is true that a single correlation cannot prove causation, a pattern of correlations can be more supportive of one causal model than another. The correlational nature of our data prohibits strong conclusions regarding causality but does not negate our findings that the hypothesized model fit as well as less parsimonious models and better than models positing reverse causality. Nevertheless, to the extent feasible, future work should examine our model longitudinally.

In sum, commitments to professions and organizations continue to be a valuable distinction for understanding organizational behavior. Our model appears to be a tenable explanation for how these commitments combine to affect research productivity through different motivational pathways.

References

- Akaike, H. 1979. A Bayesian extension of the minimum AIC procedure of autoregressive model fitting. *Biometrika*, 66: 237-242.
- Alderfer, C. P. 1969. An empirical test of a new theory of human needs. *Organizational Behavior and Human Performance*, 4: 142-175.

- Arnolds, C. A., & Boshoff, C. 2002. Compensation, esteem valence and job performance: An empirical assessment of Alderfer's ERG theory. *The International Journal of Human Resource Management*, 13: 697-719.
- Askew, K., Taing, M., & Johnson, R. E. 2013. The effects of commitment to multiple foci: An analysis of relational influence and interaction. *Human Performance*, 26: 171-190.
- Atinc, G., Simmering, M. J., & Kroll, M. J. 2012. Control variable use and reporting in macro and micro management research. *Organizational Research Methods*, 15: 57-74.
- Battistelli, A., Galletta, M., Portoghese, I., & Vandenberghe, C. 2013. Mindsets of commitment and motivation: Interrelationships and contribution to work outcomes. *The Journal of Psychology*, 147: 17-48.
- Becker, T. E. 1992. Foci and bases of commitment: Are they distinctions worth making? *Academy of Management Journal*, 35: 232-244.
- Becker, T. E. 2005. Potential problems in the statistical control of variables in organizational research: A qualitative analysis with recommendations. *Organizational Research Methods*, 8: 274-289.
- Becker, T. E. 2009. Interpersonal commitments. In H. J. Klein, T. E. Becker, & J. P. Meyer (Eds.), *Commitment in organizations*: 137-178. New York: Routledge.
- Becker, T. E., & Kernan, M. C. 2003. Matching commitment to supervisors and organizations to in-role and extra-role performance. *Human Performance*, 16: 327-349.
- Bergkvist, L., & Rossiter, J. R. 2007. The predictive validity of multiple-item versus single-item measures of the same constructs. *Journal of Marketing Research*, 44: 175-184.
- Bland, C. J., Center, B. A., Finstad, D. A., Risbey, K. R., & Staples, J. G. 2005. A theoretical, practical, predictive model of faculty and department research productivity. *Academic Medicine*, 80: 225-237.
- Blau, G., & Holladay, E. B. 2006. Testing the discriminant validity of a four-dimensional occupational commitment measure. *Journal of Occupational and Organizational Psychology*, 79: 691-704.
- Breaugh, J. A. 2008. Important considerations in using statistical procedures to control for nuisance variables in non-experimental studies. *Human Resource Management Review*, 18: 282-293.
- Burnham, K. P., & Anderson, D. R. 2002. *Model selection and multimodel inference: A practical information-theoretic approach*. New York: Springer-Verlag.
- Buss, A. R. 1978. A conceptual critique of attribution theory. *Journal of Personality and Social Psychology*, 36: 1311-1321.
- Cable, D. M., & Murray, B. 1999. Tournaments versus sponsored mobility as determinants of job search success. *Academy of Management Journal*, 42: 439-449.
- Cerasoli, C. P., Nicklin, J. M., & Ford, M. T. 2014. Intrinsic motivation and extrinsic incentives jointly predict performance: A 40-year meta-analysis. *Psychological Bulletin*, 140: 980-1008.
- Chan, D. 2009. So why ask me? Are self-report data really that bad? In C. E. Lance & R. J. Vandenberg (Eds.), *Statistical and methodological myths and urban legends*: 309-336. New York: Routledge.
- Chan, A. W., Snape, E., & Redman, T. 2011. Multiple foci and bases of commitment in a Chinese workforce. *International Journal of Human Resource Management*, 22: 3290-3304.
- Cooper-Hakim, A., & Viswesvaran, C. 2005. The construct of work commitment: Testing an integrative framework. *Psychological Bulletin*, 131: 241-259.
- Davis, J. C., & Patterson, D. M. 2000. Regional mobility of economists. *Journal of Labor Research*, 21: 641-647.
- Davis, J. C., & Patterson, D. M. 2001. Determinants of variations in journal publication rates of economists. *American Economist*, 45: 86-92.
- de Charms, R. 1968. *Personal causation: The internal affective determinants of behavior*. New York: Academic Press.
- Deci, E., Koestner, R., & Ryan, R. 1999. A meta-analytic review of experiments examining the effects of extrinsic rewards on intrinsic motivation. *Psychological Bulletin*, 125: 627-668.
- Deci, E. L., & Ryan, R. M. 1985. *Intrinsic motivation and self-determination in human behavior*. New York: Plenum.
- Dundar, H., & Lewis, D. R. 1998. Determinants of research productivity in higher education. *Research in Higher Education*, 39: 607-631.
- Dunham, R. B., Grube, J. A., & Castaneda, M. B. 1994. Organizational commitment: The utility of an integrative definition. *Journal of Applied Psychology*, 79: 370-380.
- Dwivedula, R., & Bredillet, C. N. 2010. The relationship between organizational and professional commitment in the case of project workers: Implications for project management. *Project Management Journal*, 41: 79-88.
- Earley, P. C., Connolly, T., & Lee, C. 1989. Task strategy interventions in goal setting: The importance of search in strategy development. *Journal of Management*, 15: 589-602.

- Edwards, J. R. 2008. To prosper, organizational psychology should . . . overcome methodological barriers to progress. *Journal of Organizational Behavior*, 29: 469-491.
- Enache, M., Sallan, J. M., Simo, P., & Fernandez, V. 2013. Organizational commitment, within a contemporary career context. *International Journal of Manpower*, 34: 880-898.
- Floyd, S. W., Schroeder, D. M., & Finn, D. M. 1994. "Only if I'm first author": Conflict over credit in management research. *Academy of Management Journal*, 37: 734-747.
- Gagne, M. (Ed.). 2014. *The Oxford handbook of work engagement, motivation, and self-determination theory*. New York: Oxford University Press.
- Gagne, M., Forest, J., Gilbert, M., Aube, C., Morin, E., & Malorni, A. 2010. The motivation at work scale: Validation evidence in two languages. *Educational and Psychological Measurement*, 70: 628-646.
- Gomez-Mejia, L. R., & Balkin, D. B. 1992. Determinants of faculty pay: An agency theory perspective. *Academy of Management Journal*, 35: 921-955.
- Goodwin, T. H., & Sauer, R. D. 1995. Life cycle productivity in academic research: Evidence from cumulative publication histories of academic economists. *Southern Economic Journal*, 61: 728-743.
- Grant, A. M., Dutton, J. E., & Rosso, B. D. 2008. Giving commitment: Employee support programs and the prosocial sensemaking process. *Academy of Management Journal*, 51: 898-918.
- Green, S. G., & Bauer, T. N. 1995. Supervisory mentoring by advisers: Relationships with doctoral student potential, productivity, and commitment. *Personnel Psychology*, 48: 537-561.
- Guay, F., Vallerand, R. J., & Blanchard, C. 2000. On the assessment of situational intrinsic and extrinsic motivation: The situational motivation scale. *Motivation and Emotion*, 24: 175-213.
- Holley, J. W. 1977. Tenure and research productivity. *Research in Higher Education*, 6: 181-192.
- Janus, K. 2014. The effect of professional culture on intrinsic motivation among physicians in an academic medical center. *Journal of Healthcare Management*, 59: 287-304.
- Jöreskog, K., & Sörbom, D. 2014. LISREL (Version 9.1) [Computer software]. Chicago: Scientific Software International.
- Judge, T. A., & Kammeyer-Mueller, J. D. 2012. Job attitudes. *Annual Review of Psychology*, 63: 341-367.
- Judge, T. A., Kammeyer-Mueller, J., & Bretz, R. D. 2004. A longitudinal model of sponsorship and career success: A study of industrial-organizational psychologists. *Personnel Psychology*, 57: 277-303.
- Ke, W., & Zhang, P. 2009. Motivations in open source software communities: The mediating role of effort intensity and goal commitment. *International Journal of Electronic Commerce*, 13: 39-66.
- Kenny, D. A., Kashy, D., & Bolger, N. 1998. Data analysis in social psychology. In D. Gilbert, S. Fiske, & G. Lindzey (Eds.), *Handbook of social psychology* (4th ed.): 233-265. New York: Oxford University Press.
- Klein, H. J., Molloy, J. C., & Brinsfield, C. T. 2012. Reconceptualizing workplace commitment to redress a stretched construct: Revisiting assumptions and removing confounds. *Academy of Management Review*, 37: 130-151.
- Klein, H. J., Molloy, J. C., & Cooper, J. T. 2009. Conceptual foundations and theoretical representations of workplace commitments. In H. J. Klein, T. E. Becker, & J. P. Meyer (Eds.), *Commitment in organizations: Accumulated wisdom and new directions*: 3-36. New York: Routledge.
- Klein, H. J., Wesson, M. J., Hollenbeck, J. R., Wright, P. M., & DeShon, R. P. 2001. The assessment of goal commitment: A measurement model meta-analysis. *Organizational Behavior and Human Decision Processes*, 85: 32-55.
- Kram, K. E., & Isabella, L. A. 1985. Mentoring alternatives: The role of peer relationships in career development. *Academy of Management Journal*, 28: 110-132.
- Lawler, E. E., III, & Boudreau, J. W. 2015. *Global trends in human resource management: A twenty-year analysis*. Stanford, CA: Stanford University Press.
- Lin, S. H., Huang, L. C., Chang, C. C., Lin, C. S., Chang, P. C., & Chen, P. F. 2013. The role of person and organizational variables in the three component model of occupational commitment. *Canadian Journal of Administrative Sciences*, 30: 115-126.
- Locke, E. A., & Latham, G. P. 2002. Building a practically useful theory of goal setting and task motivation: A 35-year odyssey. *American Psychologist*, 57: 705-717.
- Locke, E. A., & Latham, G. P. (Eds.). 2013. *New developments in goal setting and task performance*. New York: Routledge.
- Locke, E. A., Smith, K. G., Erez, M., Chah, D., & Schaffer, A. 1994. The effects of intra-individual goal conflict on performance. *Journal of Management*, 20: 67-91.
- Long, R. G., Bowers, W. P., Barnett, T., & White, M. C. 1998. Research productivity of graduates in management: Effects of academic origin and academic affiliation. *Academy of Management Journal*, 41: 704-714.

- Markovits, Y., Ullrich, J., van Dick, R., & Davis, A. J. 2008. Regulatory foci and organizational commitment. *Journal of Vocational Behavior*, 73: 485-489.
- Meyer, J. P., & Allen, N. J. 1997. *Commitment in the workplace: Theory, research, and application*. Newbury Park, CA: Sage.
- Meyer, J. P., Allen, N. J., & Smith, C. A. 1993. Commitment to organizations and occupations: Extension and test of a three-component conceptualization. *Journal of Applied Psychology*, 78: 538-551.
- Meyer, J. P., Becker, T. E., & Vandenberghe, C. 2004. Employee commitment and motivation: A conceptual analysis and integrative model. *Journal of Applied Psychology*, 89: 991-1007.
- Meyer, J. P., Stanley, D. J., Herscovitch, L., & Topolnysky, L. 2002. Affective, continuance, and normative commitment to the organization: A meta-analysis of antecedents, correlates, and consequences. *Journal of Vocational Behavior*, 61: 20-52.
- Meyer, J. P., Stanley, L. J., & Parfyonova, N. M. 2012. Employee commitment in context: The nature and implication of commitment profiles. *Journal of Vocational Behavior*, 80: 1-16.
- Miller, A. N., Taylor, S. G., & Bedeian, A. G. 2011. Publish or perish: Academic life as management faculty live it. *Career Development International*, 16: 422-445.
- Miller, C. C., Glick, W. H., & Cardinal, L. B. 2005. The allocation of prestigious positions in organizational science: Accumulative advantage, sponsored mobility, and contest mobility. *Journal of Organizational Behavior*, 26: 489-516.
- Morin, A. J. S., Morizot, J., Boudrias, J. S., & Madore, I. 2011. A multifoci person-centered perspective on workplace affective commitment: A latent profile/factor mixture analysis. *Organizational Research Methods*, 14: 58-90.
- Neubert, M. J., & Wu, C. 2009. Action commitments. In H. J. Klein, T. E. Becker, & J. P. Meyer (Eds.), *Commitment in organizations*: 179-213. New York: Routledge.
- Neubert, M. J., Wu, C., & Roberts, J. A. 2013. The influence of ethical leadership and regulatory focus on employee outcomes. *Business Ethics Quarterly*, 23: 269-296.
- Newman, J. M., & Cooper, E. 1993. Determinants of academic recognition: The case of the *Journal of Applied Psychology*. *Journal of Applied Psychology*, 78: 518-526.
- Park, S. H., & Gordon, M. E. 1996. Publication records and tenure decisions in the field of strategic management. *Strategic Management Journal*, 17: 109-129.
- Parry, J. 2008. Intention to leave the profession: Antecedents and role in nurse turnover. *Journal of Advanced Nursing*, 64: 157-167.
- Peterson's. 2007. *Graduate programs in business, education, health, information studies, law, and social work 2007* (41st ed., Book 6). Lawrenceville, NJ: Author.
- Pfeffer, J., & Langton, N. 1993. The effect of wage dispersion on satisfaction, productivity, and working collaboratively: Evidence from college and university faculty. *Administrative Science Quarterly*, 38: 382-407.
- Pinder, C. C. 1998. *Motivation in work organizations*. Upper Saddle River, NJ: Prentice Hall.
- Reichers, A. E. 1985. A review and reconceptualization of organizational commitment. *Academy of Management Review*, 10: 465-476.
- Ricketta, M. 2008. The causal relation between job attitudes and performance: A meta-analysis of panel studies. *Journal of Applied Psychology*, 93: 472-481.
- Rodgers, R. C., & Maranto, C. L. 1989. Causal models of publishing productivity in psychology. *Journal of Applied Psychology*, 74: 636-650.
- Rogers, W. M., & Schmitt, N. 2004. Parameter recovery and model fit using multidimensional composites: A comparison of four empirical parceling algorithms. *Multivariate Behavioral Research*, 39: 379-412.
- Ryan, R. M., & Connell, J. P. 1989. Perceived locus of causality and internalization. *Journal of Personality and Social Psychology*, 57: 749-761.
- Ryan, R. M., & Deci, E. L. 2000. Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, 55: 68-78.
- Schmidt, A. M., & Dolis, C. M. 2009. Something's got to give: The effects of dual-goal difficulty, goal progress, and expectancies on resource allocation. *Journal of Applied Psychology*, 94: 678-691.
- Schmidt, F. L., & Hunter, J. E. 1998. The validity and utility of selection methods in personnel psychology: Practical and theoretical implications of 85 years of research findings. *Journal of Applied Psychology*, 124: 262-274.
- Schwarz, G. 1978. Estimating the dimension of a model. *Annals of Statistics*, 6: 461-464.
- Spector, P. E. 2006. Method variance in organizational research: Truth or urban legend? *Organizational Research Methods*, 9: 221-232.

- Spector, P. E., & Brannick, M. T. 2011. Methodological urban legends: The misuse of statistical control variables. *Organizational Research Methods*, 14: 287-305.
- Stanley, L., Vandenberghe, C., Vandenberg, R., & Bentein, K. 2013. Commitment profiles and employee turnover. *Journal of Vocational Behavior*, 82: 176-187.
- Stark, B. J., & Miller, T. R. 1976. Selected personnel practices related to research and publication among management faculty. *Academy of Management Journal*, 19: 502-506.
- Tang, S. H., & Hall, V. C. 1995. The overjustification effect: A meta-analysis. *Applied Cognitive Psychology*, 9: 365-404.
- Vandenberghe, C. 2009. Organizational commitments. In H. J. Klein, T. E. Becker, & J. P. Meyer (Eds.), *Commitment in organizations*: 99-135. New York: Routledge.
- Wanous, J. P., & Hudy, M. J. 2001. Single-item reliability: A replication and extension. *Organizational Research Methods*, 4: 361-375.
- Wanous, J. P., Reichers, A. E., & Hudy, M. J. 1997. Overall job satisfaction: How good are single-item measures? *Journal of Applied Psychology*, 82: 247-252.
- Wasti, A. A., & Önder, C. 2009. Commitment across cultures: Progress, pitfalls, and propositions. In H. J. Klein, T. E. Becker, & J. P. Meyer (Eds.), *Commitment in organizations*: 309-346. New York: Routledge.
- Wicherts, J. M., & Dolan, C. V. 2004. A cautionary note on the use of fit indices in covariance structure modeling with means. *Structural Equation Modeling*, 11: 45-50.
- Williams, L. J., & O'Boyle, E. H., Jr. 2008. Measurement models for linking latent variables and indicators: A review of human resource management research using parcels. *Human Resource Management Review*, 18: 233-242.
- Williamson, I. O., & Cable, D. M. 2003. Organizational hiring patterns, interfirm network ties, and interorganizational imitation. *Academy of Management Journal*, 46: 349-359.
- Winkler, S., Koenig, C. J., & Kleinmann, M. 2012. New insights into an old debate: Investigating the temporal sequence of commitment and performance at the business unit level. *Journal of Occupational and Organizational Psychology*, 85: 503-522.
- Wright, P. M., & Kehoe, R. R. 2009. Organization-level antecedents and consequences of commitment. In H. J. Klein, T. E. Becker, & J. P. Meyer (Eds.), *Commitment in organizations*: 285-308. New York: Routledge.
- Wrzesniewski, A., Schwartz, B., Cong, X., Kane, M., Omar, A., & Kolditz, T. 2014. Multiple types of motives don't multiply the motivation of West Point cadets. *Proceedings of the National Academy of Sciences, USA*, 111: 10990-10995.
- Zivney, T. L., Bertin, W. J., & Gavin, T. A. 1995. A comprehensive examination of accounting faculty publishing. *Issues in Accounting Education*, 10: 1-25.