The Journal of Social Psychology, 2007, *147*(3), 299–315

The Dynamic Relation Between Organizational and Professional Commitment of Highly Educated Research and Development (R&D) Professionals

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ABSTRACT. Researchers of the work-related commitment of professionals have investigated the possibility of conflict between organizational and professional forms of commitment. Drawing on the organizational socialization literature, the authors hypothesized that both forms of commitment would change with increasing organizational tenure. Specifically, the authors proposed that the patterns of change of the 2 forms of commitment would be complementary: Organizational commitment would take a U-shaped pattern of change, whereas professional commitment would take an inverse U-shaped pattern. The results, based on data collected from a sample of 204 research and development (R&D) professionals with PhDs, confirmed the U-shaped pattern of organizational commitment and the complementary relation between the 2 forms of commitment during the first 14 months after organizational entry. These findings suggest the importance of maintaining a balance between organizational and professional commitment and provide a method for identifying the critical period for interventions designed to increase retention of R&D professionals during their early organizational socialization.

Keywords: organizational commitment, organizational tenure, professional commitment, R&D professionals

SUCCESS IN RESEARCH AND DEVELOPMENT (R&D) is becoming a key source of competitive edge in the globalized economy as a result of the increasing rate of technological change and keen competition. Because R&D functions largely depend on the intellectual and creative efforts of knowledge workers, motivating and retaining competent R&D professionals is critical for successful product development (Farris & Cordero, 2002). For this reason, scholars have identified and tested various predictors of the performance of R&D professionals, including job attitudes, career orientation, and organizational structure and climate (e.g., Van de Ven, Angle, & Poole, 1989). Researchers who study profes-

sional workers have often looked at the extent to which they identify with their profession versus their organization (Kwon & Banks, 2004). In the present study, we investigated the phenomenon of dual commitments of R&D professionals, which has substantial implications for workplace attitudes and behaviors such as job involvement, job satisfaction, work motivation, and turnover (Bogler, 2005; Brierley, 1996; Leong, Huang, & Hsu, 2003).

To investigate professionals' behavior, researchers have made a distinction between cosmopolitan and local workers that reflects differentiated levels of commitment to the values and norms of a profession versus those of an employing organization (Tuma & Grimes, 1981). *Cosmopolitans* are committed to maintaining the skills and values of the profession to which they belong and are oriented toward success as a member of their professional community. *Locals,* in contrast, are individuals who identify primarily with and are highly committed to the organization for which they work. Since Gouldner's (1957) original distinction between cosmopolitan and local orientations, researchers have regarded the issue of differentiated commitment to the profession or the employing organization as a critical dimension for understanding professionals' workplace behavior (Tam, Korczynski, & Frenkel, 2002). Scholars have developed two contradictory perspectives regarding the relation between organizational and professional commitment (Leong et al., 2003; Wallace, 1993). Gouldner (1957) argued that these two value systems tend to be inconsistent or even in conflict with each other, resulting in what is referred to as a *commitment dilemma* or *organizational–professional conflict* (OPC; Gunz & Gunz, 1994). For example, in bureaucratic organizations that do not support professionally relevant behavior, professional workers are more likely to be committed to their professions than to their employers.

In contrast, some scholars have maintained that professional and organizational commitments are not necessarily antithetical to each other and are, in fact, positively related (Baugh & Roberts, 1994; Wang & Armstrong, 2004). For example, in his meta-analysis of 11 published studies, Wallace (1993) found that there was a moderately strong, positive association between professional and organizational commitment (true population correlation = .43). Mathieu and Zajac (1990) reported a similar level of association between professional and organizational commitment (correlation corrected for attenuation = .42). In Wallace's analysis, the investigation of potential moderators revealed that (a) the degree of occupational professionalization, (b) the position one holds in the employing organization, and (c) the form of professional commitment have moderating effects on the true correlation between professional and organizational commitment.

This study was supported by a 2003 research grant from Sungshin Women's University.

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Expanding on the latter perspective, we proposed that organizational and professional commitments have a complementary relation that may change with increasing tenure in an organization. This new conceptual framework offers a more sophisticated explanation of the link between the two types of commitments than do those frameworks currently proposed in the literature. We tested this dynamic link by using data collected from a sample of R&D professionals with PhDs who were employees of two large Korean electronics companies. Our use of PhDs in engineering and natural science as a research sample constitutes a distinct empirical contribution to the existing literature on professional workers because the samples that researchers have previously used have been largely composed of accountants and lawyers. When researchers have studied engineers (e.g., Baugh & Roberts, 1994), the samples have been composed of relatively less-educated individuals (holding either bachelor's or master's degrees) who were possibly less invested in and committed to their profession.

Organizational and Professional Commitment

Organizational commitment refers to psychological attachment to and identification with an organization that make separation from the organization difficult for the employee (Mowday, Porter, & Steers, 1982). Researchers have demonstrated that organizational commitment is significantly related to various employee outcomes such as punctual attendance at work, citizenship behavior, job satisfaction, turnover intention, and work performance (Bogler, 2005; Brierley, 1996; Dishon-Berkovits & Koslowsky, 2002; Meyer & Allen, 1997). We define *professional commitment* as psychological attachment to and identification with one's profession (Morrow & Wirth, 1989). Researchers have associated professional commitment with job involvement, improved attention and service to the client, and technical performance (Farris & Cordero, 2002; Somech & Bogler, 2002; Tam et al., 2002).

Previous researchers have found that organizational and professional commitment are empirically distinguishable and predicted by different sets of variables (Brierley, 1996; Leong et al., 2003). For example, Kwon and Banks (2004) reported that organizational commitment was related to the sales volume and type of employing organization, whereas professional commitment was predicted by support for and positive group attitude toward the profession and by job characteristics such as task identity. Somech and Bogler (2002) found that participation in technical decisions was a significant predictor of professional commitment but not of organizational commitment, whereas participation in managerial decisions was more significantly related to organizational commitment than it was to professional commitment. Although education is a moderately negative predictor of organizational commitment (Mathieu & Zajac, 1990), Wang and Armstrong (2004) found that level of education was positively related to professional commitment. These findings indicate that organizational commitment and profession-

al commitment are distinct psychological experiences for professionals and that they can be accounted for by different individual and organizational variables.

Tenure and Organizational Commitment

In their meta-analysis of empirical studies on these issues, Mathieu and Zajac (1990) reported that there is a moderate but significant positive correlation between organizational commitment and organizational tenure (correlation corrected for attenuation = .17). However, in another meta-analytic summary, K. Lee, Carswell, and Allen (2000) found that the relation between tenure and organizational commitment was negligible (correlation corrected for attenuation = .05). These findings indicate the possibility of nonlinear relations between the two variables.

In the case of professionals, their lengthy training and intensive professional socialization typically cause them to experience difficulty in conforming to the goals and norms of organizations, particularly at the beginning of their organizational tenures. This inherent conflict between organizations and professionals may stem from a clash of the organizational and professional cultures (Raelin, 1991). Researchers of cultural adjustment have proposed that immigrants experience a U-curve acculturation process in the host culture (Berry, Poortinga, Segall, & Dasen, 1992; Church, 1982). For example, in a classic study, Oberg (1960) described four stages of cultural adaptation: (a) a honeymoon stage characterized by fascination, elation, and optimism lasting from a few days to 6 months; (b) a secondary stage characterized by hostile and emotionally stereotyped attitudes toward the host culture; (c) a recovery stage characterized by increased knowledge and ability to get around in the new culture; and (d) a final stage in which adjustment is almost complete, anxiety is largely gone, and immigrants accept and enjoy new customs. This U-curve hypothesis, which describes level of adjustment as a function of temporal duration of exposure to the new culture, has received considerable attention in studies of attitude change among foreign students (Church).

According to organizational socialization and organizational entry researchers, employees also tend to go through a brief initial honeymoon period (ranging between 1 and 6 months) immediately after their entry into an organization. This period is characterized by high levels of enthusiasm and commitment to the organization (Veninga & Spradley, 1981). This initial phase is followed by an encounter stage in which employees are exposed to reality shocks and unmet expectations that may lead them to develop negative attitudes toward the organization (Lee, Ashford, Walsh, & Mowday, 1992; Meyer & Allen, 1997). In the long run, however, employees recover from this decrease in organizational commitment 1–2 years after their entry into the organization, possibly because of an increased sense of belongingness and positive social exchanges within the organization (Mowday et al., 1982). These processes result in a U-shaped pattern of change in level of organizational commitment over different stages of organiza-

tional socialization (Lee et al., 1992). Because of their lengthy academic training and deep-rooted professional values, the initial disappointment or reality shock of R&D professionals may be much more severe than that experienced by other employees (Raelin, 1991); nevertheless, we expected that R&D professionals would ultimately commit to their organizations with increasing socialization and greater familiarity with and internalization of organizational norms over time.

Despite the fairly well-established pattern of temporal changes in organizational commitment, current literature on work-related commitment does not provide a clear conceptual and empirical analysis of the link between tenure or organizational experience and professional commitment. Confirming the general assumption that professional commitment is relatively stable over time, Hoff (2000) reported that medical professionals who varied by organizational tenure exhibited similar levels of professional commitment. In contrast, Blau (1999), using longitudinal data that he collected from medical technologists, found a significant decrease in professional commitment over time (although the level of professional training of this sample was relatively low—typically at the bachelor's degree level—and thus their commitments to their profession may not have been strong enough to have a lasting impact throughout their careers).

Dynamic Relations Between Organizational and Professional Commitment

Given that professionals are often more strongly committed to their professions than to their employing organizations (Wang & Armstrong, 2004), professional commitment is a critical career attitude for them that may interact over time with their attitudes toward their organizations, such as organizational commitment. As yet, researchers have not conducted empirical examinations of the changing relation between the organizational and professional commitment of professionals across different stages of organizational socialization. Moving beyond the controversy concerning the conflicting or compatible relation between organizational and professional commitment (Leong et al., 2003; Wallace, 1993), the present study provides a new perspective on the relation between organizational and professional commitment by investigating the tenure-dependent dynamics of these two types of commitment in highly educated R&D professionals after their organizational entry.

In this regard, we draw on Kabanoff's (1980) theory explaining the relation between work and nonwork satisfaction. Kabanoff suggested three potential mechanisms that link people's satisfaction with the work and nonwork domains: (a) compensation (high satisfaction in one domain may compensate for lower satisfaction in the other); (b) spillover (high satisfaction or dissatisfaction in one domain may spread to the other); and (c) segmentation (levels of satisfaction in the two domains are independent of each other). These three explanations may help clarify the relation between organizational and professional commitment. If we follow the compensation model, a high level of professional commitment can compensate for a low level of

organizational commitment, or vice versa. If we follow the spillover model, a high level of organizational commitment may increase the level of professional commitment, or vice versa. If we follow the segmentation model, levels of organizational and professional commitment may be independent from each other without any mutual influences. Of these three potential linking mechanisms, in the present study we adopted the compensation model: An individual's levels of organizational and professional commitment complement each other over time.

To justify their substantial investment in professional training, R&D professionals with PhDs may maintain a high level of psychological attachment to and involvement in their careers in the context of their organizations or professions (Wang & Armstrong, 2004). According to *cognitive congruence theory* (Tuma & Grimes, 1981), people's positions on one of these work-related dimensions directly influence their positions on the other because certain positions on the two dimensions should be cognitively congruent. For example, when organizational and professional goals are in conflict, it is cognitively congruent to have low organizational commitment and high professional commitment. In contrast, when the two goals or cultures associated with profession and organization are in harmony, organizational and professional commitment may be positively related (i.e., both high or both low). For this reason, if the organizational commitment decreases in the early period of tenure because of reality shock or unmet expectations (indicating the conflicting situation between profession and organization), then professional commitment would likely increase through the mechanism of compensation and cognitive congruence. Consequently, when either professional or organizational commitment decreases (e.g., a drop in organizational commitment following the short honeymoon period), professionals will increase the other type of commitment so that they can maintain a stable sense of career development in an attempt to justify their career choices and accompanying heavy investment (Wang & Armstrong, 2004). On the basis of our expectation that organizational commitment would follow a U-shaped pattern of change over the first several years following organizational entry, in the present study we hypothesized that professional commitment would follow an inverse U-shaped pattern over the same period, effectively complementing the level of organizational commitment.

Method

Participants

We collected data from the central R&D facilities of two large Korean electronics firms. The human resources (HR) managers of these companies provided us with mailing lists of their R&D staff with PhDs. We mailed our questionnaire to 310 R&D professionals, and 204 (response rate = 65.8%) returned the completed questionnaire. The mean tenure of the present sample was 22 months (SD = 29.45 months), and tenure ranged between 1 month and 12 years. The mean age of par-

ticipants was 33 years (*SD* = 3.31 years), and 96% of participants were men. Most participants (86%) received their PhDs in engineering, and the rest (14%) received them in natural sciences. Approximately half of the participants (51%) earned their PhDs in the U.S., 40% earned them in Korea, and 6% earned them in Japan. Forty-three percent of the participants had, after completing their PhDs, worked for at least one other company besides their present employer.

Measures

We measured organizational commitment and professional commitment by using a set of items that we adapted from Mowday et al.'s (1982) Organizational Commitment Questionnaire (OCQ), which was validated in subsequent studies (Brierley, 1996). Our version of the OCQ had five items each for organizational and professional commitment (see Appendix), which participants rated on a 7-point Likert-type scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). We translated the questionnaire into Korean through back-translation procedures and presented participants with both the English and Korean versions because our preliminary interviews with members of this sample indicated that many of them felt more comfortable reading English sentences than Korean sentences.

An exploratory factor analysis using principal component extraction and varimax rotation clearly showed that these 10 items represented two underlying constructs. A confirmatory factor analysis (CFA) using the EQS Structural Equation Modeling Software also indicated that a 2-factor model—$\chi^2(32, N = 204) = 70.17$, $p < .001$; NNFI = .91, CFI = .94, GFI = .93, RMSEA = .081—fit the empirical data significantly better than did a single-factor model—$\chi^2(34, N = 204) = 156.36$, $p < .001$; NNFI = .73, CFI = .79, GFI = .83, RMSEA = .141. The CFA results also showed that each indicator of the two constructs was significantly related to the underlying constructs, all *p*s < .01, and that the covariance between the two constructs was not significant, $\phi = .14$, $p = .15$. The reliability coefficients (αs) of organizational and professional commitment were .88 and .69, respectively. Consistent with results of previous studies (e.g., Leong et al., 2003), organizational and professional commitment were moderately and positively correlated, $r = .17$, $p = .02$. Confirming the role of hierarchical position as a moderator (Wallace, 1993), participants occupying a higher managerial position showed a greater correlation between the two commitments, $r = .33$, $p = .03$, than did participants at the junior manager level, $r = .12$, $p = .15$.

Creating Tenure-Based Subgroups

Vandenberg and Self (1993) suggested that the presence of gamma changes should discourage researchers of organizational entry from simply assuming that measures will be interpreted in the same way over time: "The presence of gamma

changes (changes in the underlying construct) were so dramatic as to render the pattern of mean differences uninterpretable" (p. 557). For this reason, a frequently used alternative to longitudinal research is cross-sectional research, in which a time-related variable such as job longevity or organizational tenure varies meaningfully among participants (Feldman, 1976). In the present sample, the participants' average tenure was 22 months, ranging from 1 month to 12 years. To examine the effect of tenure on the two commitment measures (Werbel & Gould, 1984), we created seven subgroups representing different levels of organizational tenure: (1) 1–2 months (n = 34), (2) 3–6 months (n = 24), (3) 7–12 months (n = 27), (4) 13–18 months (n = 43), (5) 19–24 months (n = 31), (6) 25–36 months (n = 24), and (7) 37 months or more (n = 21). We determined the tenure intervals for these seven subgroups on the basis of the following considerations. First, prior researchers (Lee et al., 1992; Meyer & Allen, 1997) have suggested that the tenure-related dynamics are more pronounced at the beginning of an employee's organizational tenure, typically during the first several months following entry into an organization. Second, prior researchers have indicated that, much like immigrants' acculturation to a new culture, employees' psychological adjustment to their employing organization tends to be completed 2–3 years after entry into the organization (Berry et al., 1992; Mowday et al., 1982). Last, given the empirical context, we preferred to have a comparable number of participants in all subcategories so that we would not have any empty or excessively large categories, which could create difficulties in comparing means across subgroups. To check if there were systematic differences among the subgroups, we conducted chi-square tests and found that the seven subgroups did not significantly differ from one another with respect to participants' academic disciplines, $\chi^2(6, N = 204) = 4.31$, *ns*; prior job experiences, $\chi^2(6, N = 204) = 12.12$, *ns*; or the country from which they received their PhDs, $\chi^2(18, N = 204) = 22.46$, *ns*.

Results

On the basis of different organizational socialization stages and a potential complementary relation between organizational and professional commitment, we expected that increases in organizational tenure would be accompanied by a U-shaped pattern of change for organizational commitment and an inverse U-shaped pattern of change for organizational commitment. To test these curvilinear effects, we conducted hierarchical regression analyses by regressing linear, quadratic, and cubic terms of tenure on organizational and professional commitment. Linear and quadratic effects of tenure on organizational commitment were not significant, R^2 = .00 and R^2 = .01, respectively, ps > .30. However, adding the cubic term significantly increased the explained variance of organizational commitment, $\Delta R^2 = .07$, $p < 001$. For this final equation, all three predictors were statistically significant: for tenure, B = –1.08, $p < .01$; for tenure squared, B = 2.96, $p < .001$; and for tenure cubed, B = –1.94, $p < .001$. In the case of professional commitment, only the linear effect was significant ($R^2 = .02$, $p < .05$; $\beta = -.13$, $p < .05$), whereas the quadratic and cubic

terms of tenure did not significantly increase the explained variance of professional commitment, $R^2 = .00$ and $R^2 = .01$, respectively, ps $> .50$.

To examine more closely the relation between tenure and levels of organizational and professional commitment, we conducted a subgroup analysis using the seven aforementioned subgroups. As Table 1 shows, the levels of organizational and professional commitment significantly differed from each other in Subgroups 2 and 3. To examine the effect size of these differences, we calculated Cohen's (1988) *d* for each subgroup by dividing the mean difference by the pooled standard deviation of the two values compared. Figure 1 depicts the seven tenure-based subgroups. Confirming the results of the regression analysis, the organizational commitment of recent recruits was higher than that of other tenure groups. However, the graph shows that organizational commitment became significantly lower in the subgroup with 7–12 months of organizational tenure, with an independent sample *t* test of organizational scores between Subgroup 2 and Subgroup 3 yielding $t(50) = 2.64$, $p = .01$, Cohen's $d = .52$. This low organizational commitment level continued until 36 months of tenure (see the results for Subgroups 4, 5, and 6 in Figure 1). After 3 years of organizational experience, however, organizational commitment showed a moderate increase, with an independent sample *t* test between Subgroup 6 and Subgroup 7 yielding $t(43) = 1.27$, $p = .20$, Cohen's $d = –.27$. Altogether, the changing patterns of organizational commitment observed in R&D professionals with different levels of tenure supported our expectation of a U-shaped relation between organizational commitment and tenure.

In contrast, the relation between tenure and professional commitment was more complicated and was characterized by substantial fluctuations (see Figure 1). However, when we examined together the two lines representing organizational commitment and professional commitment, it became apparent that until 12–18 months of tenure, organizational and professional commitment moved in opposite directions. In Subgroup 1, organizational and professional commitment were at the same level, and both were high. In Subgroup 2, organizational commitment showed a slight increase, whereas professional commitment showed a decrease from the previous tenure group. After 6 months (Subgroup 3), organizational commitment dropped substantially, which seemed to be complemented by a significant increase in professional commitment; an independent sample *t* test of professional commitment scores between Subgroup 2 and Subgroup 3 yielded $t(49) = 1.96$, $p = .05$, Cohen's $d = –.39$.

To validate these early phase dynamics following organizational entry, we performed a series of exploratory, post hoc regression analyses using different time periods to include different subsamples. The results revealed that when we limited our analysis to the first 14 months of organizational tenure ($n = 93$), both organizational and professional commitment showed curvilinear (cubic function) patterns that were significant at the .10 level ($R^2 = .03$ for both organizational and professional commitment). The curvilinear effects were in opposite directions with comparable effect sizes ($\beta = 2.62$ and $–2.79$, respectively, ps $< .10$), indicat-

TABLE 1. Levels of Organizational and Professional Commitment Across Different Levels of Tenure

Variable	Subgroups With Different Levels of Organizational Tenure						
	1	2	3	4	5	6	7
n	34	24	27	43	31	24	21
Organizational tenure (in months)	1–2	3–6	7–12	13–18	19–24	25–36	37+
Organizational commitment[a]	5.28	5.39	4.56	4.62	4.64	4.74	5.25
Professional commitment[a]	5.19	4.83	5.38	4.89	5.00	4.76	4.86
t	0.51	2.14	–2.91	–1.14	–1.27	–0.05	1.29
df	33	23	26	42	30	23	20
p	.61	.04	.00	.26	.21	.96	.21
Effect size (Cohen's *d*)	0.08	0.40	–0.50	–0.18	–0.22	–0.01	0.19

[a]Organizational and professional commitment scores are based on items adapted from Mowday's Organizational Commitment Questionnaire (OCQ; Mowday, Porter, & Steers, 1982), which participants rated on a 7-point Likert-type scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*).

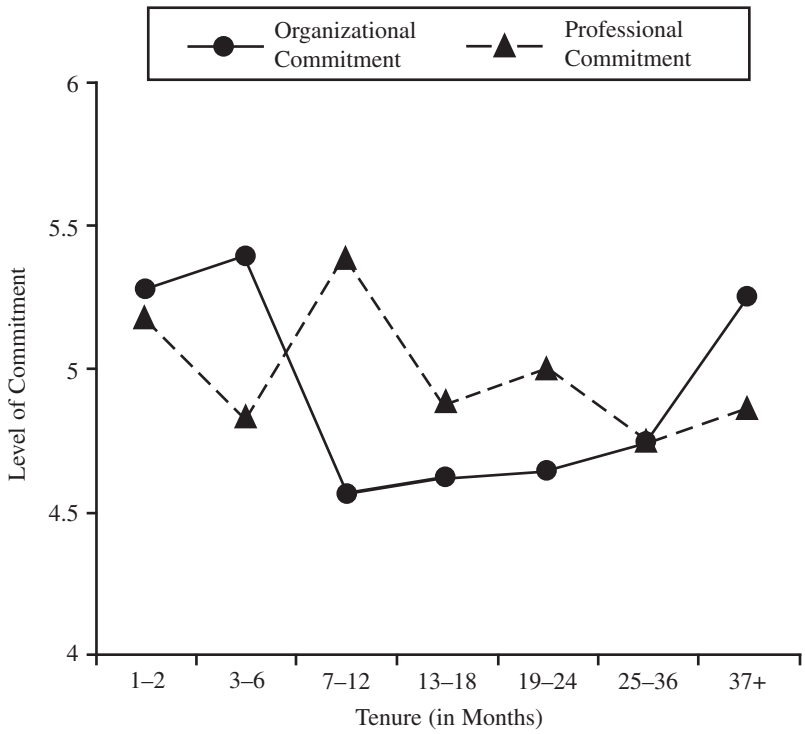

FIGURE 1. Complementary dynamics between organizational commitment and professional commitment.

ing that the curvilinear functions for organizational and professional commitment were approximately the same but in reverse directions. Overall, the results of the present analysis suggested that the complementary dynamics between organizational and professional commitment may occur only at the initial phase of organizational socialization—perhaps up to 12–18 months after organizational entry—and are followed by stabilization of professional commitment and recovery of organizational commitment in the long term.

Discussion

Despite numerous empirical studies on the issue of conflict or compatibility between organizational and professional commitment (Bartol, 1979; Brierley, 1996; Gouldner, 1957; Leong et al., 2003; Wallace, 1993), to our knowledge researchers have previously only attended to whether the two commitments are either positively or negatively related, effectively ignoring the possibility of a

dynamic relation between them that evolves over time. In this study, we attempted to provide a more sophisticated explanation of how the two commitments evolve and complement each other over time, introducing tenure as a key moderating variable of the relation between the two forms of commitment.

As Figure 1 shows, organizational and professional commitment followed opposite patterns in their changes over the first 12 months of tenure. This pattern raises the possibility that professionals who, at the beginning of their organizational socialization, experienced unmet expectations (i.e., reality shock) and the accompanying low organizational commitment increased professional commitment to fill the void in their career orientations. In other words, the R&D professionals who were not satisfied with their organization changed their career orientations toward professional engagement. However, about 2 years after entry, the difference between organizational and professional commitment was not significant, and 3 years later organizational commitment was rising again but had not regained the level observed in the first period (as other researchers have indicated; see Meyer & Allen, 1997). This opposite pattern of changes between organizational and professional commitment over the first 12 months of tenure supports our expectation of complementary dynamics between the two types of commitment.

Post hoc regression analyses indicated that the complementary dynamics between organizational and professional commitment were more pronounced during the first 14 months after organizational entry than during later periods of organizational life, when levels of organizational and professional commitment appeared to stabilize and even move together (see the results for Subgroups 4, 5, 6, and 7 in Table 1 and Figure 1). For the current sample of highly educated R&D professionals, organizational and professional commitment seemed to complement each other during the first 1 to 1.5 years of organizational socialization. The results also suggest that these professionals may have experienced psychological tensions in maintaining the balance between organizational and professional commitment in this early phase.

Consistent with prior studies of organizational socialization (Meyer & Allen, 1997; Veninga & Spradley, 1981), our results indicated that levels of organizational commitment of R&D professionals demonstrated U-shaped changes over time (as observed in different tenure subgroups). The initial drop in organizational commitment of new organizational recruits may be the result of initial unrealistic optimism and subsequent disappointment (T. W. Lee et al., 1992). Therefore, managers of R&D divisions and teams may find it useful to pay special attention to their professional employees who are in the encounter stage (from entry to approximately 6 months after entry). For example, it would be advantageous for managers to promote a sense of balance between organizational and professional commitment in highly educated professionals. Managers could help professionals achieve this balance through the implementation of organizational practices such as realistic job previews, dual-ladder career development systems (technical vs. managerial), and mentorship programs (Gunz & Gunz, 1994).

To our knowledge, we are the first researchers to investigate empirically the tenure-dependent dynamics of organizational and professional commitment among PhD holders, a special group of professionals who are highly committed to their professions because of intensive socialization and socially acknowledged expertise in their disciplines. Drawing on the findings that level of education is negatively related to organizational commitment and positively related to professional commitment (Mathieu & Zajac, 1990; Wang & Armstrong, 2004), one may expect that professionals with PhDs would have high professional commitment and relatively low organizational commitment. The R&D professionals with PhDs who participated in our study reported slightly higher professional commitment than organizational commitment (M = 5.00, SD = 1.21, and M = 4.88, SD = 1.07, respectively), but the difference was not statistically significant, $t(203) = -1.11$, $p = .27$. In addition, levels of organizational and professional commitment of this highly educated sample were comparable to those reported by participants in studies of project managers and internal auditors, in which only 1–2% of the sample were PhD holders (Kwon & Banks, 2004; Wang & Armstrong). Because the present study is, to our knowledge, the first to focus on PhD holders, it is premature to conclude that PhD holders are not different, in terms of their professional and organizational attitudes, from other professionals with fewer educational credentials. The literature in this area would benefit from further empirical investigations of the potential uniqueness of PhD-holding professionals.

Caution is in order when interpreting the present findings because of several limitations of the present study. First, the results represent a cross-sectional picture of what is essentially a longitudinal phenomenon: the impact of organizational tenure (socialization stages) on the relation between organizational and professional commitment. For this reason, the observed pattern may have resulted from cohort effects, history, age, or other demographic characteristics (Rosenthal & Rosnow, 1991). For example, organizational commitment is a significant correlate of turnover (Somech & Bogler, 2002), and the higher level of organizational commitment among professionals with longer tenure may occur because less committed employees are more likely to leave the organization. Nevertheless, cohort effects based on differences in age or organizational experience could be relatively small because we observed the meaningful dynamics between organizational and professional commitment over a relatively short timespan and in a sample of professionals who had 1–14 months of tenure. Chi-square difference tests indicated that participants did not differ significantly by age, academic disciplines, country of PhD education, or prior work experience (all ps > .30). In addition, HR managers reported that there were no substantial changes in HR practices or other organizational incidents for several years prior to collection of the present data that could have created meaningfully different histories or organizational experiences among professionals in the early stages of organizational socialization. However, further validation of the present findings using a longitudinal design or cohort analysis is necessary. Because longitudinal studies suffer severely from gamma changes in participants' cognitive structure (Vandenberg & Self, 1993), an adequate valida-

tion of the present reconceptualization of dynamics of organizational and professional commitment must be based on a longitudinal design with multiple cohorts in different stages of professional development.

Second, the reliability of the present professional commitment measure was only marginally acceptable ($\alpha = .69$). This marginal level of reliability indicates that the measurement error associated with this scale was not negligible (Rosenthal & Rosnow, 1991), which could account for the ambiguous results we observed with professional commitment. This shortcoming presents the need to develop further measures that are reliable and meaningful in assessing commitment with respect to aspects of life such as career and organization.

Third, employees may have had other types of commitment, such as religion or family, that affected the dynamics between organizational and professional commitment. However, we believe that participants in the present study, all of whom were R&D professionals with PhDs, were so heavily invested in their professions that the development of a successful career within either their organization or their profession (or both) constituted a critical priority in their lives, independent of family or other nonwork issues.

Fourth, we did not explore possible carryover effects from prior job experiences on the relation between organizational and professional commitment. This is mainly because most of the individuals in the present sample did not have any meaningful prior job experiences other than research-related positions such as postdoctoral work. The complementary dynamics between organizational and professional commitment that we observed may take different forms depending on the positive or negative nature of individuals' prior organizational experiences. It is logical to assume that prior experiences shape individuals' attachment to their professions and cause them to develop a certain attitudinal orientation toward organizational contexts. This issue requires further attention by researchers.

Last, because we collected the present data in Korea, a question arises with respect to the external validity or generalizability of the present findings to individuals in other countries with different organizational or societal cultures. In this regard, Gomez-Mejia (1984) found that professionals' work-related behaviors and attitudes were influenced to a great extent by their professional culture rather than their societal culture, suggesting more similarities than differences among countries. Moreover, the majority of individuals in the present sample obtained their PhDs from Western countries such as the United States; thus, their professional orientations and attitudes were likely more in line with the international norms and standards of their professions rather than with the local culture.

Although this study was based on cross-sectional data—and thus the findings are open to alternative explanations such as cohort effect—it is nevertheless the first study to indicate the possibility of a dynamic relation between organizational and professional commitment for R&D professionals at different stages of organizational socialization. Researchers have previously focused on the conflicting or compatible relation between organizational and professional commitment, as

well as on the moderators of this link (Lee et al., 2000; Tam et al., 2002). In this study, we propose a new direction for this literature, highlighting the critical role of the time factor: organizational and professional commitment develop a dynamic relation that is shaped by the amount of time one spends in the organization. This conceptual orientation and this empirical finding resonate with Katzell's (1994) argument that relations among variables can change with the flow of time, making it crucial for industrial and organizational psychologists to take this trend into account in their research. Because in the current knowledge-driven economy, many careers are becoming professions instead of occupations (as defined by Kerr et al., 1977), the issue of balancing organizational and professional commitment is becoming a critical concern for many employees. Unfortunately, compared with our fairly well-developed empirical and conceptual understanding of organizational commitment, our understanding of professional commitment, particularly in regard to changes over time or at various career stages, is relatively limited. Future researchers could investigate the question of whether diverse professions (e.g., medicine, law, accounting) and different types of organizations (e.g., professional, for-profit, bureaucratic) engender unique dynamics between organizational and professional commitment. In addition, it would be fruitful for researchers to go beyond the bifurcated notion of organizational and professional commitment and integrate into their research additional sources of commitment, such as the work group or family, as well as other nonwork issues that may concern professionals and affect the dynamics of organizational–professional commitment at work.

AUTHOR NOTES

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Received December 5, 2005
Accepted August 17, 2006

APPENDIX
Items Used to Measure Organizational and Professional Commitment

No.	Item
1.	I am proudly talking to others about this company (profession).
2.	I do not feel a sense of belonging to my company (profession).[a]
3.	I often think that it was a mistake on my part to choose this company (profession) over others I had considered.[a]
4.	I do not feel emotionally attached to this company (profession).[a]
5.	I would be very happy to spend the rest of my career with this company (profession).

[a]Reverse coded.

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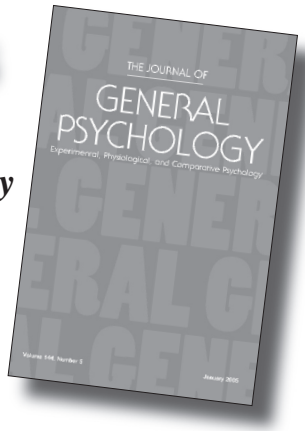

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