

# Unpacking Prior Experience: How Career History Affects Job Performance

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As individuals change jobs more frequently, it is increasingly important to understand what they carry from their prior work experience that affects their performance in a new organizational context. So far, explanations about the imperfect portability of experience have primarily been about firm specificity of knowledge and skill. We draw on psychological theory to propose additional sociocognitive factors that interfere with the transfer of knowledge and skill acquired from prior related work experience. As we hypothesized, we find that task-relevant knowledge and skill mediates the relationship between prior related experience and job performance and that it acts as suppressing mediator of a negative direct relationship between prior related experience and current job performance. We also find that the positive effect of prior related experience on task-relevant knowledge and skill is attenuated by higher levels of experience within the current firm.

*Key words:* experienced-based learning; organizational boundary crossing; work experience; job performance; firm-specific knowledge; career history

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People are weighed down by the baggage they bring in . . . those hired from other [insurance] carriers were the least successful.

—Claims department manager, InsurCo.

## Introduction

The growing instability of the employment relationship has been the subject of intense scrutiny (Arthur and Rousseau 1996, Cappelli 1999, Hall 2002). Scholars have explored implications of the new employment models for organizational identification (Rousseau 1995), employment practices (Cappelli 1999), and the patterns and status of managerial careers (MacDuffie 1996). In post-industrial careers, fewer people follow stable or predictable career patterns within one organization (Hall 2002, O'Mahony and Bechky 2006), and their career experiences are increasingly likely to occur across, rather than within, firm boundaries. In the late 1970s, Americans were estimated to have an average of seven employers in their working lifetimes (Kolb 1984). By 2005, the U.S. Bureau of Labor Statistics had found that the average American worker born in the later years of the baby boom had 10.5 employers by age 40.<sup>1</sup> Experience in a single firm, therefore, captures only a fraction of the total work experiences of most individuals.

The corollary to a more mobile workforce is the hiring of more experienced workers, but what do organizations get when they hire experienced workers? Experienced workers can bring in diverse knowledge that enables innovation and performance (e.g., Almeida et al. 2003, Rao and Drazin 2002). Yet most organizations do not explicitly hire to gain diverse knowledge. Instead, organizations seek employees whose prior work experience is similar to the current needs of the organization because they expect that these employees will bring knowledge that enables them to be immediately productive (Rynes et al. 1997). At the same time, almost all research on the relationship between work experience and job performance has considered only experience within the current firm, overlooking the importance of work experience acquired in prior firms (Goldsmith and Veum 2002, Quinones et al. 1995). Indeed, empirical investigation of the relationship between prior work experience and current job performance has been very limited despite its importance to organizations. Therefore, the question of how related experience (e.g., in the same industry or occupation) transfers across firm boundaries has not been adequately addressed.

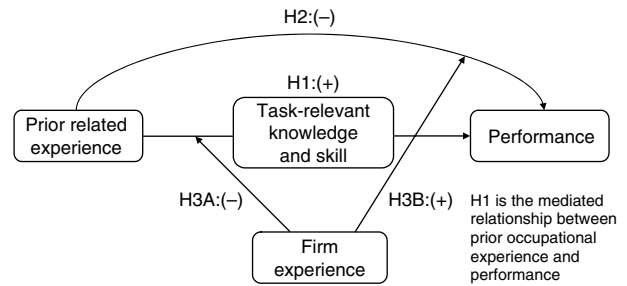
Prior related experience is believed to confer valuable knowledge and skill that can be applied to the current

work context (Schmidt et al. 1986); however, empirical findings have been mixed (McDaniel et al. 1988). Even when occupation remains constant, job performance can improve or worsen with a change in employers (Allison and Long 1990, Groysberg et al. forthcoming). One reason for a lack of consistency in results may be greater complexity in the relationship between prior work experience and performance than has been previously examined. Most studies of experience and performance treat experience as a proxy for knowledge (Quinones et al. 1995). However, prior work experience may include not only relevant knowledge and skill, but also routines and habits that do not fit in the new organizational context. Indeed, these routines and habits may limit the positive effect of prior experience on performance, suggesting that when individuals move across firm boundaries, their prior experience may not be wholly beneficial.

By exploring the relationship between prior related experience and current job performance, we extend inquiry about what it is that workers carry with them across firm boundaries and begin to reconcile seemingly inconsistent findings. Along with knowledge and skill, experienced workers may bring a “repertoire of cognitions and behaviors acquired from prior jobs,” (Beyer and Hannah 2002). These cognitions and behaviors are part of a career imprint (Higgins 2006) that can influence workers’ assumptions about how work should be done. We propose that experienced workers may carry knowledge and skill that contributes to an organization’s goals, especially when there is similarity between the prior experience and the current work. However, workers also may transfer cognitive and behavioral rigidities in the form of schemas and scripts (Gioia and Poole 1984, Markus and Zajonc 1985) that can impede performance in the new firm, as the opening quote of this paper suggests.

We address the issues arising from the transfer of prior experience across firm boundaries using career history data from all applicants to the call centers of a major U.S. property and casualty insurance firm. We analyze data from unsuccessful applicants as well as those who were hired, in order to account for sample selection biases when examining the relationship between prior experience and performance. We conceptually and methodologically distinguish between prior related experience and task-relevant knowledge and skill, as defined by the current organization. By distinguishing prior related experience from task-relevant knowledge and skills, we are able to disentangle the positive and negative effects of prior related experience on performance. Specifically, we predict and find that prior related experience has a positive effect on job performance through the mediator of knowledge and skill; however, it has a negative direct effect on job performance once knowledge and skill is accounted for. To support our contention that this negative direct effect of prior

**Figure 1 Overview of Model**



experience on performance is related to cognitive and behavioral rigidities, we perform several supplementary analyses that show that adaptability and cultural fit moderate this relationship. Last, we find that the effects of prior related experience on task-relevant knowledge and skill are moderated by firm tenure, such that the effects of prior related experience on task-relevant knowledge and skill in the current firm diminish the longer a person is employed at the current firm. Figure 1 provides an overview of the relationships that we propose and test in this paper.

## Theory and Hypotheses

### Prior Related Experience, Knowledge and Skill, and Performance

Organizations hire on the basis of work experience because they expect experienced workers to perform better (Rynes et al. 1997). Indeed, prior experience is often used by employers as an expedient proxy for the knowledge and skill that contributes to performance. Similarly, researchers studying the relationship between experience and performance often treat work experience as a proxy for knowledge (Almeida et al. 2003, Huckman and Pisano 2006), yet the two constructs (experience and knowledge) are theoretically and practically distinct (Quinones et al. 1995). Task-relevant knowledge can result from work experience, but it is not the only outcome. Prior work experience can also lead to habits, routines, and other cognitions and behaviors that may or may not be useful for performance when applied in a different context. Moreover, not all work experience generates equally useful knowledge and skill; jobs that involve similar work activities are more likely to provide opportunities to develop relevant knowledge and skill that can be applicable to performance in a new context than jobs with unrelated work activities.

First, it is important to understand the relationship between work experience and performance. Work experience may improve performance, but only indirectly via relevant knowledge and skill, because prior work experience provides the opportunity for individuals to acquire relevant knowledge and skill that can, in turn, enhance performance in the job (Borman et al. 1993, Schmidt

et al. 1986). Although researchers tend to assume that experience operates through knowledge and skill development to influence performance, there are only a few studies that have empirically distinguished between work experience and job knowledge and their effect on performance (Borman et al. 1993, Schmidt et al. 1986). These studies, on samples of military personnel, find a positive indirect relationship between work experience and performance mediated by job knowledge. We build on the ideas advanced in these studies, that experience is different from knowledge and that knowledge is a key mediator of the relationship between experience and performance. However, we differ from this past research in that these studies only include experience within the current job and organization; they do not address the question of portability of experience across firm boundaries.

One important assumption in determining whether prior experience acquired in one organizational context leads to task-relevant knowledge and skill that can be transferred to a new context is the *relatedness* of that prior experience. Prior related jobs, i.e., those comprised of similar work activities, should provide portable experience in that they impart knowledge and skill that a worker can transfer and apply to a new job. The transfer of learning at the individual level from one context to another has primarily been studied in cognitive psychology and the psychology of education (e.g., Barnett and Ceci 2002, Cormier and Hagman 1987, Ellis 1965, Singley and Anderson 1989). This body of work is almost exclusively experimental, testing the ability to apply training in a cognitive task or problem to related tasks or problems. Though there is some debate about the ease of transfer (Barnett and Ceci 2002), the consensus is that transfer is more likely to be attempted when the subject perceives similarity of tasks or contexts. Further, knowledge and skill is more likely to be successfully transferred when there are real structural similarities between the tasks or problems, i.e., when the same knowledge and skill is needed to perform the task or solve the problem (Cormier and Hagman 1987, Singley and Anderson 1989).

Prior experience may be related because it is acquired when people work in the same industry or occupation before joining the current firm. Indeed, prior research has found that employers are willing to pay a premium for within-industry or within-occupation experience (Ang et al. 2002, Goldsmith and Veum 2002, Parent 2000). These studies suggest that human capital may be portable across firm boundaries, but within industry or occupational boundaries. That is, prior work experience that is related through similar tasks and problems may contribute to performance. This notion is consistent with theoretical work in personnel psychology that expands the concept of experience to include multiple levels of specificity, such as task, firm, and industry (Quinones et al. 1995, Tesluk and Jacobs 1998).

In sum, the primary mechanism in the transfer of experience is the acquisition and application of task-relevant knowledge and skill. Prior work experience provides the opportunity for knowledge acquisition, and prior *related* work experience provides not only opportunity but also greater potential applicability of that knowledge to the new context. Further, prior related work experience may increase performance only indirectly via related knowledge and skill, because related work experience provides the opportunity for individuals to acquire relevant knowledge and skill that can in turn enhance performance in the current job (Borman et al. 1993, Schmidt et al. 1986). Therefore, as shown in Figure 1, we expect that prior related work experience will have a positive indirect effect on performance through the mechanism of task-relevant knowledge and skill.

*HYPOTHESIS 1. Prior related experience will have a positive, indirect effect on job performance through its effect on task-relevant knowledge and skill.*

### **Negative Aspects of Prior Related Experience**

Although we expect that prior related experience will enhance job performance through increased knowledge and skill, there are other components of prior experience that might partially offset these benefits when this experience is acquired in other organizations. Habits, routines, and scripts that contribute to performance in one organizational context may detract from performance in a different organizational context. That is, the relationship between prior related experience and performance may not be wholly positive. Indeed, despite the common assumption that prior related experience will improve performance, past research findings have been mixed about the effect of work experience on performance. On one hand, McDaniel et al. (1988), in one of the only large sample studies associating prior related work experience with performance, find a positive correlation between time in occupation and performance; on the other hand, Castilla (2005) finds no significant relationship between prior occupational or industry experience and performance. Even for studies examining the relationship between current job experience and performance, empirical results have been mixed, with most studies showing positive correlations (Borman et al. 1993, Quinones et al. 1995, Schmidt et al. 1986) but some showing no relationship or a negative relationship (Medoff and Abraham 1980).

Difficulties in finding a consistent relationship between experience and performance could be due to the fact that few studies distinguish between experience and knowledge and skill. Prior related experience may impart task-relevant knowledge and skill, as we hypothesized earlier, but individuals are also likely to acquire expectations about how work should be done and what behaviors are appropriate (Adkins 1995, Beyer and Hannah

2002) that may be counterproductive in a new organization. In this section, we argue that along with relevant knowledge and skill, experienced workers may also bring rigidities that act as baggage, weighing down their responsiveness or ability to reflect in the new situation. Such baggage may actually have a negative effect on performance, resulting in a negative direct relationship between prior related experience and performance once the benefits of knowledge and skill are accounted for.

Related work experience could have a negative effect on performance through institutional mechanisms (i.e., norms) or cognitive mechanisms (i.e., schemas and scripts) that lead to rigidities in behavior or thinking. First, working in related jobs over long periods of time may indicate that an individual has become invested in the institutional norms and standards of a particular occupation or industry (McCall 1990). Occupational norms and standards are well defined enough to result in communication difficulties across occupational boundaries (Bechky 2003, Van Maanen and Barley 1984). Particularly for occupations that are more professionalized (Abbott 1991), individual adherence to institutional norms and practices may be more strongly mandated and become taken for granted. Similarly, industry characteristics could become increasingly salient over time and across positions held within an industry. Though firms vary within industries, there are industry-level norms and values (Chatman and Jehn 1994) that can become more ingrained as experience in an industry increases, leading to fixed assumptions about how work activities should be approached. Occupational and industry experience is situated in organizations, which have their own organizational norms. Thus, the experience of working in one organization can be quite different from working in a similar position at another organization.

Second, extended and consistent experience can create cognitive schemas or scripts (Gioia and Poole 1984, Markus and Zajonc 1985). Schemas and scripts are cognitive frameworks that organize and encode experience to make sense of events and guide behavior and are developed by repetition of tasks or behaviors (Gioia and Poole 1984, Markus and Zajonc 1985). Occupational work is defined by commonalities across firms in the way tasks are divided (Abbott 1989), so occupational experience is comprised of the repeated practice of tasks, which forms and reinforces schemas and scripts. Scripts in particular can be applied automatically, that is, without reflection (Gioia and Poole 1984).

Although we believe that norms, schemas, and scripts can have a similar effect on the transfer of learning, we should clarify that norms are distinct from schemas and scripts. Specifically, norms are a manifestation of culture, whereas schemas and scripts are essentially cognitive habits. Though schemas can result from adherence to organizational norms, they can also come from idiosyncratic experiences. Norms and schemas can both

lead to nonreflective behavior, which is at the heart of our rigidity argument, but they have different origins.

Both institutional and cognitive mechanisms can result in negative transfer of learning (Singley and Anderson 1989, Woltz et al. 2000) that can hinder performance. Negative transfer of learning occurs when previously acquired cognitive structures are inappropriately used in a new situation such that performance suffers (Gick and Holyoak 1987). Thus, negative transfer refers not to diminished transfer of learning but to the misapplication of skill that interferes with effective performance. An individual is more likely to experience negative transfer between two situations when the situations share surface similarities but have underlying structural differences (Novick 1988, Woltz et al. 2000). Jobs in the same occupation or industry are similar on their surface but can often have true cultural or operational differences. For example, large insurers are very careful about the dollar amount of claims paid out (Cummins and Weiss 1993), and it is common practice to negotiate with insured customers for a settlement amount. A claims adjuster might take this model of industry practice to a new insurance company that charges a premium price and differentiates on service, where haggling with customers is contrary to the new firm's customer service norms. Haggling behaviors may not be valued in this new setting, yet they may be very difficult for an adjuster to give up if it has become part of the mental model of how insurance companies make money or how a competent adjuster behaves. Performance can suffer as a result, as illustrated by the quote at the beginning of this paper. Further, another manager at this organization gave an additional example that illustrates this point. He described an incident with an adjuster who had been hired from another insurance company and responded to an insured customer's complaint about the tardiness of an appraiser by giving the insured customer the appraiser's phone number. The manager saw this level of service as completely inadequate and said that the adjuster should have called the appraiser himself and "read him the riot act." He went on to explain that the company's high expectations regarding customer service were hard for many employees coming from other insurance firms to adapt to. Thus, cognitive schemas and scripts, as well as norms from prior experiences, may conflict with a new employer's expectations and result in a negative effect on performance once knowledge and skill is accounted for. As shown in Figure 1, we expect that:

*HYPOTHESIS 2. When task-relevant knowledge and skill is controlled for, prior related experience negatively affects performance.*

### **Moderating Role of Firm Experience**

The central goal of this study is to unpack the effects of prior related experience on task-relevant knowledge

and skill and subsequently on job performance. However, it is also important to understand how current firm experience—the most common way that researchers have studied the effects of experience on performance (Quinones et al. 1995)—interacts with prior related work experience to affect both task-relevant knowledge and skill and job performance. First, as we argued in Hypothesis 1, we expect that prior related experience will provide task-relevant knowledge and skill that can be used in the current firm. In this way, learning in other firms can substitute for learning within the current firm. However, they are imperfect substitutes in that differences in context lead to differences in learning, and current firm experience will provide learning that is a closer fit to the demands of the current job, decreasing the importance of prior experience to knowledge and skill.

As an employee responds to situations and problems within a current firm, feedback and learning are situated in context, avoiding the need to transfer learning with its inherent inefficiencies and potential inaccuracies (Greeno et al. 1993). Within-firm experience should also be more salient simply because it is more recent, with local cues to signal its relevance. For example, investigation of claims is a standard task for insurance claims adjusters;<sup>2</sup> however, claims investigations can encompass different activities for different types of policies and reasons for loss. Faced with a new type of investigation, an employee with experience within the current firm can draw on both within-firm experience and prior experience when learning about the new type of investigation, but should be more likely to use the within-firm experience because it is more salient and has more obvious similarities to the task at hand. In other words, task-relevant knowledge and skill become increasingly tailored to firm needs as firm experience increases (Barth 1997, Becker 1962, Groysberg et al. forthcoming), so the effect of prior experience on knowledge and skill diminishes in importance. As shown in Figure 1, we expect that:

**HYPOTHESIS 3A.** *The interaction between prior related experience and firm experience on task-relevant knowledge and skill is negative, such that the positive relationship between prior experience and task-relevant knowledge and skill is weaker for employees with more experience within the firm.*

Second, as individuals become increasingly socialized into a firm and become conversant with the firm's unique culture and practices (Van Maanen and Schein 1979), the current firm replaces the profession or industry as the salient institutional referent. Similarly, cognitive models that employees hold can be challenged and replaced with scripts and schema that are more congruent with the new environment (Bartunek and Moch 1987). Accordingly, an individual's behavior will become increasingly tailored to a particular firm's notion of good practice,

instead of adhering to the general standards of the occupation or industry. Therefore, cognitive or institutional baggage that an individual carries from previous experiences will become less burdensome as the individual becomes socialized into the new firm. Thus, as shown in Figure 1, we expect that:

**HYPOTHESIS 3B.** *The interaction between prior related experience and firm experience on performance is positive, such that the negative relationship between prior experience and performance is weaker for employees with more experience within the firm.*

## Methods and Data

### Research Setting

To address these hypotheses, we conducted a field study in the call centers of a major U.S. property and casualty (P&C) insurance firm. InsurCo (a pseudonym) operates two call centers (eastern and western) to handle telephone-based claims. There are three major non-supervisory line jobs in these centers: claims adjusters (Adjs), claims assistants (CAs), and customer service representatives (CSRs). The data used in this study come from several types of firm archival records. Most of the independent variables, including prior work experience, come from résumés and application forms, available for all applicants to the call centers since the centers opened. There were a total of 1,371 applicants across the two centers. After accounting for selection into the organization and listwise deletion of missing data, our analysis sample totaled 771 observations for the sample including all applicants and 197 observations for those hired. Dependent variables and independent variables pertaining to employment at InsurCo come from human resource (HR) records of annual performance reviews and competency assessments for all current and former employees.

### Dependent Variables

**Task-Relevant Knowledge and Skill.** We use an archival rating of employees' most recent job competency evaluation to operationalize their task-relevant knowledge and skill. The organization initiated annual competency assessments to give workers a purely developmental evaluation of knowledge and skill. Because the ratings are generated by the organization as part of its normal operation, they represent knowledge and skill that is valued by InsurCo specifically. In these assessments, supervisors and HR managers evaluate work product (e.g., case files, recorded phone interactions, etc.) to rate workers on areas of competence that are specific to their particular jobs. Competencies include technical knowledge and skill (e.g., investigation) and general work skills (e.g., teamwork). Each area is rated on a scale of 1 to 5, with 5 being the highest level of

competence. *Knowledge and skill* is an average of the ratings for 11 dimensions of competence. To verify that the 11 knowledge and skill areas could be aggregated into a single measure, we conducted a principal factors analysis for the 11 items and found that all items loaded on a single factor; i.e., only one factor had an eigenvalue greater than 1. This single factor accounted for 91% of the total variance; factor loadings ranged from 0.64 to 0.88 (average of 0.81). The Cronbach's alpha for these 11 items was 0.95.

*Performance.* We measure performance in this study using the organization's annual performance review ratings. Annual review ratings are a commonly used measure of worker performance (Campbell et al. 1993) and allow for comparison across workers in different jobs within the same organization (Grote 1996). At InsurCo, reviews are done annually at the worker's anniversary date. There is a standardized form for the annual reviews that calls for assessing the employee's achievement versus individual goals. The evaluation is summarized with a rating of how well the worker has met the requirements of the job. This rating distills performance into a single score, ranging from the best rating of "clearly exceeds" to the worst rating of "development needs." The category of rating is used to determine the worker's merit pay increase, and it is indicative of performance that the organization values, making it an ideal measure for this study.

Because the annual review directly affects pay, it is the result of a formal and structured process. The supervisor completes the initial draft of the review, which is then revised by upper levels of management and the HR director; they then ensure that ratings are comparable across supervisors and that they comply with the distributional requirements of the organization. Workers have the opportunity to respond to or dispute annual review ratings before they are finalized. We used the employee's most recent performance review rating and quantified it with an ordinal number from 6 ("clearly exceeds") to 1 ("development needs"), which was used as a performance outcome measure. *Performance* records the number corresponding to the last rating the worker received prior to the end of data collection.

It should be noted that annual performance reviews and competency assessments are conceptually and operationally separate at InsurCo. The competency assessments are separated in time from annual performance reviews so that the employee and the firm can focus on development of knowledge and skill apart from performance and pay, and these assessments are not a formal part of the performance evaluation process. Also, the two assessments involve different raters and have different purposes. The performance review is used to reward workers, whereas the competency assessment is used to highlight knowledge and skill deficiencies and strengths.

Though the measures are related, as we hypothesize, each measure is designed by the organization to capture the construct it represents in this study. The bivariate correlation between these two measures is 0.54, suggesting that they are related but empirically distinct and that the organization is able to distinguish between them.

## Independent Variables

*Prior Related Experience.* The primary independent variables of interest in this study pertain to prior related work experience. Employees across the two call centers have a wide variety of work experience profiles—from many years of related experience to no related experience—making this population well suited to the questions in this study. Consistent with previous studies (e.g., Castilla 2005, Goldsmith and Veum 2002, McDaniel et al. 1988, Parent 2000), we focus on prior experience that is related through industry or occupation, as these are two important sources of task-relevant knowledge and skill. For example, prior occupational experience as a CSR for a bank's call center provides a person with basic phone service skills that could be valuable when he or she joins the call center for an insurance firm. Such skills should be applicable to firms in any industry because of the generalizable nature of phone customer service skills.

Prior industry experience might also contribute to task-relevant knowledge and skill. For example, prior experience in the insurance industry, regardless of one's occupational role, may expose an individual to terminology, principles, and concepts that would be relevant to the individual's next job in the insurance industry. Though industry and occupational experience are related, they are distinct for most occupations. Relevant to this study, CAs are commonly found in property and casualty insurance firms, but they are also found in health insurance firms, third-party adjusting services, and government agencies.

To assess prior experience, we reconstructed the work history of each applicant from his or her employment application and résumé. For each prior job, we coded industry and occupation as the same or different from the job currently held at InsurCo and used this coding to develop two variables that capture prior experience. One of the authors and two independent raters coded more than 7,200 work history records into industry and occupation categories. The single measure intraclass correlation coefficient for the three raters was 0.93 for the industry variable and 0.86 for the occupation variable. Consistent with prior learning studies, all of these variables were logged to better fit the diminishing marginal value of experience (Argote 1999, Schilling et al. 2003).

First, *prior industry experience* measures the months of work experience in the property and casualty sector of the insurance industry prior to employment at InsurCo.

Often, the industry was included on the employment application or résumé, but in cases where it was not, we assigned each employer an industry. Our primary objective in coding for industry was to identify prior work experiences that were in the P&C insurance industry. We used two primary ways to code industry: (1) by noting North American Industry Classification System (NAICS) codes listed in Compustat for publicly held employers, and (2) by searching the World Wide Web for employers not listed in Compustat to ascertain if the employer's industry was P&C insurance. Additionally, in a number of cases, the industry was clearly not P&C insurance, based on the name of the firm (e.g., Galleria Auto Wash) or the occupation listed (e.g., waitress). For all applicants, the mean for this variable prior to log transformation was 31.0 months, and the standard deviation was 53.1 months. Excluding applicants who were not hired, the mean for this variable prior to log transformation was 38.0 months; the standard deviation was 56.7 months.

Second, *prior occupational experience* measures the months of work experience in the currently held occupation. Job titles vary across firms for the same types of work (Bielby and Baron 1986), and the same job title can entail different responsibilities across different organizations, so we held to restrictive criteria for assessing sameness of occupation. Adjusters were assessed to have prior occupational experience if they had previously held the job of CA, taking into account the alternative names for the Adj occupation appearing in generic job descriptions for Adjs (e.g., from the U.S. Bureau of Labor Statistics or job search websites such as Monster.com). For example, claims specialists and claims examiners are alternative names for Adjs. CSRs were assessed to have prior within-occupation experience if they provided telephone-mediated inbound customer service. Therefore, call center work that involved primarily outbound calling (e.g., telemarketing) was not considered the same occupation because the work did not involve service. Likewise, customer service work that was not phone mediated (e.g., retail sales) was not considered the same occupation because the activities involved in the work are considerably different. CAs had prior occupational experience if they provided clerical or processing support in the claims settlement process. The job titles claims coordinator, claims technician, and claims administrator were considered equivalent to CA.

In ambiguous cases, we made an attempt to assign an occupational category based on other available information. For instance, the job title claims representative is a common title for CAs, but it is also a common name for CSRs in insurance firms. We looked at the person's salary and previous and future jobs to determine if the person should be coded as an Adj or CSR. If this information was not available, occupation was treated as missing. The mean for the *prior occupational experience*

variable before log transformation was 23.3 months, and the standard deviation was 43.6 months. Excluding applicants who were not hired, the mean for this variable prior to log transformation was 23.8 months, and the standard deviation was 44.8 months.

*Firm Experience.* We use firm tenure to represent work experience within the firm. This variable measures the elapsed months between hire into the firm and the end of data collection (May 2003). *Firm experience* was also logged to account for diminishing returns to experience (Argote 1999, Schilling et al. 2003). The mean for this variable prior to log transformation was 48.0 months with a standard deviation of 47.1.

It should be noted that experience-based learning theory rests on the number of times a task is performed (e.g., Darr et al. 1995, Reagans et al. 2005), rather than a time-based measure such as tenure. Despite the limitations of a time-based measure of experience, using such a measure may better account for experience at the job rather than the task level. Jobs often have multiple tasks, all of which can be evaluated as part of overall job performance. A more aggregate measure of experience such as tenure allows us to consider nontask learning, e.g., learning about norms and firm-specific business practices that are central to this study. Therefore, this measure allows us to examine the transferability of experience in whole jobs and is well suited to this study, although it is limited in its examination of the mechanisms of learning at the task level.

*Controls.* We control for other variables that may affect skills and performance. In addition to *firm experience*, in all models of prior experience, we also control for *internal transfer*, a binary variable coded 1 if the worker transferred into her current job from another job within InsurCo, 0 otherwise. Internal transfers may be relatively good performers, given the higher-quality information available when selecting from within an organization.

We also control for whether an employee referral was associated with the worker's hire (*referral hire*). Employee referrals have been shown not only to increase the likelihood of entry into the organization, but also to improve the performance of the worker post entry (Castilla 2005). *Education* is the number of years of post high school education, which proxies general ability, a predictor of performance (Schmidt 2002). All applicants had high school degrees.

We control for location because our empirical setting is comprised of two different work sites opened at different times and situated in different labor markets (*Eastern Region* indicator). We control for job applied for or held (CA and CSR indicators; Adjs are the omitted category) because the jobs have different tasks and responsibilities that might be related to knowledge and skill and performance.

Additionally, we control for demographic variables such as gender and age. Gender (*female* indicator) affects many workplace outcomes, such as performance evaluation and selection (Castilla 2008, Heilman 1995, Reskin and Padavic 1994). Age in years also serves as a proxy for total years of work experience (e.g., Parent 2000).

### Analysis

To test the hypotheses, we estimate parameters of ordinary least squares (OLS) models with a correction for possible sample selection bias. All models are run with the Huber-White correction for standard errors that are robust to heteroskedasticity (Huber 1967, White 1980).

Sample selection bias can be an issue in studies of job performance. Selection bias issues are particularly important for studies that relate career history to job performance. People are selected based on their prior work experience, demographics, and other factors (Schmidt and Hunter 1998, Wilk and Cappelli 2003) that may affect performance, so a sample that includes only successful applicants would necessarily be biased, leading to biased estimates of the coefficients (Castilla 2005). In this paper, we wish to understand the relationship between prior work experience, knowledge and skill, and performance, but we only observe knowledge and skill and performance for those people who were actually hired by the organization. Fortunately, we have data on the entire applicant pool, so we can address this type of selection bias using two-stage models (Heckman 1976). Two-stage methods to correct for sample bias have been widely employed in labor economics, public policy, education, political science, and strategy. However, these methods have not been widely applied to the study of performance of individuals in organizations, though they are directly applicable.

In the first stage, the probability of being included in the sample is calculated. To choose the first stage selection variables, we consulted prior literature about selection methods (e.g., Schmidt and Hunter 1998, Wilk and Cappelli 2003). From this literature, we include occupational experience, industry experience, education, age, gender, job applied for, and whether the applicant was referred by an existing employee in the selection model. However, a number of these variables could also affect performance. Therefore, we include in the selection model the unemployment rate in the local labor market at the time of application,<sup>3</sup> an instrument necessary to identify the system of equations. Local unemployment can act as an instrument because it affects the probability of being hired but is largely exogenous to the individual's performance, apart from its effect on selection.

The main models are the second stage hypothesis-testing models, containing the predictors and dependent

variables of interest. These models use the probabilities generated in the first stage to weight the observations and correct for selection into the sample being analyzed.<sup>4</sup>

To test the mediation hypothesized in Hypothesis 1, we use a product of coefficients technique (MacKinnon et al. 2002, Sobel 1982) instead of the more commonly used Baron and Kenny (1986) technique, because the Baron and Kenny technique does not allow for the case of suppressing mediators (Kenny 2006, MacKinnon et al. 2000), as is hypothesized here. A suppressing mediator increases the magnitude of the relationship between the independent variable and the dependent variable instead of decreasing or eliminating it, such that including a suppressing mediator in a model reveals a direct relationship that was previously obscured. Hypothesis 2 suggests that knowledge and skill is a suppressing mediator and the negative direct effect of prior experience on performance is masked by the positive mediation through knowledge and skill (Hypothesis 1 and 2), making the Sobel (1982) test more appropriate for our purpose.

### Results

Table 1 contains descriptive statistics. Because we use multiple independent sources of data and analyses run both with and without applicants who did not become employees, sample sizes can vary considerably across variables. Therefore, we report descriptive statistics and pairwise correlations for samples with and without applicants who were not hired.

Table 2 reports the results for the performance models and the knowledge and skill models. The main models show the analyses of interest for this paper, and the selection models are shown below the main models.<sup>5</sup>

Table 2 shows analyses with performance and task-relevant knowledge and skill as dependent variables. Models 1 and 2 contain the main effects for prior occupational and industry experience, the first stage of the mediated model, on *knowledge and skill* and *performance*, respectively. Prior occupational experience is a positive and significant predictor of knowledge and skill (Model 1,  $\beta = 0.06$ ,  $p < 0.05$ ), although Model 2 shows that neither type of prior related experience directly predicts performance. However, the mediation hypothesized in Hypothesis 1 suggests that a positive effect for prior experience should operate only indirectly through the mechanism of knowledge and skill.

As reported earlier, we use a product of coefficients technique (MacKinnon et al. 2002, Sobel 1982) to test for mediation in Hypothesis 1. In this technique, an estimate of the mediating variable effect is calculated by multiplying the coefficients of the independent variable and the mediating variable. The effect is divided by the standard error of the indirect effect, and the result is



**Table 1 Descriptive Statistics**

	Mean	SD	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
Panel A: Employees ( <i>n</i> = 197)																	
(1) Performance	4.29	0.66															
(2) Knowledge and skill	3.04	0.49	0.54*														
(3) Prior occupational experience <sup>a</sup>	1.36	1.95	-0.12	0.08													
(4) Prior industry experience <sup>a</sup>	2.16	2.04	-0.07	0.05	0.64*												
(5) Firm tenure <sup>a</sup>	3.65	0.64	0.03	0.37*	-0.12	-0.10											
(6) Firm tenure × prior occ experience	4.83	7.07	-0.15*	0.10	0.97*	0.63*	0.02										
(7) Referral	0.60	0.49	0.09	-0.13	-0.03	0.06	-0.24*	-0.03									
(8) Internal transfer	0.23	0.42	0.00	-0.10	-0.32*	-0.18*	0.13	-0.30*	-0.03								
(9) Education	2.31	1.65	0.00	-0.11	0.15*	0.01	-0.16*	0.12	-0.09	-0.16*							
(10) Age	37.08	8.07	-0.21*	0.01	0.36*	0.25*	0.19*	0.40*	-0.10	-0.12	-0.10						
(11) Female	0.78	0.41	-0.06	0.04	-0.16*	-0.10	0.18*	-0.10	-0.05	0.02	-0.26*	0.01					
(12) Location	0.70	0.46	0.06	0.14*	-0.32*	-0.36*	0.23*	-0.28*	-0.12	0.01	0.12	-0.08	0.19*				
(13) Adjuster	0.97	0.16	0.12	0.05	0.00	0.06	-0.01	-0.01	0.07	-0.14*	0.03	0.02	0.07	-0.04			
(14) CSR	0.01	0.10	-0.12	-0.06	0.03	-0.03	0.04	0.05	-0.13	0.07	0.04	-0.05	-0.07	0.07	-0.63*		
(15) CA	0.02	0.12	-0.06	-0.01	-0.03	-0.05	-0.03	-0.03	0.02	0.13	-0.07	0.02	-0.03	-0.01	-0.77*	-0.01	
(16) Unemployment rate	3.61	0.63	0.00	-0.17*	0.09	-0.17*	-0.32*	0.00	-0.11	-0.04	0.08	-0.06	-0.17*	-0.08	-0.01	0.03	-0.01
Panel B: All applicants ( <i>n</i> = 771; pairwise correlations provided for variables applicable to employees only)																	
(1) Performance	n.a.	n.a.															
(2) Knowledge and skill	n.a.	n.a.	0.54*														
(3) Prior occupational experience <sup>a</sup>	1.48	1.91	-0.12	0.08													
(4) Prior industry experience <sup>a</sup>	1.76	2.01	-0.07	0.05	0.41*												
(5) Firm tenure <sup>a</sup>	n.a.	n.a.	0.03	0.37*	0.04	0.16*											
(6) Firm tenure × prior occ experience	n.a.	n.a.	-0.15*	0.10	0.56*	0.42*	0.51*										
(7) Referral	0.59	0.49	0.09	-0.13	-0.04	0.04	0.02	0.02									
(8) Internal transfer	0.06	0.24	0.00	-0.10	-0.16*	-0.04	0.37*	-0.05	0.00								
(9) Education	2.42	1.72	0.00	-0.11	0.08*	0.08*	-0.03	0.06	-0.08*	-0.09*							
(10) Age	37.34	8.57	-0.21*	0.01	0.19*	0.18*	0.00	0.16*	-0.04	-0.06	-0.02						
(11) Female	0.76	0.43	-0.06	0.04	-0.08*	-0.10*	0.01	-0.05	0.09*	0.01	-0.24*	0.02					
(12) Location	0.80	0.40	0.06	0.14*	-0.22*	-0.38*	-0.29*	-0.37*	-0.10*	-0.05	0.01	-0.04	0.13*				
(13) Adjuster	0.66	0.47	0.12	0.05	-0.09*	0.31*	0.39*	0.19*	0.05	0.13*	0.16*	0.05	-0.17*	-0.24*			
(14) CSR	0.27	0.44	-0.12	-0.06	0.17*	-0.27*	-0.36*	-0.16*	-0.10*	-0.13*	-0.12*	-0.05	0.13*	0.24*	-0.85*		
(15) CA	0.07	0.25	-0.06	-0.01	-0.14*	-0.09*	-0.10*	-0.08*	0.09*	-0.03	-0.08*	0.01	0.09*	0.02	-0.38*	-0.16*	
(16) Unemployment rate	3.51	0.73	0.00	-0.17*	0.17*	-0.03	0.11*	0.08*	-0.07*	0.03	0.01	-0.05	-0.04	-0.12*	-0.12*	0.13*	0.00

<sup>a</sup>Log transformed variable.  
 \*Significant at *p* < 0.05 level.

compared to a normal distribution to test for significance (see Sobel 1982). In Model 1, the coefficient for the effect of prior occupational experience on knowledge and skill is 0.06 (standard error [se] = 0.03), and in Model 3, the coefficient for the effect of knowledge and skill on performance is 0.86 (se = 0.08), which yields a test statistic of *z* = 1.97 (*p* < 0.05) and provides support for the mediation hypothesized in Hypothesis 1. If we test for mediation using a full model for knowledge and skill that includes the firm tenure interaction from Hypothesis 3A, the evidence for mediation becomes stronger (*z* = 3.75, *p* < 0.001).

Model 3 also shows the counterbalancing effects of knowledge and skill and prior occupational experience, supporting Hypothesis 2. Knowledge and skill is positively and significantly related to performance ( $\beta = 0.86$ , *p* < 0.001); however, the coefficient for prior occupational experience is negative and significant ( $\beta = -0.06$ , *p* < 0.05). This result provides support for our expect-

tation that when knowledge and skill is accounted for, the direct effect of prior experience on performance is negative.

Models 4 and 5 test for a moderating effect of firm experience on task-relevant knowledge and skill (Hypothesis 3A) and on performance (Hypothesis 3B). In Model 4, the interaction term (*firm tenure* × *prior occ experience*) is negative and significant ( $\beta = -0.06$ , *p* < 0.01), indicating that firm tenure attenuates the effect of prior occupational tenure on knowledge and skill, providing support for Hypothesis 3A.<sup>6</sup> For employees with high firm tenure, the amount of prior occupational experience is virtually irrelevant for knowledge and skill. Generally, workers with higher firm tenure have competencies that are rated higher. However, for employees with low firm tenure, those with greater prior occupational experience were rated higher on skills than those with lower prior occupational experience.

**Table 2 OLS Regressions of Performance and Knowledge and Skill, with Correction for Selection**

	Knowledge and skill		Performance		Performance		Knowledge and skill		Performance	
	Model 1		Model 2		Model 3		Model 4		Model 5	
	Coeff.	Robust SE	Coeff.	Robust SE	Coeff.	Robust SE	Coeff.	Robust SE	Coeff.	Robust SE
Main model										
Controls										
Constant	2.13***	(0.37)	5.00***	(0.43)	2.95***	(0.35)	1.63***	(0.37)	2.70***	(0.36)
Education	−0.05*	(0.02)	0.001	(0.03)	0.04	(0.02)	−0.05*	(0.02)	0.04	(0.02)
Age	−0.01*	(0.00)	−0.02*	(0.01)	−0.01	(0.01)	−0.01*	(0.00)	−0.01	(0.01)
Female	−0.03	(0.09)	−0.25	(0.14)	−0.20*	(0.09)	0.01	(0.09)	−0.18	(0.10)
Location	0.12	(0.09)	0.07	(0.12)	−0.05	(0.10)	0.12	(0.09)	−0.04	(0.10)
CSR	−1.03	(0.82)	−0.38	(0.38)	0.15	(0.27)	−1.05	(0.75)	0.18	(0.28)
CA	−0.16	(0.20)	−0.03	(0.28)	−0.05	(0.13)	−0.14	(0.17)	−0.03	(0.14)
Referral hire	−0.09	(0.07)	0.12	(0.11)	0.19*	(0.08)	−0.06	(0.07)	0.20*	(0.09)
Internal transfer	0.24	(0.31)	−0.53	(0.33)	−0.45**	(0.16)	0.28	(0.25)	−0.45**	(0.16)
Firm tenure <sup>a</sup>	0.29***	(0.05)	0.13	(0.08)	−0.12*	(0.06)	0.38***	(0.07)	−0.05	(0.07)
Prior experience										
Prior occupational experience <sup>a</sup>	0.06*	(0.03)	−0.03	(0.03)	−0.06*	(0.03)	0.28***	(0.07)	0.07	(0.09)
Prior industry experience <sup>a</sup>	0.01	(0.02)	0.004	(0.03)	−0.01	(0.02)	0.01	(0.02)	−0.003	(0.02)
Knowledge and skill					0.86***	(0.08)			0.85***	(0.08)
Firm tenure × prior occ experience							−0.06**	(0.02)	−0.04	(0.02)
Selection model										
Constant	−1.53**	(0.49)	−1.24*	(0.52)	−1.37***	(0.35)	−1.54**	(0.50)	−1.33***	(0.36)
Education	−0.07*	(0.03)	−0.06	(0.03)	−0.07*	(0.03)	−0.07*	(0.03)	−0.07*	(0.03)
Age	−0.01	(0.01)	−0.01	(0.01)	−0.01	(0.01)	−0.01	(0.01)	−0.01	(0.01)
Female	0.38**	(0.14)	0.34*	(0.14)	0.34**	(0.11)	0.39**	(0.14)	0.34**	(0.11)
Location	0.06	(0.15)	−0.03	(0.15)	0.0001	(0.12)	0.07	(0.14)	0.003	(0.12)
CSR	−2.43***	(0.40)	−2.53***	(0.40)	−2.50***	(0.37)	−2.42***	(0.39)	−2.50***	(0.37)
CA	−1.65***	(0.34)	−1.62***	(0.37)	−1.63***	(0.34)	−1.65***	(0.33)	−1.62***	(0.34)
Referral hire	−0.02	(0.12)	−0.01	(0.12)	−0.02	(0.10)	−0.01	(0.12)	−0.02	(0.10)
Internal transfer	3.07***	(0.63)	3.34***	(0.60)	3.15***	(0.30)	2.99***	(0.55)	3.15***	(0.30)
Prior occupational experience <sup>a</sup>	0.06	(0.04)	0.07	(0.04)	0.07*	(0.03)	0.06	(0.04)	0.07*	(0.03)
Prior industry experience <sup>a</sup>	0.01	(0.04)	−0.01	(0.04)	−0.01	(0.03)	0.01	(0.04)	−0.01	(0.03)
Local unemployment rate	0.31***	(0.09)	0.28**	(0.09)	0.29***	(0.06)	0.31***	(0.09)	0.28***	(0.06)
Wald chi-square statistic	60.8***		31.42***		197.5***		70.1***		207.9***	
Test of independence of equations	1.54		2.14		15.55***		2.89		13.52***	
Number of applicants	771		771		771		771		771	
Number of employees	197		197		197		197		197	

<sup>a</sup>Log transformed variable.\* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ .

Hypothesis 3B was not supported. Model 5 indicates that firm experience does not moderate the direct relationship between prior related occupational experience and performance.<sup>7</sup> Although we expected employees' understanding of performance in the current context to be refined by time in the firm, we did not find support for this hypothesis. The expectations and beliefs about what is good performance acquired prior to entering the firm may be particularly difficult to change.

Though we represented prior related experience in two ways, prior industry experience is not significant in any of the models when prior occupational experience is also included. A reason for this could be that there is overlap between industry and occupational experience. All industries include a variety of occupations, but certain occupations are strongly associated with particular industries. For example, insurance adjusters are most commonly found in the insurance industry. In our sample of employees, prior occupational experience and prior industry experience are correlated ( $\rho = 0.64$ ).<sup>8</sup> If prior

occupational experience is excluded from our knowledge and skill model (Model 1), prior industry experience becomes positive and significant ( $\beta = 0.04$ ,  $p < 0.05$ ).<sup>9</sup> Therefore, industry experience and occupational experience may overlap enough to be difficult to distinguish empirically in this sample, although prior occupational experience seems to be a better predictor of the phenomena of interest.

### Robustness of Model

To assess the robustness of our model, we performed supplementary analysis with additional controls. Moreover, we perform several analyses to better explore the theoretical explanations that underlie the negative direct effect of prior occupational experience on performance. These analyses can be found in Table 3.

*Alternative Explanations for the Negative Effect of Prior Related Experience.* Although we theorized that prior experience's negative effect on performance has

**Table 3** Supplementary Analysis—OLS Regressions of Performance with Correction for Selection

	Performance									
	Model 6		Model 7		Model 8		Model 9		Model 10	
	Coeff.	Robust SE	Coeff.	Robust SE	Coeff.	Robust SE	Coeff.	Robust SE	Coeff.	Robust SE
<b>Main model</b>										
Controls										
Constant	2.72***	(0.41)	2.99***	(0.08)	3.12***	(0.35)	2.09***	(0.42)	2.55***	(0.49)
Education	0.04	(0.02)	0.03	(0.02)	0.03	(0.02)	−0.02	(0.03)	0.01	(0.04)
Age	−0.01	(0.01)	−0.01	(0.01)	−0.01	(0.01)	−0.01	(0.01)	0.003	(0.01)
Female	−0.20*	(0.09)	−0.17	(0.09)	−0.19*	(0.09)	−0.04	(0.10)	−0.09	(0.11)
Location	−0.06	(0.10)	−0.04	(0.10)	0.03	(0.10)	−0.11	(0.10)	0.004	(0.14)
CSR	0.12	(0.26)	0.10	(0.26)	0.13	(0.22)	−0.56*	(0.23)	0.40	(0.27)
CA	−0.03	(0.14)	−0.06	(0.13)	−0.04	(0.14)	−0.62**	(0.21)	−0.16	(0.24)
Referral hire	0.19*	(0.08)	0.19*	(0.09)	0.17*	(0.08)	0.18*	(0.09)	0.20	(0.11)
Internal transfer	−0.48**	(0.16)	−0.43**	(0.17)	−0.47**	(0.14)	0.46**	(0.18)	−0.68**	(0.23)
Firm tenure <sup>a</sup>	−0.10	(0.06)	−0.12*	(0.06)	−0.16**	(0.05)	−0.19**	(0.06)	−0.15*	(0.07)
Prior experience and supplementary analysis variables										
Prior occupational experience <sup>a</sup>	−0.07*	(0.03)	−0.07*	(0.03)	−0.08**	(0.03)	−0.19*	(0.08)	−0.30*	(0.12)
Prior industry experience <sup>a</sup>	−0.004	(0.02)	−0.01	(0.02)	−0.01	(0.02)	−0.02	(0.02)	−0.01	(0.03)
Knowledge and skill	0.86***	(0.08)	0.86***	(0.08)	0.84***	(0.08)	0.81***	(0.08)	0.92***	(0.10)
Number of jobs	1.92	(1.73)								
Unrelated experience			−0.01	(0.02)						
High salary					0.21*	(0.08)				
Adaptability							0.09*	(0.04)		
Adaptability × prior occ experience							0.04*	(0.02)		
Cultural fit									0.06	(0.08)
Cultural fit × prior occ experience									0.08*	(0.03)
<b>Selection model</b>										
Constant	−1.37***	(0.35)	−1.37***	(0.36)	−1.34***	(0.35)	−1.34**	(0.40)	−1.07*	(0.48)
Education	−0.07*	(0.03)	−0.07*	(0.03)	−0.07*	(0.03)	−0.07*	(0.03)	−0.09**	(0.03)
Age	−0.01	(0.01)	−0.01	(0.01)	−0.01	(0.01)	−0.01	(0.01)	−0.01	(0.01)
Female	0.33**	(0.11)	0.36**	(0.12)	0.33**	(0.11)	0.39**	(0.12)	0.29*	(0.14)
Location	0.002	(0.12)	0.03	(0.12)	0.01	(0.12)	−0.06	(0.13)	0.14	(0.17)
CSR	−2.51***	(0.37)	−2.50***	(0.37)	−2.52***	(0.37)	−2.35***	(0.38)	−2.07***	(0.35)
CA	−1.63***	(0.34)	−1.63***	(0.34)	−1.62***	(0.35)	−1.57***	(0.35)	−1.30***	(0.34)
Referral hire	−0.01	(0.10)	−0.02	(0.10)	−0.02	(0.10)	0.05	(0.11)	0.11	(0.12)
Internal transfer	3.15***	(0.31)	3.19***	(0.32)	3.18***	(0.29)	3.38***	(0.29)	3.09***	(0.24)
Prior occupational experience <sup>a</sup>	0.07*	(0.03)	0.07*	(0.03)	0.07*	(0.03)	0.03	(0.04)	0.04	(0.04)
Prior industry experience <sup>a</sup>	−0.01	(0.03)	−0.01	(0.03)	−0.01	(0.03)	−0.01	(0.03)	−0.06	(0.04)
Local unemployment rate	0.30***	(0.06)	0.29***	(0.06)	0.29***	(0.06)	0.26***	(0.07)	0.13	(0.08)
Wald chi-square statistic	205.1***		193.9***		201.6***		307.2***		233.6***	
Test of independence of equations	14.45***		12.75***		22.34***		5.57*		14.45***	
Number of applicants	771		768		771		749		678	
Number of employees	197		194		197		175		104	

<sup>a</sup>Log transformed variable.

\* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ .

its basis in cognitive or behavioral rigidities, the relationship found could have its basis in other kinds of performance-detracting behaviors that are revealed through time in the firm. Employees might be changing firms because of poor performance in prior jobs. To account for this possibility, we included a control for the number of jobs normalized by the total number of years of work experience in the performance model (Model 6). This variable included prior jobs both inside and outside InsurCo and was derived from personnel files and records. On average, employees in our sample had 5.06 prior jobs. Workers with high numbers of prior jobs might be job hoppers who are unsuccessful at holding a job regardless of their skill level. However, when we include this control, it is not significant ( $\beta = 1.92$ ,

$se = 1.73$ ) and its inclusion has no effect on our variables of interest.

In addition, cognitive baggage should only affect related experience. Prior unrelated experience should not lead to the same sorts of rigidities found for prior occupational experience. To explore this issue, we included the amount of experience outside of the occupation, i.e., unrelated experience, in the performance model (Model 7). This variable was derived from personnel files and records. Workers in our sample had a mean of 98.1 months of prior experience in other occupations. When this control is included, work experience outside the current occupation is not significantly related to performance ( $\beta = -0.01$ ,  $se = 0.02$ ), suggesting that prior experience outside of the occupation does not create

baggage in the way that prior related occupational experience does. Moreover, the main findings for the effects of prior related experience do not change with the inclusion of this control.

Finally, it is possible that more experienced workers are subject to higher expectations. If this were true, more experienced workers could receive lower performance ratings for a given level of performance simply because the firm expected more from them. To address this possibility, we included an indicator variable *high salary* in the performance model to isolate the effect of prior experience (Model 8). *High salary* records whether employees are paid above average for their salary band, because employees who are highly paid relative to their immediate peers might be subject to higher expectations. This control is positive and significantly related to performance ( $\beta = 0.21, p < 0.05$ ); however, it does not substantively change the results reported in our main analyses: specifically, the relationship between prior occupational experience remains negative and significant ( $\beta = -0.08, p < 0.01$ ).

*Exploring Rigidities as a Mechanism for the Negative Effect of Prior Experience.* In addition to analyses to test the robustness of the model, we performed additional analyses to explore the theoretical mechanisms posited by the model. In particular, we were able to gather additional data that suggest support for the institutional and cognitive mechanisms that we theorized account for the negative effect of prior experience on performance. If the negative component of prior experience is explained by rigidities, we would expect that more adaptable employees should suffer from fewer rigidities, suggesting a positive interaction between adaptability and prior related experience. Indeed, Hall (1986) identifies adaptability as a trait that allows a person to identify qualities necessary for good performance and to make concomitant personal changes. Adaptable workers are both more willing to reactively adjust their behavior to changed environments and more likely to proactively initiate change to perform better (Griffin and Hesketh 2003, Pulakos et al. 2000).

We measured *adaptability* by separately surveying supervisors, asking them to assess their subordinates on these two dimensions of adaptability on a scale of 1–5. Our two-item measure of *adaptability* has a Cronbach's alpha of 0.80, a mean of 3.59, and a standard deviation of 0.94, and it ranges from 1 to 5. Consistent with the idea that behavioral and cognitive rigidities account for the negative effect of prior occupational experience on performance, the interaction between adaptability and prior occupational experience is positive and significant ( $\beta = 0.04, p < 0.05$ ), indicating that more adaptable workers are less subject to the negative effects of prior related experience (Model 9).

To examine if the negative effect of prior experience on performance is also possibly attributable to the

institutional mechanisms we theorized, we also analyzed a measure of cultural fit. If a worker's prior related experience socialized him into the occupation, then his performance will be affected to the extent that the organization's culture is consistent with his experience of the occupation's culture within a prior organization. For example, a worker with a large amount of occupational experience entering a firm whose norms are consistent with the norms the worker previously learned may not suffer the downside of prior experience; the same employee entering a firm whose norms differ from or conflict with the norms previously learned would be negatively affected by the baggage she carries from the prior work experience. Therefore, we would expect the relationship between prior occupational experience and performance to be contingent on how well the employee fits with the organization's culture.

We measured cultural fit by surveying a subsample of employees. We asked the employees how well they fit in with the organization's culture and used this self-rating as an indicator of fit. *Cultural fit* ranged from 1 to 5, with a mean of 3.53 and standard deviation of 0.85. To explore the contingent relationship, we created an interaction term (*cultural fit*  $\times$  *prior occ experience*) by multiplying *cultural fit* and *prior occupational experience* and included the main effects terms and interaction term in a regression model (Model 10). In this model, the interaction term is positive and significant ( $\beta = 0.08, p < 0.05$ ), indicating that workers with more prior occupational experience who also felt they fit well with the InsurCo culture are less likely to suffer negative effects from greater prior experience. This finding supports the idea that the negative effect of prior experience on performance is partially attributable to an institutional mechanism. Taken together, these supplemental analyses provide preliminary evidence that the negative direct relationship between prior related experience and performance may be a function of rigidities in cognition or behavior.

## Discussion

We tried to hire from our competitors and paid a premium for the experience but [those hires] were the least successful.

—Senior human resource manager, InsurCo.

Studies about the portability of prior experience have highlighted new knowledge that experienced workers carry into firms (e.g., Rao and Drazin 2002, Rosenkopf and Almeida 2003, Song et al. 2003) or knowledge and skill that cannot be usefully carried across organizational boundaries (Huckman and Pisano 2006, Groysberg et al. forthcoming). We contribute to this line of inquiry by expanding the focus of attention beyond knowledge and skill to include the rigidities carried by experienced workers.

In this study, we examine prior related experience, which is believed to generate the most portable knowledge and skill. We have found evidence suggesting that it might have unforeseen costs as well as benefits. Specifically, our findings suggest that in addition to helpful skills and knowledge, workers also carry rigidities that partially offset the benefits of prior related experience. We also find that adaptable workers and those who feel they fit well into the culture of the new firm are less subject to the negative effects of rigidities on performance. Also, increased firm tenure replaces the positive effects of prior experience on task-relevant knowledge and skill.

*Effects of Prior Work Experience.* Past research has failed to find a strong relationship between prior work experience and current job performance (Castilla 2005), despite the common assumption that prior experience enhances job performance. This assumption is predicated on the idea that prior experience develops knowledge and skill, which in turn enhances job performance. By examining the relationships between prior experience and performance both directly and indirectly via knowledge and skill, we reconcile these findings and assumptions. We find evidence for a strong positive indirect relationship via knowledge and skill such that individuals do bring valuable human capital across the firm boundary. However, we also find a direct *negative* relationship between performance and experience once the positive effects of knowledge and skill are accounted for in the model. Our findings suggest that the relationship between prior experience and performance may have been elusive because prior experience has both positive and negative effects on performance. Indeed, knowledge and skill serves as a suppressing mediator such that the direct effect is obscured until the mediator is included in the model. By conceptually and empirically distinguishing knowledge and skill from experience and explicitly theorizing and measuring knowledge and skill as a mediator, we are able to start untangling some of the conflicting ways that work experience, particularly prior related work experience, influences performance. Future studies of the relationships among experience, knowledge and skill, and performance should consider these conflicting effects and account for complexity in how prior experience influences performance in a new organizational context.

Our exploratory analyses indicate that individuals who exhibit adaptive behaviors at work are less likely to suffer from the negative consequences of prior related experience. This suggests that individual differences, like adaptability, may condition the relationship between prior experience and performance. Individual differences such as desire for control and desire for feedback affect the likelihood of taking a more active role in adjusting to new jobs, which might lead to better fit and better performance. Future studies should address the role of

individual differences in examining the effect of prior experience on knowledge and skill and performance.

We also find in our exploratory analysis that cultural fit can mitigate the negative effects of prior related experience. This suggests that institutional mechanisms are also a factor in the rigidities that experienced workers bring with them across firm boundaries. Cultural fit has been found to be an important predictor of job choice (e.g., Cable and Judge 1996) and of commitment to the firm over time (e.g., O'Reilly et al. 1991), but its effect on performance has been more elusive (Arthur et al. 2006). Our research suggests that rather than cultural fit having a direct positive effect on performance, cultural fit is beneficial in minimizing the rigidities that experienced workers bring to a new organization that can hamper performance. In light of this, future research may focus on the interaction between experience and cultural fit as it relates to important attitudinal and behavioral outcomes rather than on cultural fit alone.

Our findings about prior work experience also begin to clarify the role of different types of related experience in determining performance. The pattern of our findings in this setting suggests that occupational experience may be more important to task-relevant knowledge and skill and performance than industry experience. Occupational practice is about the practice of skills and knowledge (Bechky 2003), and more practice in the occupation leads to more facility with the specific tasks that are associated with the occupation. Industry practice might be more associated with knowledge development about the broader implications of a particular type of work but might be less directly helpful to individual performance, though still valuable overall. Therefore, there is reason to believe that occupational skill is transferable across firm contexts in a way that is beneficial to the individuals changing jobs.

Our findings contrast with studies in economics that show a straightforward positive relationship between industry and occupational experience and wages (Ang et al. 2002, Parent 2000). However, there are some noteworthy differences between wage outcomes and performance outcomes. Wages are a common proxy for performance and are often the only outcome that is comparable across organizations. But wages also include many determinants other than performance (Castilla 2005). In fact, a few studies have found that performance explains a relatively small portion of wages and wage growth (Medoff and Abraham 1980, 1981). The current study is situated in a single organization, which enables direct measures of knowledge and skill and performance instead of the proxy measure of wages.

Finally, our study serves as a complement to organizational learning studies that have examined the transfer of learning at the task level (e.g., Argote et al. 1990, Kane et al. 2005, Thompson et al. 2000) by exploring how individual learning at the job level transfers to

new settings. This approach is consistent with theory on work experience that proposes that learning occurs through experience at multiple levels (Quinones et al. 1995, Tesluk and Jacobs 1998). From a practical perspective, information on job-level experience is often the most readily available, and when organizations select based on experience, they typically have access to information on applicants' job experience rather than their task experience.

In addition, we recognize the importance of the firm boundary as an inhibitor not only to the transfer of experience but also for the translation of experience into performance. We begin to bring together research on learning and on firm specificity of performance that finds that job performance is not directly portable across firm boundaries (e.g., Huckman and Pisano 2006, Groysberg et al. forthcoming). Jobs in organizations are complex, comprising multiple tasks and other requirements, such as teamwork or leadership (Campbell et al. 1993). Moreover, organizations can value tasks and requirements differently when judging overall job performance (Grote 1996). Therefore, our perspective is that a job in one firm is never exactly the same as a job in another firm, because the jobs do not comprise the same mix of tasks and performance requirements. Thus, learning does not transfer and accumulate across jobs in a straightforward way.

#### *Moderating Effects of Within-Firm Work Experience.*

As predicted, firm tenure moderated the positive relationship between prior related work experience and task-relevant knowledge and skill, suggesting that as people acquire experience within a firm, prior experience becomes a less-important source of knowledge and skill. Within-firm experience is the most commonly studied type of experience (Quinones et al. 1995), and it serves to supplant the effects of prior related experience on knowledge and skill because it provides a closer match to the specific knowledge and skill required for the job. Within-firm experience is most salient to current work requirements and provides learning that is situated in context. With long firm tenure, the contribution of prior related experience to knowledge and skill may become marginal; however, with the increasing mobility of the workforce, the effects of prior related experience should continue to be important to organizations.

Though firm tenure moderates the relationship between prior related experience and task-relevant knowledge and skill, it does not moderate the direct negative relationship between prior related work experience and performance. As firm tenure increases, we expected that the negative effects from adherence to norms or cognitive habits acquired elsewhere would diminish, but we found no support for this hypothesis. One possible explanation for the lack of effect is that rigidities are more stable than we expected and that the habits of experience persist. The test of the hypothesis essentially used

time in the organization as a proxy for changes in norms and cognitive habits. It may be that knowledge and skill develop more naturally with time in the organization, whereas changing habits and routines may be more difficult. It may be that only some individuals are likely to change without intervention, or that organizations need to identify and address the rigidities more directly and actively to replace unproductive norms and cognitive habits with those that are more functional for the current organizations.

Within-firm experience shows a strong positive direct relationship to job performance; however, once knowledge and skill is controlled for, within-firm experience (i.e., tenure) at InsurCo also has a negative effect on performance, similar to prior related experience. Although it is not the focus of this study, this result is notable because it suggests that there may be costs as well as benefits to time in the current job on job performance. To better understand if the negative effect of firm tenure on performance was driven by the same processes as the negative effect of prior experience on performance, we performed a supplementary analysis similar to the one we used for prior occupational experience by interacting firm tenure with adaptability and cultural fit. However, unlike the interactions for prior experience, neither of the firm experience interactions was statistically significant.<sup>10</sup> This suggests that different mechanisms operate for tenure in the current firm than for prior experience. It may be that processes such as burnout—as discussed above—might account for these relationships.

#### **Theoretical Implications**

Our study has a number of theoretical implications. First, our study addresses the literature on experience and performance. As our findings show and the quote at the beginning of the discussion illustrates, the firm's expectations about the benefits of prior related experience were often not met. Our research suggests that it is important to understand that experience from other organizations can have both costs and benefits; this was even true for the type of prior experience most likely to have a positive effect in a new context, prior *related* experience. Future research should consider that more is brought across the firm boundary than just knowledge and skill. Moreover, future studies may want to focus on training and socialization processes that might help to mitigate the negative effects of prior related experience and better capitalize on the knowledge and skill brought into the organization by these experienced workers.

Second, our findings have implications for the literature on careers. The study of careers has primarily focused on the career itself—the literal and psychological construction of the career. Addressing questions about how career opportunities unfold (e.g., Batt 1996, Higgins and Kram 2001, Robson et al. 1996), how people make career choices (e.g., Higgins 2001, Miles

and Snow 1996), and how people make sense of the choices they make (e.g., Wrzesniewski et al. 1997, 2003) contributes to our understanding of how careers operate. However, understanding the implications of career choices for performance is also important to gain a fuller picture of careers. Our findings do not say that prior related experience is bad and firms should avoid workers with more experience. Indeed, the net effect of prior related occupational experience on performance is substantially positive through its effect on knowledge and skill. However, our study does highlight that greater related occupational experience may not have a wholly positive effect on performance and firms should consider this for selection, training, and socialization where incompatible schemas, norms, and the like may be uncovered and addressed.

Third, our study has implications for research that examines the transfer of knowledge across the firm boundary. Although prior studies have found that the new or diverse knowledge carried by workers can be valuable because it allows them to be more innovative (e.g., Rosenkopf and Almeida 2003, Song et al. 2003), in our supplemental analyses we find that unrelated prior experiences carry neither benefits nor baggage to the new firm. It may be that these contrasting findings could be due to differences in the value of diverse information and innovation in different contexts and at different levels of analysis. For example, importing new information through unrelated experience might be useful to organizations or groups, but only as it is recombined with the organization's existing knowledge base, and therefore less directly beneficial to the individuals carrying the new information.

### Limitations and Future Research

To obtain detailed data on prior experience, current knowledge and skill, and performance, our study focused on three jobs within one organization, limiting the generalizability of the study. Findings may be sensitive to the industries, types of occupations, or the particular organization studied. For example, samples of managerial or highly professionalized workers may be less subject to the negative effects of prior experience because they may have more control over their work environments than the workers we studied (Abbott 1991, Groysberg et al. 2004). Future research should explore these questions in other contexts. Generally, there is a tradeoff between cross-organization samples that are broadly generalizable and single-organization samples that can have richer data. However, direct measures of performance are difficult to compare across organizations. The richness of the data set employed in this study provides a high level of detail and allows comparison between individuals within this organization. In addition, we were able to collect data on applicants, which allows for a more econometrically valid examination of prior experience and job performance.

Another potential limitation of our study is the use of annual performance review ratings to measure performance, because of the potential for subjectivity in the process. However, we controlled for many potential sources of bias (e.g., demographic characteristics), and our results remained robust. Moreover, there are several reasons to prefer annual performance review ratings over more objective measures of performance in our study.

First, objective measures of performance are difficult to compare across job types. We include several different job categories in our sample (e.g., CSRs and Adjs), each of which has different types of "task-related" measures of performance (e.g., calls per hour versus claims settled). Using annual review ratings provides the most comparable performance indicator across jobs within an organization. Second, we are interested in performance as the organization values it. There is no single task-based indicator of performance that would have adequately served our purposes. The performance evaluation at InsurCo contained multiple facets of performance. This broader measure of performance was important to our theoretical argument, as knowledge and skill acquired in other contexts may not apply to a particular task yet still may be important to performance in a whole job. Using a narrow measure of performance may have obscured the relationship. Third, even though our measure is subjective, it is not subject to the single-source error that can plague traditional supervisory evaluations. As in most large corporation contexts, the performance evaluation is a product of the input of multiple raters and is the result of a standardized process.

### Conclusion

This study makes several contributions to research on the portability of experience as well as research on careers. First, we consider how prior work experience outside a given job or organization affects performance in a new organization to better understand what organizations get when they hire experienced workers. We find that prior occupational experience has a positive effect on performance via knowledge and skill but a negative direct effect that diminishes the overall relationship, and we provide preliminary evidence that the negative effect is driven by behavioral and cognitive rigidities. Second, we tie concepts of careers to the outcome of performance in organizations. The study of careers has focused on the career itself as the outcome of interest. Though the context and content of career decisions are important, the consequences of these decisions for performance are an important piece of a full understanding of careers. A final strength of the paper is our unique data, which allow us to correct for sample selection bias, an issue that few studies of job performance have been able to address.

Assessing the effects of hiring experienced workers is important because human resources are mobile, and lifetime employment within one firm is a relatively small part of the U.S. employment picture (Cappelli 1999; Hall 2002, 1982; Rynes et al. 1997). Workers have differing portfolios of knowledge and skill gained from prior work experience, and these portfolios contribute differentially to a worker's current job performance. Understanding how past job experiences contribute to organizations' needs is important. If organizations understand how applicants' work histories affect their performance, they might consider the effects of prior experience in designing selection, training, or socialization processes.

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### Endnotes

<sup>1</sup>Source: U.S. Department of Labor, Bureau of Labor Statistics, August 25, 2006.

<sup>2</sup>See O\*Net classification 13-1031.02, Insurance Adjusters, Examiners, and Investigators.

<sup>3</sup>This variable is the annual unemployment rate from the U.S. Bureau of Labor Statistics for counties within commuting distance from the centers, based on the distance from the call centers and the responses to a question about commute time from a self-report survey conducted among employees in the centers in April 2003.

<sup>4</sup>The Heckman selection model uses an OLS specification in its second stage. Because performance is rated on a six-level scale, we also ran two-stage models with the same variables using a probit for the first stage and ordinal logit for the second stage. Results from these analyses were consistent with the OLS results reported here.

<sup>5</sup>The significant results for the tests of independence of equations in the full models (Models 3 and 5) suggest that the two-stage models are needed for correcting selection bias. The selection models are largely consistent with each other, showing that those with prior experience in the occupation, females, internal transfers, are more likely to be selected into this sample. More educated workers are less likely to be in the sample; possibly because of perceived overqualification leading to fewer offers or more choice for educated applicants leading to fewer offers accepted. Surprisingly, although referrals are hired at a higher rate than nonreferrals, once other factors are controlled for, the effect is nonsignificant. The lack of significance could be caused by the prevalence of referrals in these settings. Fifty six percent of applicants to the centers were

referred by existing employees, likely because of the unusually high referral bonus paid by InsurCo (\$1,500 vs. \$250 for similar settings; see Fernandez et al. 2000).

<sup>6</sup>The interaction of firm tenure with prior industry experience was not significant, so in the interest of space we do not report the results here. The table is available from the first author on request.

<sup>7</sup>Again, we include only the interaction using prior occupational experience, not prior industry experience.

<sup>8</sup>Because these two variables are substantially correlated, we checked the variance inflation factors to determine if the correlation was problematic for our results. The highest variance inflation factor was 2.19, suggesting that multicollinearity is not a problem for this analysis.

<sup>9</sup>Table available from first author.

<sup>10</sup>Table available from first author.

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