

Learning Through the Lens of Your Job:
Acquisition of Non-Transferable Human Capital by Employees

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Abstract

This paper offers a new perspective on employee acquisition of human capital by proposing that employees play an active role in shaping the transferability of skills acquired. We argue that employees who are more committed (i.e., have greater psychological attachment) to their employer are more likely to acquire new skills in a way that is most valuable to their current employer, resulting in accumulation of relatively more non-transferable skills as compared to employees who are less committed to their employer. Using data from a sample of employees pursuing a part-time Masters in Business Administration (MBA) degree, we measure employees' reports of non-transferability for each course taken and their commitment to their employer as measured by affective and normative commitment. We find a positive relationship between commitment and non-transferability, which is largely driven by differences in the extent to which the employee draws on her current employment context within the coursework. We also find that more committed employees are more likely to pursue job-related elective courses relative to those with lower commitment. Finally, acquisition of non-transferable skills is negatively associated with employee's intentions to quit their current employer, implying that such perceptions may influence labor market mobility.

Keywords: Firm-specific human capital, organizational commitment, mobility costs, identity economics

1. Introduction

From the traditional human capital perspective, whether skills an employee acquires through a training program are firm specific, as opposed to general, are determined based on the content of the training program (i.e., if the researcher had access to training materials, then she could assess its firm specificity). Training location – on-site versus off-site – is often used by researchers to proxy for whether the training provides firm-specific (on-site programs) as opposed to general (off-site programs) skills (e.g., Lynch 1992; Barron, Berger, and Black 1999) because training program content is typically unknown. Because the training program determines the transferability of skills, any employee who participates in a given training program is assumed to acquire the same skills (i.e., there is homogeneity in skill acquisition). Variation across employees in the acquisition of firm-specific, or non-transferable skills has been considered, however, the employee's decision on whether or not to invest in these skills has been linked to characteristics of the firm or market (Hashimoto 1981; Lazear 2009), not employee characteristics. Therefore, variation based on individual-level attributes has largely been overlooked in the human capital literature to date.

This paper presents a new perspective on human capital acquisition by employees. We propose that there is individual-level variation in the acquisition of skills, which may lead to heterogeneity across employees in the types of skills – transferable versus non-transferable – acquired within the same training environment. Conceptually, we argue that employee attitudes may matter. In particular, employees who are more committed (i.e., have greater psychological attachment) to their employer are more likely to disproportionately acquire skills that are most more valuable at their current employer relative to outside employers as compared to employees

who are less committed. This may result in acquisition of relatively more non-transferable skills for more committed employees relative to less committed employees. Our conceptual framework is related to prior work on identity economics (Akerlof and Kranton 2005), which proposes that individual-level attitudes towards one's employer influence employee decisions within the organization such that those whose identity is more closely aligned with their employer are more likely to act in the interest of that employer.

Using longitudinal data on a sample of employees who are pursuing a part-time Masters in Business Administration (MBA) degree, we evaluate the relationship between commitment and non-transferability of skills acquired in MBA courses. Given that we are interested in a measure of commitment relating to psychological attachment, we use measures of affective and normative commitment from industrial and organizational psychology that capture strength of emotional and attitudinal connections to the employer (Allen and Meyer 1990). We find that measures of affective and normative commitment are positively related to employees' reports of non-transferability of skills, controlling for the course taken. Stated differently, we find that employees with stronger psychological attachment to the employer are more likely to report that the skills they acquire from a given course are non-transferable relative to those with weaker psychological attachment.

Variation in how an employee engages in the course material explains this positive relationship. In particular, those with higher levels of commitment are more likely to report using their current employment setting during course assignments and discussions relative to employees with lower levels of commitment. This difference across employees in how they engage their current employer in course material explains roughly half of the relationship between commitment and non-transferability of acquired skills. Therefore, we find evidence that

employees play an active role, whether consciously or unconsciously, in determining the non-transferability of acquired skills.

This paper contributes to the literature on firm-specific human capital in several ways. First, it introduces the importance of the employee's role in influencing the type of human capital acquired, which has largely been ignored to date. We find that 35 percent of MBA courses taken by employees in our sample are reported as providing relatively more non-transferable as compared to transferable skills despite the fact that most human capital scholars would overwhelmingly classify such courses as providing transferable skills.

Second, relatedly, our paper challenges the use of training location or program content as the sole determinant of transferability. We contribute a novel perspective by proposing and finding variation in transferability of acquired skills – even for employees in the same training environment (i.e., same MBA course) – based on individual-level characteristics, namely strength of psychological attachment to the employer. Our findings imply that using program content or location of training to proxy for the transferability of acquired skills may fail to account for important variation across employees and may lead to incorrect conclusions regarding the relationship between skill acquisition and labor market outcomes, such as pay and turnover.

Finally, the multidisciplinary approach of this study, which incorporates concepts from human capital theory and industrial-organizational psychology literatures leads to a greater understanding of how these theories relate to employee outcomes within organizations. Namely, our empirical findings connect research on organizational commitment with human capital acquisition. We are the first to propose and document acquisition of non-transferable skills as explaining part of the well-established negative relationship between organizational commitment

and employee intentions to leave their employer (Vandenberghe, Bentein, and Stinglhamber 2004; Mohamed, Taylor, and Hassan 2006; Weng and McElroy 2012).

The rest of the paper is organized as follows. Section 2 presents the theoretical framework that captures individual-level variation in transferability of skills based on the extent to which the employee identifies with the employer. Section 3 describes the sample and measures used in the analysis. Results are presented and discussed in Section 4, while Section 5 concludes the paper.

2. Conceptual Framework

We propose that individual-level attributes, namely attitudes, may matter for human capital acquisition.¹ In particular, we propose that an employee's level of commitment (i.e., psychological attachment) to the employer is likely to influence how the employee engages with new information: employees who are highly committed to their employer are likely to disproportionately engage in material that is more valuable to their current employer as compared to material that is equally valuable to outside employers because such employees have a high level of psychological involvement with their current employer and its ultimate success. Alternatively, we expect employees who are less committed to their employer to engage in material in a manner that provides value to employers more broadly, or equally across employers. Thereby, the skills acquired by employees with higher levels of commitment will be

¹ The concept that there is individual variation in skills acquired from a given learning environment is well-established in educational psychology literature, known as "transfer of learning" (e.g., Perkins and Salomon 1992; Alexander and Murphy 1999), and has been applied in the human resources literature to understand training effectiveness (i.e., Velada et al. 2009). "Transfer of training," which is the capacity of an employee to apply information learned in a course or training program to contexts outside that exact learning environment has been shown to be a function of individual characteristics, including cognitive ability, analogic skills, and motivation (Blume, Ford, Baldwin, and Huang 2010). The present work is distinct from past theory on transfer of training in that we conceptualize differences in skill acquisition across employees in terms of transferability *across employers* (not just outside the training environment).

less transferable across employers as compared to the skills acquired by employees with lower levels of commitment.

The notion that attitudes towards one's employer shape employee decisions is related to the work of Akerlof and Kranton (2000, 2002, 2005) on identity economics. Namely, Akerlof and Kranton (2005) propose a utility framework in which employee decisions are influenced by the extent to which one's employer contributes to an individual's identity. Akerlof and Kranton use the terminology of "insider" and "outsider" to differentiate employees based on whether or not they identify with their employer, which has implications for how an employee behaves on the job. Namely, insiders "act in the interest of the firm," while outsiders do not (2005: p. 14). Akerlof and Kranton show how identity can affect employees' response to organizational practices, such as incentives (i.e., an employee who identifies as an insider will require less of a pay differential between high- and low-effort tasks to induce high effort on the job relative to an outsider). We expect that differences in strength of identity closely align with our proposed difference in commitment to the employer such that employees who are highly committed act similar to insiders, while those with low commitment act like outsiders.²

We apply the basic utility framework proposed by Akerlof and Kranton (2005) for identity to model how commitment may influence skill acquisition. Let $\theta = [0,1]$ represent the employee's commitment (i.e., psychological attachment) to the organization with higher values of θ indicating stronger commitment to the employer (i.e., an insider).³ We are interested in

² Based on interactions with MBA programs, there is a tendency to characterize employed students who pursue an MBA as either someone who want to advance in their current employer, or switch employers. This characterization is consistent with the insider/outsider labeling such that insiders are more likely to be those who want to advance, while outsiders are more likely to be those who want to switch. Regardless, both are consistent with the idea that individual-level variation likely matters for skill acquisition.

³ We conceptualize that commitment to the employer (θ) is comprised of a fixed component, which captures an employee's individual-level tendency to become psychologically attached to one's employer, as well as a variable component that may change over time in response to policies and practices of the current employer.

modeling employee's choice in the extent to which acquired skills are non-transferable, as measured by π , for a given investment in human capital (e.g., enrolling in a course, training session, etc.). We conceptualize that $\pi = [0,1]$ captures the range of skills transferability, which varies from all acquired skills being equally valuable at current and outside firm, or transferable ($\pi = 0$), to all skills being exclusively valuable to the current employer, or non-transferable ($\pi = 1$); higher values of π indicate a greater proportion of non-transferable skills.⁴

Employees choose π to maximize utility, which is increasing in income and decreasing in the extent to which there is a mismatch between non-transferability and strength of commitment to the employer.⁵ Let α be the measure of intensity through which deviations of π from θ result in disutility. We normalize the wage for transferable skills to one and the wage for non-transferable skills is given by w .⁶ Below we state the utility function given w , α and θ :

$$U(\pi; \theta, w, \alpha) = (1 - \pi) + w\pi - \alpha(\theta - \pi)^2 . \quad (1)$$

Assuming an interior solution, we solve for the optimal π given w , α and θ by taking the first order condition, setting it equal to zero, and solving for π :

$$\pi^* = (w-1)/2\alpha + \theta . \quad (2)$$

Based on equation 2, π^* is increasing in θ (i.e., non-transferability is increasing in strength of commitment to the employer). This implies that employees with greater commitment will choose higher levels of π , while employees who are less committed will choose lower levels of π .

⁴ It is worth noting that this conceptual framework presumes that investment occurs while employed and does not readily apply to investments made in pre-employment years. While we apply the framework to formal training programs, it can also apply to on-the-job learning. Because most human capital acquisition occurs after the pre-employment period (Heckman, Lochner, and Taber 1998), precluding pre-employment years does not reduce the relevance of the proposed framework.

⁵ We assume a quadratic loss function for simplicity; other symmetric loss functions would produce the same implications.

⁶ Because training has a cost, these wages can be viewed as net of training costs.

Equation 2 also shows that non-transferability is increasing in the wage gap between non-transferable and transferable skills, $(w-1)$.

How might such variation in non-transferability across employees based on commitment occur? First, employees who are more committed to their employer may choose to participate in training sessions that best serve their current employer as compared to those with lower commitment. In particular, to the extent that employees have a choice, we predict that employees who are more committed would be more likely to enroll in training experiences that cover content areas that are particularly valuable to their current employer as compared to coursework that applies more broadly across firms, or perhaps even more applicable to outside firms.

Second, employees with who have higher levels of commitment may acquire different types of skills from the same training environment as compared to employees who have lower levels of commitment. We propose that this occurs through differences in how employees engage with and retain course material: Employees who are more committed may focus more of their learning on material that is particularly salient to their current employer, while those who are less committed do not apply such a lens. For example, suppose there are two types of employees, A ($\theta = 1$, or insider) and B ($\theta = 0$, or outsider), who are identical except that they differ in their level of commitment to the employer. Suppose these employees work for the same consumer goods firm, which operates plants and facilities in which most of the production employees are unionized. Employees A and B are both enrolled part-time in a professional degree program and are taking a required course on labor relations. Within this course, we expect employee A to gravitate towards course material most valuable to the current employer, such as managing relationship with a union and conducting contract negotiations; perhaps employee A even uses the upcoming negotiation contract at her current employer as the subject of her final project in

the course. Alternatively, we expect employee B is as interested in learning strategies to prevent unionization as she is in learning how to manage an existing union relationship; employee B may choose to conduct a cross-industry analysis of differences in the rise and fall of unions for her final project. In comparing employee A to employee B, they differ in the extent to which their acquired skills are transferable (i.e., skills of employee B are more transferable relative to employee A) as well as the extent to which they engage their current employment context to their learning within the course (i.e., employee A draws more on her current employment context as compared to employee B).

While we explicitly model choice of non-transferability of skills in equation 1, this process may be subconscious. In particular, when conceptualizing skill acquisition within a given training environment, it is quite possible that a high-commitment employee is not actively choosing to directly acquire non-transferable skills. Instead, this employee may be actively learning new material in a way they perceive most benefits their current employer, which we refer to as “learning through the lens of one’s job,” while not even realizing that this learning process leads to acquisition of non-transferable skills that, in turn, may limit her labor market mobility. Regardless of whether it is conscious or unconscious, the empirical predictions for the relationship between commitment and non-transferability of skills are the same.

3. Sample and Variable Descriptions

The data used in this analysis is from a longitudinal dataset of part-time MBA students at the University of Minnesota.⁷ The dataset was constructed using a series of post-semester surveys, which asked enrolled students questions three times a year (following Fall, Spring, and Summer

⁷ University of Minnesota Part-time MBA program was ranked 10th nationally by U.S. News and World Report in 2015.

semesters) on employment characteristics and job attitudes as well as questions about each course they took that semester. We initiated data collection by recruiting enrolled part-time MBA students in January 2008, and then invited additional students to participate in the study via orientation sessions each year through 2012. The original dataset includes information on 3,762 courses taken by 840 individuals between 2008 and 2013.⁸

3.1 Sample Restriction

The present analysis restricts the sample to respondents who are pursuing their MBA degree part-time while working full-time (35 or more hours a week), which limits the sample to 698 individuals with 3,188 course observations. To this sample, we apply the following restrictions.

Omit Redundant Skills: For each course, we assess whether *new* skills were acquired in the course with the following question, “Evaluate the course in terms of the skills it helped you develop. Select the response that best characterizes the course's content: 1) taught me a new skill(s); 2) helped me master or improve an existing skill; or 3) the course material was redundant with my current skill set.” All courses for which the skill was redundant were dropped because of an inability of employees to assess non-transferability of any new skills in this situation given that no new skills were acquired (drop $n = 374$ course observations).

Lagged Measure of Commitment: Because we survey employees following each semester, we have longitudinal data on time-varying characteristics, such as job attitudes like strength of commitment to the employer. In the analysis we relate a measure of non-transferability to a *lagged* measure of commitment to avoid the concern that common-source bias is driving our results (i.e., a common shock influences response to survey questions asked at the

⁸ Given this time period includes changes in macroeconomic environment, we include time controls for each semester in our analyses.

same point in time such that any findings are spurious). More specifically, we use the following estimation model:

$$\pi_{jit} = \alpha + \beta\theta_{i,t-1} + \Omega X_{it} + \Sigma X_i + \kappa_j + \varepsilon_{ijt} \quad (3)$$

where π_{jit} measures non-transferability for course j by person i at time t , $\theta_{i,t-1}$ measures strength of commitment for person i at time $t-1$, X_{it} and X_i represent time-varying and time-invariant individual and employer characteristics, κ_j represents a course fixed effect, and ε_{ijt} is an independent, identically distributed error at time t . Based on this model, we drop any observations for which the respondent did not have a measure of commitment (i.e., $\theta_{i,t-1}$) from the prior post-semester survey (drop $n = 791$ course observations).

Complete Data on Control variables: Finally, we restrict the sample to those with complete information on control variables, including gender, GMAT score (which is used as a measure of cognitive ability), tenure at employer, size of employer, industry, job function, whether or not course was financed by employer, course grade and course name,⁹ which leaves a total sample of 2,573 course observations on 365 individuals from 2008 through 2013.

Descriptive statistics for control variables are reported in Table 1. For the analysis sample, 44.1 percent of observations are from female employees, average GMAT score is 635, average job tenure is 4.71 years, average semester-by-semester GPA is 3.71 and most employees (82.6%) work for large employers (1,000 or more employees). The three highest populated industries are Manufacturing (29.1%), Retail/wholesale trade (20.5%) and Finance/insurance/real estate (18.5%), while the three most common job function areas are Marketing/Sales/Distribution

⁹ We control for course grade to capture performance in the course to rule out the possibility that the relationship between commitment and non-transferability is driven by superior (or inferior) mastery of course concepts. We use course name (or number) to construct fixed effects for the courses.

(20.4%), Accounting/Finance (19.3%) and Engineering/R&D (16.9%).¹⁰ Using demographic information available from the MBA program office, such as gender, work experience, GMAT scores and undergraduate GPA, the sample is roughly representative of the population of University of Minnesota MBA students.

3.2 Measuring Non-transferability

We assess non-transferability of each course by asking the employee to assess how her productivity at her current employer relative to her productivity at alternative employers has changed after completing the course. In particular, we measure non-transferability of skills acquired in a course using the following question: “After completing this course, I am more productive at my **current employer** than if I switched to a different employer” measured using a 5-point Likert agreement scale.¹¹ This question is asked for each course the employee takes in the post-semester survey, which is deployed approximately 1-2 weeks after the end of the semester. Agreement with the question captures acquisition of mostly non-transferable skills; it indicates that the change in the employee’s skillset resulting from a course resulted in acquisition of more *non-transferable* skills relative to any transferable skills acquired. Therefore, this question does not preclude acquisition of transferable skills, but focuses on the relative change in the employee’s stock of non-transferable and transferable skills, which is likely most relevant for employee outcomes, including labor market mobility.

¹⁰ There are 15 possible industries (Agriculture, Business/Management services, Communications, Construction, Engineering, Finance/insurance/real estate, Government/public administration/military, Manufacturing, Mining, Not-for-profit, Other Services, Retail/wholesale trade, Transportation, Utilities, and Other) and 14 possible job functions (Accounting/finance, Consulting, Education, Engineering/R&D, Entrepreneurship, General management/strategy, Human resources, management information systems, marketing/sales/distribution, Procurement/purchasing, Production/operations, Public relations, Real estate, and Other).

¹¹ The Likert agreement scale responses are: 5 = Strongly agree, 4 = agree, 3 = neither agree nor disagree, 2 = disagree, and 1 = strongly disagree.

Table 2 reports the descriptive statistics for the Likert measure, which has a mean of 3.06 (roughly corresponding to *neither agree nor disagree*) and a standard deviation of 1.12. The mean is significantly greater for elective courses (3.15) relative to core courses (3.00; $p < 0.05$). We convert the Likert response scale into a binary measure of non-transferability that equals 1 if the employee responds “Agree” or “Strongly Agree,” and equals 0 otherwise.¹² The mean of the binary measure is 0.35, which indicates that a substantial proportion of employees (35 percent) perceive a given course as increasing their stock of non-transferable skills relative to transferable skills.

To provide additional context for variation in non-transferability, Table 1A in the Appendix includes a sampling of courses ordered by the mean of the non-transferability measure. When reading the course description, the variation we find in the non-transferability rating is sensible in that those courses with greater emphasis on general principles have lower values of non-transferability (e.g., Managerial Economics), while courses with more applications have higher values of non-transferability (e.g., Leadership & Personal Development). Given that the human capital literature has long used offsite and academic coursework as examples of training that provides employees with transferable skills, finding that over a third of course experiences are classified by employees as increasing their non-transferable skills by more than their transferable skills is notable.

How does our measure of non-transferability of newly acquired skills compare to past studies? Overall, employee-level assessments of non-transferability of skills are rare. The only known measure for the U.S., which is used by Loewenstein and Spletzer (1999), was collected in the NLSY79 in 1994 and asks respondents to assess the following, “How many of the skills that

¹² Mapping this measure to the model presented in Section 2, we are capturing empirically whether or not $\pi > 0.50$.

you learned in this training program could be useful in doing the same kind of work for an employer DIFFERENT than [current employer]?” with a response scale of 1) all or almost all, 2) more than half, 3) about half, 4) less than half, or 5) none or almost none of the skills. Only 11 percent of workers reported that either less than half (response = 4) or none of the skills (response = 5) were useful at another employer (1999).

However, there are two reasons why the NLSY79 question likely measures a lower bound on the extent to which an employee acquires non-transferable skills. First, assessing whether skills “could be useful” does not require the respondent to compare usefulness at the current employer relative to alternative employers. This implies that respondents are likely to respond based only on their increases in transferable skills; however, presence of transferable skills does not preclude increases in non-transferable skills as employees likely acquire a portfolio of skills from a training experience (Raffiee and Coff 2016).¹³ Second, respondents are asked to assess the transferability of skills acquired from any training program in which they participated during the past year. Raffiee and Coff (2016) argue that such a large time lapse between response and training likely induces a tendency towards over-reporting of transferable skills due to recall bias. Our measure of non-transferability, which is asked immediately following the course and asks about the composition of skills, addresses both of these concerns.

As with the NLSY measure, the measure of transferability we use in the paper is subjective in that it is based on employee reports rather than an objective measure of skills.

Scholars in management have recently proposed that the distinction between objective and

¹³ Data from the Korean Labor and Income Panel Study includes a measure of transferability that is less susceptible to the this limitation in that it includes a direct comparison between current and alternative employers: “How useful do you think your knowledge of skills which you learned from this job would be for other jobs if you move to another workplace in the same industry and occupation? 1) Useful as much as in the current workplace, 2) partly useful, 3) hardly useful, 4) I did not learn any special knowledge or skills at this job. However, this measure differs from the one used in the present study in that it assesses the relative stock of transferable and non-transferable skills, not the *change* in the stock resulting from a training or learning experience.

subjective firm-specific human capital may be theoretically important (Campbell, Coff and Kryscynski 2012; Coff and Raffiee 2015; Raffiee and Coff 2016), yet there is no empirical evidence that relates these two types of measures.

We also measure acquisition of non-transferable skills using choice of electives; within the part-time MBA, roughly half of the 48 required credits are electives. We categorize elective courses using the course number and title as whether or not they are related to a specific job function or industry.¹⁴ For example, “Mergers and Acquisitions” (FINA6541) is assigned to the Finance/Insurance/Real Estate industry and the Accounting/Finance job function. We then create an indicator variable that equals 1 if the employee’s current job function matches that assigned to the course. We create a second measure that repeats this process using information on job function and industry. Based on this, 10.9 percent of courses are designated as job-related based on job function, while 15.2 percent are designated based on job function or industry.¹⁵ We relate our measure of commitment to elective selection and expect a positive relationship between strength of commitment with the employer and the likelihood of enrolling in an elective course that is job related.

3.3 Measuring Commitment

We measure commitment using two dimensions of organizational commitment, affective and normative commitment, developed by the industrial-organizational psychology literature (Allen and Meyer 1990), that are likely to capture differences in the extent to which the employee is

¹⁴ We map courses to one of 13 possible job function and one of 14 possible industry categories, which are listed in footnote 9, except we exclude “Other” from the mapping. If the course maps to multiple industries, such as course that are germane to practices that affect all organizations, like Human Resources, then it is coded as “Multiple” for industry and does not meet the job-related definition for any participant based on industry.

¹⁵ If the course maps to multiple industries, such as course that are germane to practices that affect all organizations, like Human Resources, then it is coded as “Multiple” for industry and does not meet the job-related definition for any participant based on industry.

psychologically attached to the employer. Below we describe the different dimensions and how there were measured in our sample. It is worth noting that our measures include a subset of questions from the original Allen and Meyer (1990) scale rather than the full scale in order to maximize retention in the study given that participants receive the survey questionnaire three times a year (i.e., after each semester). To assess whether this is a concern, we compare the reliability of our survey scale to the original scale.

Affective commitment is based on an emotional attachment to the employer and captures the extent to which an employee identifies with and is involved in an employer (or organization). We include three questions from Allen and Meyer (1990)'s full 8-item scale to capture affective commitment: 1) "I really feel as if this organization's problems are my own;" 2) "I do not feel a strong sense of belonging to my organization" (reverse coded), and 3) "I would be happy to spend the rest of my career with this organization;" each is measured on a 5-point Likert agreement scale. The reliability statistic for this 3-item scale is 0.67 as measured by Cronbach's α , which performs reasonably well as it meets agreed upon standards for reliability, despite having a lower value than the full scale measure ($\alpha = 0.87$, Allen and Meyer 1990). We create an index of affective commitment by taking the average of the employee's response to these three questions. We measure affective commitment each semester and report the descriptive statistics in Table 2; in our sample, the average index of affective commitment is 3.20 with a standard deviation of 0.85. We standardize the index when using it in the regression analysis.

Normative commitment reflects employee attitudes and feelings related to a sense of obligation to an employee and captures how employees think they *should* act in order to best serve the employer or organization. We include the following three questions from Allen and Meyer (1990)'s full 8-item scale: 1) "I do not feel any obligation to remain at my current

employer” (reverse coded); 2) “Even if it were to my advantage, I do not feel it would be right to leave my organization right now;” and 3) “I owe a great deal to this organization,” each measured on a 5-point Likert scale. The reliability statistic for this 3-item scale is 0.65 as measured by Cronbach’s α , which also performs reasonably well (full scale reliability coefficient is $\alpha = 0.75$, Allen and Meyer 1990). We create an index of normative commitment by taking the average of three questions. The average value for the index measuring normative commitment in our sample is 2.91 with a standard deviation of 0.87 (Table 2). We standardize the measure when using it in the analysis.

Affective and normative commitment likely capture the psychological attachment that we propose influences employee preferences regarding acquisition of skills (i.e., Section 2, equation 1). Indeed, these measures closely relate to Akerlof and Kranton’s (2000, 2002, 2005) conceptualization of identity, which is based on how strong one’s feelings are toward group membership as well as perceptions of the norms for how individuals who belong to a group should behave, that is proposed to shape preferences and economic decisions. Overall, we expect that employees who report high levels of affective and/or normative commitment are more likely to acquire skills that are less transferable relative to those who report low levels of affective or normative commitment. In our sample, the correlation between the index measuring affective and normative commitment is strong ($r = 0.64$), which gives credence to the idea that these two dimensions together capture a source of meaningful variation across employees. Given this strong correlation, we create a combined index measure that averages across all six questions and use this as an alternative specification in the regression analysis.

While we are interested in measuring strength of psychological attachment to the employer, employees may feel tied to their organization for other reasons. In particular,

employees may vary in their mobility costs, with employees with higher mobility costs feeling more attached to their employers relative to employees with lower mobility costs. Such mobility costs could influence skill acquisition, although we expect that this operate through the budget constraint, not preferences. Namely, employees who face high mobility costs likely face a greater difference in the relative wages between non-transferable and transferable skills, which would incent such employees to acquire skills that are relatively less transferable in order to maximize their pay at the current employer (see Equation 2). Alternatively, such employees may actively seek to acquire transferable skills in order to increase the likelihood of finding employment elsewhere (i.e., take efforts to reduce their mobility costs).¹⁶ Therefore, predictions for skill acquisition based on mobility costs are ambiguous. Nonetheless, assessing the relationship between mobility costs and acquisition of non-transferable skills provides a useful comparison as it may illuminate differences in how psychological attachment and cost-based attachment relate to skill acquisition.

To measure mobility costs, we use continuance commitment from industrial-organizational psychology (Allen and Meyer 1990), which is the third dimension of organizational commitment. We include four items from Allen and Meyer's (1990) original 8-item scale example: 1) "It would be hard to leave my organization right now, even if I wanted to;" 2) "It would not be too costly for me to leave my organization right now" (reverse coded); 3) "I feel that I have too few options to consider leaving this organization;" and 4) "One of the major reasons I continue to work for this organization is that leaving would require considerable personal sacrifice – another organization may not match the overall benefits I currently have," each is measured on a 5-point Likert agreement scale. The reliability statistic for the 4-item scale

¹⁶ The idea that mobility costs are endogenous is outside the simple model presented in section 2.

is 0.79 as measured by Cronbach's α , which performs as well as the full scale (8-item $\alpha = 0.79$, Allen and Meyer 1990). We create an index for continuance commitment by taking the average of these four questions. The mean for the index for continuance commitment in our sample is 3.17 with a standard deviation of 0.73 (Table 2); we standardize the measure when using it in the analysis. The correlations between continuance and affective commitment ($r = 0.130$) and the correlation between continuance and normative commitment ($r = 0.259$) are relatively low as compared to the correlation between normative and affective commitment, which underscores the conceptual difference between continuance commitment and the other two measures.

3.4 Firm-specific Opportunity

Our conceptual framework predicts that acquisition of non-transferable skills among employees with greater commitment to the employer (relative to employees with less commitment) occurs because such employees acquire new skills in a way that best serves their current employer. To measure how this may occur within the same training course, we assess to what extent an employee reports engaging their current employment situation within the course. We measure this using the following question, "This course provided me with significant opportunities to draw from experiences and challenges at my **current position** through class assignments, class discussion, and course reading," with a 5-point Likert agreement scale for response. We call this measure *firm-specific opportunity* and report the mean (3.80) and standard deviation (1.14) in Table 2. In the subsequent regression analysis we evaluate to what extent differences across employees in how much they engage their current employment context in their learning within the course explains higher reports of non-transferability among employees with greater commitment to the employer. While it is likely that courses vary in the extent to which

these opportunities are available, our analysis controls for course offering such that any variation in the firm-specific opportunity measure is due to employee-initiated differences, rather than course or instructor differences.

3.5 Measures of Voluntary Turnover

We expect that acquisition of non-transferable skills will reduce labor market mobility of employees. In particular, we expect that employees who perceive that they have acquired disproportionately more non-transferable skills will be less likely to voluntarily end their current employment relationship due to expectations that their productivity (and pay) would be lower elsewhere. We measure quit intentions using the following question: “What is the chance that you are going to voluntarily quit your job in the next 12 months?” Response options were 100%, 75%, 50%, 25% and 0% chance. The average value for our sample is 25% with a standard deviation of 28%. Because quit intentions are measured semester by semester, we relate this to the average of the non-transferability across courses for the semester for a given individual; we expect a negative relationship between non-transferability and quit intentions.

4. Results

This section reports the results from the multivariate regression analysis involving measures of non-transferability, commitment, and quit intentions. First, we relate the three measures of organizational commitment (affective, normative, and continuance) to reports of non-transferability of skills acquired through MBA coursework as well as elective selection. Second, we evaluate to what extent differences in non-transferability is related to differences in how students use their current employment context as part of their coursework. Finally, we evaluate how reports of non-transferability relate to quit intentions.

4.1 Commitment and Non-transferability of Skills

We evaluate the relationship between commitment and non-transferability of skills in two ways. First, we assess how commitment relates to employee reports of non-transferability for a given course. Second, we assess how commitment relates to the propensity of employee to enroll in an elective course that is relevant to an employee's current employer. We use affective and normative commitment to capture the notion of psychological attachment that is part of our conceptual framework. We also evaluate differences in non-transferability stemming from mobility costs as measured by continuance commitment to provide a comparison of this different form of attachment elates to skill acquisition.

4.1.A. Skill acquisition within a course

We relate our binary measure of non-transferability to lagged values of organizational commitment controlling for time-varying characteristics (grade in course, tenure, tenure squared, and dummy variables capturing firm size and industry) as well as time-invariant individual-level characteristics (GMAT score and gender). We estimate Equation 3 using a linear probability model with the left-hand-side variable as $\Pr(\text{NonTransferable}_{j\text{it}} = 1)$, which captures whether the employee perceived the course as providing relatively more non-transferable as compared to transferable skills (equation 4). We estimate,

$$\Pr(\text{NonTransferable}_{j\text{it}} = 1) = \alpha + \beta\theta_{i,t-1} + \Lambda X_{j\text{it}} + \Omega X_{i\text{t}} + \Sigma X_i + \kappa_j + \varepsilon_{j\text{it}} \quad (4)$$

Where $\theta_{i,t-1}$ is a measure of commitment, $X_{j\text{it}}$ includes course by employee measures (course grade), $X_{i\text{t}}$ includes time varying employee measures (tenure, tenure squared, firm size, firm industry), and X_i includes time invariant measures (GMAT score, female indicator variable); κ_j is a course fixed effect. We cluster the standard errors at the individual level.

Table 3 reports the regression results; each column separately reports results for the three dimensions of organizational commitment, which are lagged (i.e., measured in the previous post-semester survey). Column 1 reports the results using our index of affective commitment; we find a positive and significant relationship between affective commitment and the likelihood that the course provided non-transferable skills. In particular, a one standard deviation increase in the affective commitment index is associated with a 5.3-percentage point increase in the likelihood of acquiring skills that are mostly non-transferable (relative to the mean of 35 percent). Because we include course by semester fixed effects, this relationship is identified from variation across employees in reports of affective commitment and non-transferability among employees enrolled in the same course. Furthermore, because we control for grade, this relationship is not simply driven by employees with higher levels of affective commitment performing better (or worse) in the course.

The second column of Table 3 reports the results using the index for normative commitment. Again, we find a positive and statistically significant relationship between this measures of commitment and acquisition of non-transferable skills. A one standard deviation increase in the index for normative commitment is associated with a 5.3 percentage point increase in the likelihood of acquiring skills that are mostly non-transferable. We report results from using the combined index in Column 4. We find a positive and statistically significant relationship, with a slightly higher estimated coefficient: A one standard deviation increase in the combined index is associated with 6.6 percentage point increase in the likelihood of acquiring mostly non-transferable skills.

In comparison, we do not find a statistically significant relationship between acquisition of non-transferable skills and the index for continuance commitment (column 3, Table 3). While

the standard errors are too large to conclude that the relationship with non-transferability is statistically different for affective and normative commitment as compared to continuance commitment, the estimated positive relationship between continuance commitment and non-transferability of skills is notably weaker than that estimated for affective and normative commitment.

The control variables in the regression present interesting results useful for furthering our understanding of the factors that relate to the accumulation of non-transferable skills. First, we find a significant negative relationship between GMAT score and acquisition of non-transferable skills in Table 3. While we use GMAT score to control for general cognitive ability, it may also capture variation in external labor market opportunities across employees such that those with higher cognitive ability may face higher pay for transferable skills (relative to non-transferable skills) in the market as firms compete for top talent. This would be consistent with equation 2, which predicts a negative relationship between investment in non-transferable skills and compensation for transferable skills. Second, we find evidence of a concave relationship between tenure and acquisition of mostly non-transferable skills (i.e., coefficient on tenure is positive and coefficient on tenure squared is negative).¹⁷ This may seem counterintuitive in that typically we associate higher tenure with greater amounts of firm-specific skills. However, because our measure of non-transferability essentially captures *changes* in the stock of non-transferable as compared to transferable skills, this pattern is sensible in that it indicates that the capacity to acquire firm-specific skills is greatest earlier in one's tenure and dissipates over time.

4.1.B. Enrollment in Job-Related Electives

¹⁷ The estimated concave relationship implies that acquisition of non-transferable skills peaks at roughly 6.5 years of tenure.

The previous results are consistent with our conceptual framework. However, one may be concerned that those findings are confounded by omitted factors given that we used perceptual measures of non-transferability and commitment. As a complementary strategy, we evaluate the relationship between organizational commitment and the likelihood of pursuing a job-related elective (i.e., left-hand-side variable is $\Pr(\text{job related}_{jit} = 1)$) as determined by a match between course name and the individual's current position. We use the same model as specified in equation 3, but restrict the sample to elective courses as these are the course experiences for which employees exert choice. We report the regression results in Table 4, where columns 1 to 4 defines job-related based on the employee's job function and columns 5 to 8 designate a course as job-related if it matches the employee's job function or industry.

We find that affective commitment is significantly related to likelihood of pursuing a job-related elective when this is defined based on job function (Table 4, column 1). In particular, a one standard deviation increase in the affective commitment index is associated with a 3.3 percentage point increase in the likelihood of pursuing a job-related elective (relative to a base rate of 10.9 percent). When we expand the definition of job-related to also include a match based on industry, we find that both affective and normative commitment indexes are positively and significantly related to pursuing a job-related elective (Table 4, columns 5 and 6). When we use the combined measure of affective and normative commitment (Table 4, column 8), we find that a one standard deviation increase in this measure of identification is associated with a 4.8 percentage point increase in likelihood of pursuing a job related elective (relative to a base of 15.2 percent). We find no evidence of a significant relationship between continuance commitment and pursuit of job-related elective courses when either definition of job related is used.

Overall, these findings are consistent with our proposed theoretical framework:

Individuals who are more psychologically attached to the employer, as measured by higher levels of affective and normative commitment, are more likely to acquire a skillset in their MBA coursework that is perceived as relatively more non-transferable than transferable as compared to their counterparts who have weaker attachment to their employer. This occurs through higher pursuit of job-related electives, and perhaps more striking, through differences in perceptions of skill transferability for skills acquired within the same course. These relationships are not statistically significant for measures of commitment that based on mobility costs.

4.2 Mechanism: Firm-Specific Opportunity

How do individual-level differences in the extent to which newly acquired skills are non-transferable emerge even when individuals are enrolled in the same course? As described in Section 2, we propose that employees who are more committed to their employer are more likely to engage in behaviors that are in the interest of the employer relative to those who are less committed. In the context of skill acquisition within a given course, this may manifest as employees with greater commitment being more likely to make connections (consciously or unconsciously) between their classroom learning and their current employer relative to those who are less committed. We measure differences in the engagement of an employee's current employment context in her learning using our firm-specific opportunity measure (i.e., reports of opportunities to draw on current position in coursework, see Section 3.2).

Table 5 reports regression results that relate employee reports of firm-specific opportunities for a given course to the commitment indexes (lagged by one semester). We find that affective commitment and normative commitment are positively and significantly related to reports of firm-specific opportunities (columns 1 and 2), which indicates that employees with

greater commitment to their employer are more likely to engage their current employment context in their learning relative to those with lower commitment. In particular, a one standard deviation increase in the index for affective (normative) commitment is associated with 0.157 (0.105) of a standard deviation increase in the measure of firm-specific opportunity. When we use the index that combines normative and affective commitment, the estimated effect increases slightly to 0.165 (Table 5, column 4). We find no evidence of a significant relationship between continuance commitment and reports of firm-specific opportunity (column 3), which indicates that employees who are attached to their employer based on mobility costs are not more likely to actively engage their current employment context in their learning within a given course. While course and instructors likely vary in the opportunities provided for drawing on one's current employment context within the course, this is not driving the results given that we include course by semester fixed effects in the model.

In terms of other predictors of employee reports of firm-specific opportunities, we find that higher ability employees as captured by GMAT score are less likely to report engaging their current employment context in their learning (i.e., there is a significant negative relationship between GMAT and firm-specific opportunity, Table 5). This is consistent with these high-ability employees' facing lower incentives to invest in non-transferable skills due to greater labor market opportunities (i.e., equation 2). Despite this, we find that greater engagement of one's current employment context in one's learning is associated with a higher grade in the course as evidenced by the positive and significant relationship between course grade and firm-specific opportunity (Table 5).

Table 6 reports evidence on the extent to which greater engagement of an employee's current employment context explains the relationship of affective and normative commitment

with non-transferability of skills acquired in a given course. Columns 1 to 4 of Table 6 report the same findings from Table 3 by way of comparison, while Columns 5 to 8 add the firm-specific opportunity measure to the regression model. To evaluate the role of firm-specific opportunity in explaining the acquisition of non-transferable skills, we assess to what extent the estimated coefficients on the commitment measures decrease when firm-specific opportunity is added to the regression model. We find that the coefficients on affective and normative commitment indexes are decreased roughly in half by including firm-specific opportunity in the model (i.e., compare columns 1 to 5, and columns 2 to 6). When we conduct a formal test for mediation, we find that firm-specific opportunity explains nearly half of the relationship of affective and normative commitment with non-transferability of skills.¹⁸

4.3 Quit Intentions and Non-transferable Skills

Acquisition of non-transferable skills is expected to reduce mobility by creating a gap between an employee's productivity at her current employer and alternative employers. In a competitive market, this gap in productivity would imply a wage loss for the employee upon separating from the current employer under the assumption that pay reflects the value of the employee's productivity. Therefore, we expect that employees who acquire relatively more non-transferable skills will be less likely to voluntarily separate from (i.e., quit) their employer.

There is a large literature in industrial-organizational psychology that links greater organizational commitment to lower intentions to leave the employer (Vandenberghe, Bentein, and Stinglhamber 2004; Mohamed, Taylor, and Hassan 2006; Weng and McElroy 2012).

¹⁸ We conduct a Sobel test for mediation using the command *sgmediation* in Stata 14. We estimate a statistically significant indirect effect for affective and normative commitment (as well as the combined measure), which indicates mediation. We do not find evidence of an indirect effect for continuance commitment.

However, this literature generally fails to test the specific mechanisms or channels through which this may occur. We are the first to propose that greater acquisition of non-transferable skills by employees with higher affective and normative commitment may explain part of the established negative relationship between organizational commitment and turnover intentions.

To mitigate the possibility that any observed relationship we find between commitment, non-transferability and intentions to quit are driven by a spurious factor generated from collecting these survey measures at a single point in time, we use a lagged estimation structure. In particular, we model intentions to voluntarily quit at time t as a function of acquisition of non-transferable skills at time $t-1$ and organizational commitment at time $t-2$. Because intentions to quit and organizational commitment are measured for each semester, while non-transferability is measured at the course by individual level, we take the average of our measure of non-transferability across courses for an individual in a given semester to obtain a semester-level measure, which we represent as Π in equation 5:

$$\Pr(\textit{Turnover Intentions}_{jit} = 1) = \alpha + \psi\Pi_{i,t-1} + \beta\theta_{i,t-2} + \Lambda X_{jit} + \Omega X_{it} + \Sigma X_i \kappa_j + \varepsilon_{ijt}. \quad (5)$$

Table 7 reports regression results from relating intentions to quit one's employer in the next year, measured from 0% chance to 100% chance, to the amount of non-transferable skills acquired last semester, and organizational commitment measured two semesters ago.¹⁹ Column 1 reports the relationship between non-transferability and intentions to turnover; we find a negative and statistically significant relationship. In particular, the effect of assessing all of one's prior semester coursework as non-transferable relative to transferable is associated with a 7.4 percentage point decrease in intentions to quit (relative to a base of 25 percent). Columns 2 through 4 report a negative and statistically significant relationship between intentions to

¹⁹ We estimate the relationship using OLS. However, because the response options of quit intentions are ordinal categories, we also use ordered probit; the conclusions are the same.

voluntarily quit and organizational commitment for all three dimensions, although the effect is stronger for affective (column 2), normative (column 3), and the combined measure (column 5) relative to continuance commitment (column 4). When we include the measure of non-transferability of skills in the model (column 6 to 9, Table 7), we see that the estimated relationships of affective and normative commitment with intentions to quit are reduced slightly; there is no change in the estimated relationship between continuance commitment and intentions to turnover. Formal tests for mediation find that there is some evidence that the relationship between affective and normative commitment is in some part explained by acquisition of non-transferable skills.²⁰

What about actual turnover of employees? In our sample, just 4.2% of employees in our sample changed employers during the study timeframe. When we evaluate the relationship between commitment, non-transferability of skills, and actual turnover we do not find evidence of a statistically significant relationship between acquisition of non-transferable skills and actual turnover (available upon request). Low power likely contributes to this null finding.²¹

5. Conclusion

This paper finds that employees' attitudes towards their employer are related to the transferability of acquired skills. Namely, we find that employees who are more committed to their employer such that they are more emotionally connected to (as measured by affective

²⁰ Sobel test for mediation finds a marginally significant effect for the acquisition of non-transferable skills explaining the relationship between the index for affective commitment (p-value = 0.11), normative commitment (p-value = 0.08), and the combined index (p-value = 0.08) with intentions to voluntarily quit the employer within the year.

²¹ Alternatively, it is possible that outside employers may find the tendency of an employee to become psychologically attached to an employer as a desirable characteristic and actively recruit such employees despite these employees not seeking an employment change. Such a possibility is an area of future research.

commitment) and feel a stronger obligation to (as measured by normative commitment) their employer are more likely to report that the skills they acquire are non-transferable relative to employees with lower commitment to their employer. We find that such acquisition of non-transferable skills occurs through differential pursuit of training opportunities (i.e. selection of job-related electives) and, more importantly, through differential acquisition of skills within a given learning environment. Furthermore, much of the difference in the acquisition of the non-transferable skills within a given learning environment is due to more committed employees drawing on their current employment context in their learning relative to employees with less commitment. Importantly, we do not find such relationships for employees who feel more attached to their employer based mobility costs (as measured by continuance commitment).

While the paper proposes a new conceptual framework for understanding human capital acquisition that is supported by empirical evidence, it is not without limitations. First, the data used in this study are observational and cannot be used to establish a causal relationship between commitment and skill acquisition. While we have mitigated concerns that our findings are driven by spurious factors related to data collection by using lagged measures of commitment and find evidence consistent with the mechanism we propose through our measure of firm-specific opportunity, we cannot claim that stronger psychological attachment has a causal effect on skill acquisition, or that such skill acquisition has a causal effect on reducing intentions to quit one's employer. Nonetheless, these data allow for testing the key aspects of the conceptual framework proposed in this paper: Assessing empirical evidence of variation in transferability based on heterogeneity in individual-level attributes.

Second, we rely on employee reports of transferability, which are subjective and may not match objective transferability. It is possible that more committed employees may be more likely

to perceive skills as non-transferable as compared to less committed employees. At the same time, perceptions are likely to matter for behaviors (c.f. Raffaei and Coff 2016), including job search.

Third, our sample is limited to employees pursuing a part-time MBA program at the University of Minnesota. While the findings are likely to generalize to other types of degree-based programs, we cannot assess to what extent there is variation in acquisition of skills for on-site training programs or on-the-job learning more generally.

Despite this limitation, this paper has important implications for research on employees and organizations. First, finding empirical evidence that employees influence to what extent the skills they acquire (or report) are transferable challenges human capital scholars to more explicitly account for differences across employees when making assessments on the relationship between training, mobility and wages. Second, the findings call for caution in using training program characteristics to infer the extent to which acquired skills are transferable. Namely, we find that approximately a third of MBA course experiences by employees, which standard human capital theory would characterize as purely transferable, provide skills that are mostly non-transferable. Third, this paper provides empirical support for the theoretical distinction proposed by identity economics. The clear difference in the pattern of findings between employees whose attachment to the employer is psychological (i.e., stems from emotion and attitudes) as opposed to mobility costs provides strong support for the role of individuals' preferences towards their employer in influencing individual's behavior in organizations.

The present research opens up avenues for future work. Additional research is needed that relates subjective and objective firm-specific human capital measures and how subjective measures relate to employee behaviors in the labor market. In addition, research is needed to

assess other employee-level attributes related to acquisition of non-transferable skills and whether the employee's influence is a conscious as opposed to subconscious process.

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Table 1: Descriptive Statistics for Control Variables

Variable	Mean	Std. Dev.	Min	Max
Female	0.441	0.497	0	1
Average GMAT Score	634.928	61.073	440	770
Average Job Tenure	4.711	2.970	0.000	23.667
Average GPA	3.705	0.449	2.000	4.000
Employer size: less than 100 employees	0.080	0.271	0	1
Employer size: 100-499 employees	0.060	0.237	0	1
Employer size: 500-999 employees	0.035	0.183	0	1
Employer size: 1,000-9,999 employees	0.164	0.371	0	1
Employer size: 10,000-99,999 employees	0.361	0.480	0	1
Employer size: over 100,000 employees	0.301	0.459	0	1

Notes: N = 2,573.

Table 2: Descriptive statistics for Non-transferability, Firm-specific Opportunity, and Measures of Attachment

Variable	Mean	Std. Dev.	Min	Max
Non-transferability of course (Likert scale)	3.058	1.122	1	5
Non-transferability of course (Binary)	0.350	0.477	0	1
Firm Specific Opportunity (Likert scale)	3.802	1.142	1	5
Lagged Affective Commitment (Index)	3.198	0.852	1.000	5.000
Lagged Normative Commitment (Index)	2.911	0.865	1.000	5.000
Lagged Continuance Commitment (Index)	3.168	0.725	1.000	5.000

Notes: N = 2,573. The binary measure of non-transferability equals 1 when the Likert measure of non-transferability has a value of 4 (Agree) or 5 (Strongly agree).

Table 3: Non-transferability of Coursework and Organizational Commitment

	(1)	(2)	(3)	(4)
Affective commitment index (lagged), Standardized	0.053*** (0.018)			
Normative commitment index (lagged), Standardized		0.053*** (0.020)		
Continuance commitment index (lagged), Standardized			0.028 (0.022)	
Affective and Normative combined index (lagged), Standardized				0.066*** (0.022)
GMAT, Standardized	-0.049*** (0.017)	-0.046*** (0.016)	-0.046*** (0.017)	-0.048*** (0.016)
Female	-0.02 (0.035)	-0.024 (0.035)	-0.02 (0.036)	-0.023 (0.035)
Tenure	0.026** (0.013)	0.025* (0.013)	0.023* (0.013)	0.025** (0.013)
Tenure, squared	-0.002*** (0.001)	-0.002*** (0.001)	-0.001** (0.001)	-0.002*** (0.001)
Course Grade	0.026 (0.024)	0.026 (0.024)	0.026 (0.024)	0.026 (0.024)
Constant	0.186 (0.143)	0.183 (0.144)	0.201 (0.143)	0.186 (0.144)
Semester by Course Controls	Yes	Yes	Yes	Yes
R-Squared	0.141	0.14	0.135	0.142
Individuals	365	365	365	365
Observations	2573	2573	2573	2573

Notes: Left-hand-side variable is binary measure of non-transferability. Unit of observation is course by individual. Standard errors in parentheses, clustered at individual level. Additional controls include employer characteristics (i.e., size and industry dummy variables).

* p<0.10, ** p<0.05, *** p<0.01.