

Stages of the Recruitment Process and the Referrer's Performance Effect

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Although the existing theory predicts that a referral's chances of being hired increase with the job performance of the referrer, no empirical evidence is available to support this claim. To address this discrepancy, we decompose the recruitment process into objective selection, subjective selection, and self-selection and theorize that the likelihood of passing a particular recruitment stage increases with the performance of the referrer under objective selection and self-selection, but remains undetermined at a stage of subjective selection. Our analysis of unique comprehensive data on online recruitment of sales agents in a virtual call center supports these arguments. The effectiveness of personnel as a recruitment channel varies with the type of the recruitment stage and performance of the referrer. When the firm evaluates candidates by an objective criterion, the advantage of a referral increases with the performance of his or her referrer; those referred by relatively high-performing workers are significantly better than the applicants who learned about the job from Internet ads. When job candidates self-select into the next stage of the online application process, the referral of any agent is more likely to continue than a nonreferral, and this likelihood increases with the performance of the referrer. On a subjective stage, the outcome is contingent on the intricacies of the recruitment process. In our case, an applicant's chances of being hired increase with the performance of his or her referrer because the firm rejects the referrals of low-performing workers at a higher rate than it does nonreferrals, while it treats equally the referrals of high-performing workers and nonreferrals. The study's contributions to the literature on social networks in labor markets are discussed.

Key words: labor markets; social networks; virtual recruitment; hiring through referrals; contingent workers

Introduction

A few recent case studies of organizations carefully document the role of referrals in recruitment. The existing theory posits that recruitment is an inherently social process in which personal relationships among employers, job seekers, and intermediaries play a leading role, providing intensive, hard-to-measure information, attracting candidates who would not apply through formal labor market channels, and securing a smoother adjustment and more effective training for new hires. Job candidates referred by the firm's current workers are more likely to survive the selection process and perform well on the job because they possess more appropriate observable and unobservable characteristics, have a deeper understanding of the job's requirements and the firm's culture, and receive informal help with training and socialization (for review of the literature, see Fernandez et al. 2000, Granovetter 1995, Marsden and Gorman 2001). Castilla (2005) provides the first credible evidence that referrals are more productive than nonreferrals, although the advantage disappears in the long run and, moreover, turns into a disadvantage if the referrer quits the firm.

By relying on workers' social networks, employers economize on hiring costs and share these savings with the

very same workers in the form of bonuses for successful referrals; such formal referral programs proliferate and, according to some estimates, deliver nontrivial economic returns (Fernandez et al. 2000). Management textbooks support such practices because referrals "are more satisfied, productive, and likely to remain" with the firm (Baron and Kreps 1999, p. 342). We learn that by and large, referrals enjoy advantage over nonreferrals because of their propensity to present more appropriate résumés, to apply when market conditions are more favorable, and to rely on the reputation, influence, and support of their sponsors (Fernandez and Weinberg 1997, Fernandez et al. 2000). Not surprisingly, access to potential referrers and the ability to mobilize them become major factors in hiring and explain hiring rate differentials among ethnic groups (Petersen et al. 2000).

Despite this progress, at least one major theoretical and empirical puzzle remains: Although the received theory predicts a referrer's performance effect—that is, that a referral's quality and chances of being hired should increase with the job performance of the referrer (Montgomery 1991, Simon and Warner 1992)—no empirical evidence is available to support this claim despite multiple attempts to find it (e.g., Castilla 2005, Fernandez et al. 2000). On the contrary, Fernandez et al.

(2000) find that a referral's likelihood of getting an interview and job offer might even decrease with the tenure and wage of the referrer, which are major indicators of the referrer's performance. Explanations of these discrepancies often point to methodological difficulties of measuring a referrer's characteristics relevant to performance of either the referrer herself or her referral. Because observable sociodemographic characteristics are not reliable predictors of the performance of their carriers, it is hard to expect them to be helpful with referrals either. Moreover, referrals often compete for jobs other than the ones occupied by their referrers, which makes even a perfect measure of referrers' performance largely irrelevant to the performance of the referral.

We argue that, methodological considerations aside, there are theoretical reasons for the absence of the referrer's performance effect. The effect remains undertheorized unless we separate the objective and subjective components of the recruitment process. The information and social homophily arguments, which are commonly brought to justify the relevance of the referrer's performance (Montgomery 1991, Simon and Warner 1992), are valid under objective selection criteria but become problematic when subjective judgments of human resources (HR) personnel guide recruitment decisions. Indeed, such judgments are often guided by considerations other than performance—for example, by a referrer's political clout or the desire to help referrers meet their obligations to family and friends—and as a result, the role of performance in recruitment becomes muted. The literature also ignores judgments of job applicants during the recruitment process and instead portrays them as passive during the time between when they submit an application and when they decide whether to accept an offer. However, a job applicant has an obvious opportunity to withdraw at any moment during the process, and the decision to do that is a subjective judgment on his or her part.

To put the theory on a stronger footing, we analytically decompose the recruitment process into objective selection, subjective selection, and self-selection. For the purpose of this study, we define objectivity with regard to referrals as a consistent application of the employer's predetermined metrics to all candidates, referrals and nonreferrals.

A primary example of objective selection is a test whose outcome is determined by a score calculated according to a fixed algorithm. Subjective selection comprises managerial decisions based on recruiting managers' interpretation of all the information about an applicant available at the time. Self-selection is the mirror image of subjective selection; it comprises workers' decisions to continue through the recruitment process or quit, based on their interpretation of all the information about the firm available to them at the time a

decision is made. This analytical decomposition is productive only if it can be operationalized for an empirical application, which is challenging because typical recruitment stages, such as a screening of résumés and face-to-face interviews, lump together objective and subjective components. We benefit from the spread of the Internet as a recruitment medium; virtual recruitment requires a more careful delineation of recruitment stages and the tasks that employers and job candidates perform on each stage, making operationalization possible.

The typology of selection stages—objective selection, subjective selection, and self-selection—allows us to refine the prediction regarding the referrer's performance effect. The likelihood of being selected increases with the performance of the referrer at a stage of objective selection and self-selection but remains undetermined at a stage of subjective selection. Our analysis of unique comprehensive data on online recruitment of sales agents in a virtual call center (VCC) generally supports these arguments.

Personal contacts remain a salient recruitment channel, although their effectiveness varies with the type of the recruitment stage and performance of the referrer. When the firm evaluates candidates by an objective criterion, the advantage of a referral increases with the performance of his or her referrer; only those referred by relatively high-performing workers are significantly better than the applicants who learned about the job from Internet ads. On a subjective stage, where HR personnel make a judgment about a candidate's qualifications, the outcome is contingent on the intricacies of the recruitment process. In our case, an applicant's chances increase with the performance of his or her referrer because the firm rejects the referrals of low-performing workers at a higher rate than it does nonreferrals, though it treats equally the referrals of high-performing workers and nonreferrals. Finally, when job candidates self-select into the next stage of the online application process, the referral of any agent is more likely to continue than a nonreferral, and the likelihood increases with the performance of the referrer.

This paper is organized as follows: First, we present relevant theoretical arguments and formulate testable propositions. Next, we describe the empirical setting, which is substantially different from those in which similar studies have been conducted. The third section is devoted to a detailed description of our data and research methodology. After providing empirical findings, we summarize them, highlight their limitations, and discuss their implications for studies of labor markets and recruitment processes.

Theoretical Approach

Social Mechanisms of Recruitment Through Referrals

To understand how the referrer's performance effect varies by the type of the recruitment stage, we engage the literature that explores the ways in which employers benefit from hiring through referrals. After a thorough review of that literature, Fernandez et al. (2000) identify five basic mechanisms that generate such benefits: social homophily, extensive and intensive information, reputation protection, and posthire socialization. Social homophily is based on people's preferences to socialize with others similar to them. Thus, referrals are similar to their referrers, and because the latter have survived a prior screening process, the former are better qualified than nonreferred applicants (Fernandez et al. 2000, McPherson et al. 2001, Montgomery 1991, Mouw 2003, Myers and Shultz 1951, Rees and Shultz 1970, Ullman 1966). In addition to observable sociodemographic characteristics, such as gender, age, education, social class, and religion, the homophily proposition encompasses behaviors and values (for a review, see McPherson et al. 2001). Empirical evidence does show that referrals and their referrers exhibit above-chance levels of homophily, at least on observable characteristics, which recruiters take into account (Fernandez et al. 2000).

The extensive information argument essentially suggests that referrers bring applicants who would not apply otherwise, or as Rees (1966) first put it, it helps employers search at the extensive margin. Such applicants exist for two main reasons. First, the population accessible through social networks can be different from the population accessible through formal labor market channels, such as employment agencies and newspaper ads, in terms of individual characteristics, in particular, age, gender, and race (Breugh and Mann 1984, Schwab 1982, Fernandez and Weinberg 1997). Second, potentially attractive applicants are often satisfied with their current employment and therefore are not present in the labor market, which is a precondition for being reachable through formal channels. At the same time, social networks are proactive and match workers and employers even when neither side searches for the other (Granovetter 1995, Marsden and Gorman 2001, Yakubovich 2006).

The intensive information mechanism is based on the ability of referrers to equip both employers and job candidates with detailed, sensitive, and nonstandard information about each other, thereby improving the overall quality of matches (Rees 1966, Granovetter 1995). Information-rich signals may come not only from what referrers say, but also from what they do. Neckerman and Fernandez (2003, pp. 304–305) describe a referral program that allows referrers to choose at the time of making the referral whether to claim a referral bonus or not.

Two-thirds of the referrers did, and their referrals had a significantly lower turnover rate within the 18-month period after the hire; the referrals of those who did not claim the bonus had the same turnover rate as nonreferrals. Thus, referrers appear to have a pretty good idea about the quality of their protégés.

While relying on referrers' outreach effort, employers might yield them too much control over access to jobs (Manwaring 1984) and expose themselves to the risk of hiring inferior candidates who happen to be referrers' relatives and friends in need of jobs. Reputation protection is the mechanism that is supposed to reduce this risk, by making referrers feel concern about damage to their standing with the employer in the case of a poor referral (Rees 1966, Saloner 1985). Finally, the received theory posits that employers benefit from referrals in the long run because of socialization. Having a link to the firm from the beginning helps the newcomer access resources, receive informal training, and form ties to other workers.

The degree to which the five mechanisms described above actually lead to better matches between workers and jobs is contingent on the firm's organizational structure (Neckerman and Fernandez 2003). We argue that the same is true for the referrer's performance effect on the referral's progress through the recruitment process. The critical contingency in this case is the formal recruitment procedures the firm uses. Below, we develop a relevant typology and discuss how each of the mechanisms contributes to the referrer's performance effect under one type or another.

The Typology of Recruitment Procedures and the Referrer's Performance Effect

Formal recruitment procedures are an important component of modern personnel practices. Firms adopt them to make large-scale recruitment more effective and efficient (Blau and Schoenherr 1971, Doeringer and Piore 1971), control workers (Baron et al. 1988), overcome gender and racial stereotyping (Bielby 2000), and accommodate equal opportunity policies of the state (Dobbin et al. 1993). Formalization does not fully eliminate subjective judgments. Firms often treat standard job requirements as desirable but not necessary (e.g., Fernandez and Weinberg 1997, p. 887). American courts outlaw employment tests that are not "demonstrably related to the work to be performed if those tests had the effect of excluding blacks" (Dobbin et al. 1993, p. 396). More generally, because of inherent imperfections in information on the quality of the match between a job and job candidate, such information has to be interpreted.

With respect to hiring through referrals, the need for interpretation raises the issue of the effect on a recruitment decision maker of his or her indirect tie to the referrals. Experimental psychology shows multiple ways in which decision makers arrive at conclusions beneficial

for the people they prefer to deal with (Ditto and Lopez 1992). If, for whatever reason, a recruiting manager has a predisposition toward or against referrals, he or she is likely to find a way to justify his or her position in objective terms, whether any of the advantages or disadvantages associated with recruiting referrals are actually present or not. Fernandez and Weinberg (1997) find strong empirical evidence of employers' preference for referrals vis-à-vis other candidates even after the quality of résumés, including relevant sociotechnical characteristics, are taken into account. Their followup interviews at the firm indicate that by expressing such preferences, managers reward the loyalty of their workers and give them a sense of empowerment.

At the same time, there are circumstances under which an employer is disinclined to hire referrals. If workers' influence is too strong, the employer may want to prevent their further empowerment, and therefore will try to avoid hiring through referrals (Manwaring 1984). It may be the case that management is unhappy with the current labor force for one reason or another and wants a change. Another possible consideration is the geographic distribution of a firm's labor force. For example, it is beneficial for customer centers to have their agents dispersed across various time zones to ensure uninterrupted service around the clock. Referrers, however, bring candidates from their own localities, and thereby limit geographic diversification. Thus, it is impossible to theoretically predict the effect of referrals, in general, and their performance-related attributes, in particular, when subjective judgments are involved.

To determine what predictions are possible in the absence of subjective judgments, we introduce the notion of *objective selection*. In accordance with our discussion, we define objectivity narrowly as the consistent application to all candidates, regardless of their referral status, of the same metrics exogenous to the recruitment process, various standardized tests being a primary example. Do the five social mechanisms identified above predict the referrer's performance effect under objective selection?

Discussing the social homophily mechanism, Montgomery (1991) points out that while workers tend to refer candidates like themselves, employers are more likely to benefit from referrals of high-performing employees. Indeed, because employers make mistakes in hiring and underperforming workers exist, there is no reason to expect that any referral from the current labor force will qualify for the job. The advantage of a referral over a nonreferral increases with the referrer's performance, assuming he or she works in the same job to which the referral applies.¹ Likewise, a high performer should better understand the requirements of the job and therefore provide more valuable intensive information to the job seeker and coach him or her on tests and other tools of objective selection.

At the same time, the existing literature and our observations do not offer any reason to believe that a referrer's performance is relevant to his or her ability to search at the extensive margin, that is, to bring additional applicants who are not available through impersonal channels. The literature also implies that the reputation-protection mechanism should be performance neutral. For example, Fernandez et al. (2000, p. 1292) claim that "even underperforming employees should worry about risking their reputation with the firm when referring others" and point to Saloner's (1985) model, which does not include the referrer's performance as a factor in her decision to put her reputation on the line. Finally, by definition, objective selection cannot take into account advantages of a referral's post-hire socialization.

We argue, however, that there is another mechanism, overlooked in the literature, that also predicts the referrer's performance effect. Simultaneously with being collaborative, organization members in similar positions compete against each other. Burt (1997) analyzes the implications of such a competition among managers for the value of their social capital and, consequently, their promotion chances. In our context, getting a new strong competitor is not necessarily in a referrer's best interests. The stronger the referrer's performance, the less of a concern this is for the employer. Even if a relatively strong referrer sponsors a weaker candidate, that candidate may still be better than nonreferrals. Employers should worry, however, if the referrer is a weak performer. In this case, the *competition* argument implies that he or she will sponsor a weaker and, more often, unqualified candidate.

To summarize, the social homophily, intensive information, and competition mechanisms suggest that the referrer's performance effect will manifest itself under objective selection.

PROPOSITION 1. *Under objective selection, a referrer's advantage over a nonreferral increases with the performance of the referrer.*

The existing accounts of the recruitment process focus primarily on the role of the employer who controls and administers objective and subjective selection procedures; the offer acceptance stage is the only stage whose outcome is determined by the job candidate. Thus, it is implicitly assumed that once an application is submitted, the candidate does not quit until the employer makes an offer decision. The three major studies of complete applicant pools (Fernandez and Weinberg 1997, Fernandez et al. 2000, Petersen et al. 2000) do not report any attrition of applicants in the process of hiring. This is puzzling, because a job applicant is simultaneously exposed to other labor market opportunities or might lose interest in the job after learning more about it or having bad experiences in the process itself. The resulting attrition, which we call *self-selection*, should be

more common among better candidates, who are more likely to be in demand elsewhere and have higher expectations regarding potential employers. As a result, self-selection exacerbates the adverse selection intrinsic to labor markets (Greenwald 1986) and therefore presents a serious problem for an employer. It is critical for the employer to keep an applicant interested until it is decided whether to offer that individual employment. A referrer facilitates this task by *preselling* the job to the applicant (Fernandez et al. 2000, Ullman 1966). High-performing referrers are, by definition, better matched to their employers and jobs and therefore should be more successful in persuading the applicant to stay. This intensive information mechanism supplements the applicant's general more favorable predisposition to the job, which is present according to the social homophily principle.

Last but not least, the applicant can expect from a high-performing referrer more effective help in terms of post-hire socialization and training. Taken together, these arguments lead to our second proposition regarding the referrer's performance effect:

PROPOSITION 2. *The likelihood of a referral self-selecting into continuing through the recruitment process increases with the referrer's performance.*

Empirical Setting

The VCC

We analyze the recruitment of sales agents in a virtual call center (VCC). The VCC handles, inquiries and purchases that are generated from infomercials broadcast on TV networks. Its clients are vendors of various products. Its entire sales force consists of independent contractors who work from home and process orders over the Internet. The pay is assessed at a fixed rate per minute of time on the phone with callers and is equal on average to about \$8 per hour, which includes both time spent on the phone with callers and idle time spent waiting for calls. The average utilization rate—the percentage of the work time spent on the phone with callers—is about 50% in the period we study.

Computer-assisted training of new recruits takes place online without any coaching by the firm's personnel. In its instructions to potential job applicants, the firm explicitly states that it does not provide compulsory training beyond the recruitment process and seeks applicants who are already capable of providing a professional level of service.

To motivate performance, the firm makes sales agents compete against each other. The VCC continuously monitors performance by individual product and uses these data to assign agents their positions in the queue for receiving calls. Better performers have priority, regardless of the number of calls they have already processed. Remuneration is determined entirely by the time an agent spends on the phone with callers and thereby is closely linked to his or her priority in the queue.

The Recruitment Process at the VCC

The VCC practices virtual recruitment, which creates both the opportunity and the need for the separation of objective selection, subjective selection, and self-selection into distinctive stages. The opportunity derives from the VCC's ability to administer tests and other standard recruitment procedures online. Computers are perfectly capable of measuring the outcomes of such procedures, and the VCC can delegate to them standardized decisions, thereby separating the procedures into distinctive selection stages. The need to do that stems from the impersonal nature of virtual recruitment and its low cost for job seekers. Because HR personnel do not monitor and guide applicants until late in the process, the process itself has to be well structured and easy to navigate. In addition, virtual recruitment heightens the problem of adverse self-selection, because less-able candidates, who in the past would not bother to apply, find it very easy to do so electronically (Autor 2001). The clear assignment of decision making to the applicant, computer, or an HR person helps address these issues.

The VCC does not have a preset number of vacancies but strives to ensure that the number of agents and their work schedules correspond to the demand for services. To send a clear signal that it does not hire a permanent labor force and instead contracts free agents to conduct its business, the VCC refers to its recruitment process as *certification*. The certification process consists of multiple stages. To prepare for them, an applicant registers on the VCC's website and provides his or her background information: education, Spanish-speaking skills, years of experience in sales and call centers, and so forth.

In Stage 1, the testing stage, an applicant decides whether to take reading and logic tests,² and if the applicant fails even one of them, his or her application is rejected and he or she may not proceed further. The test is administered entirely on the Internet, with the computer calculating the score and making the decision. Thus, according to our classification, Stage 1 consists of two analytically separate substages of self-selection and objective selection: An applicant self-selects into taking the tests while the computer determines whether he or she passes them according to an objective criterion.

Next, an applicant decides whether to take a voice test. Although HR personnel do not evaluate results immediately, together with the whole application package, the job candidate cannot proceed further without taking this test, and therefore we put taking the voice test into a separate Stage 2. According to our classification, it fits into the self-selection category.

With the voice test taken, a job candidate's application package is complete and ready for screening and subsequent approval or denial in the approval stage. The HR personnel review the materials submitted, listen to the voice test recording, and conduct a phone interview, although the latter does not always take place.

This is where the recruitment process has a bottleneck. HR personnel are physically incapable of processing all the applications in a timely manner and have to establish some priority. The absence of formal procedures gives leeway to subjective judgments of individual HR officers. In our interviews with HR personnel, all of them claimed that the firm does not treat referrals differently and, in fact, does not pay attention to recruitment sources when deciding whether to approve a particular application. Moreover, recently the firm realized that hiring through referrals becomes an impediment for the geographic diversification of its labor force. A substantial portion of the sales agents resides in Florida and Texas and therefore is at high risk of disruption during hurricane season. Agents from Florida and Texas also tend to go to church at the same time on Sunday mornings, which happens to be a popular shopping time.

If an application is approved, the HR department sends some paperwork to the applicant and directs him or her to assemble computer equipment and to sign up for telecommunication services necessary to perform the functions of a sales agent. Because the applicant's compliance implies a major personal investment in the job and signals his or her willingness to do it, we call this fourth stage *offer acceptance* and characterize it as self-selection.

In Stage 5, the training stage, the candidate goes through online training, which consists of taking quizzes and making two sales of real products to real callers. When the sales are completed, the candidate is certified and becomes a full-fledged sales agent for the VCC. The HR department has no means to intervene in this process or influence its outcome; therefore, the stage fits into the objective selection category.³

To summarize, the five stages of the recruitment process cover all three types of selection stages introduced in the previous section. Passing the reading and logic tests and training constitute objective selection; taking the reading and logic tests, taking the voice test, and offer acceptance represent self-selection; finally, the approval stage is an instance of subjective selection.

The VCC promotes sales jobs entirely over the Internet in a passive mode (cf. Marsden and Gorman 2001, Yakubovich 2006). It does not advertise them, but instead relies on word of mouth, both person to person and via websites known to be visited by appropriate audiences, such as teleworkers, stay-at-home mothers, and people with disabilities.

Data and Method

Data

We analyze the VCC's complete database of applications for the position of sales agent that were submitted between September 2004 and February 2005. The database contains 14,843 records of individuals who

started the five-stage certification process. Applicants from the states of New York, California, Oregon, Washington, Alaska, and Hawaii are automatically deemed unqualified because of state laws that limit a firm's ability to utilize independent contractors. After removing these applicants, the sample size becomes 13,387. One hundred ninety applicants were returning agents. Of the remaining applicants, 22 individuals previously convicted for financial crimes are automatically rejected by the VCC and therefore excluded from the analysis. Two hundred twenty seven applicants did not officially submit their applications, because they did not click the submit button, and therefore their applications have never been processed. Further, 328 records cannot be analyzed because they have missing values for the agent's gender. The company considers only those who provide all the required background information. Three thousand six hundred twelve applicants failed to do so, which leaves us with 9,008 cases available for analysis.

The Dependent Variables

Our research questions require a dependent variable for each stage of the recruitment process. The reading and logic tests stage includes two selection steps, and therefore is represented by two dependent variables. The dependent variable for each selection step is a dummy coded 0/1: (1.1) reading and logic tests taken, (1.2) reading and logic tests passed, (2) voice test taken, (3) application approved, (4) offer accepted, and (5) training completed.

Because a candidate is rejected after the first failure, "taking both tests" means that a candidate either took both tests or took one test, failed, and therefore was not allowed to take the second test. In other words, the variable "reading and logic tests taken" is equal to zero only when an applicant voluntarily decided to not take a test, which is consistent with the characterization of this stage as self-selection. Accordingly, the variable "reading and logic tests passed" is defined for the applicants who took both tests in the sense just explained. In a similar fashion, the variable "voice test taken" is defined for those who passed the reading and logic tests, the variable "agent approved" for those who passed all the tests, the variable "offer accepted" for those who were approved, and finally, the variable "training completed" for those who passed the preceding offer acceptance stage. Thus we have six dependent variables defined on a set of nested samples. We discuss how to model them in the Statistical Model section.

The Independent Variable: The Referrer's Performance

A close-ended question on the VCC application form asks candidates how they found out about the job and offers the choice among six mutually exclusive answers: another agent, friend, job ad, bulletin board, chat room,

and other. Because the firm does not advertise the job in traditional mass media, we combine “job ad,” “bulletin board,” and “chat room” into one category for the anonymous channel “the Internet” and treat it as a reference group.

The distinction between the two types of personal contacts, “agent” and “friend,” is important. The former is a proper referrer who possesses information about the employer and can influence the recruitment process. An applicant who indicates that he or she was referred to the job by an agent is supposed to put the name of the agent on the application form. Our conversations with the VCC’s HR personnel suggest that the category “friend” is heterogeneous. Mainly, it includes people unaffiliated with the VCC who learned about the job from others or over the Internet and represent essentially another impersonal—at least on the employer side—channel, the only difference being that it channels information to a specific person rather than broadcasts it widely. In a small number of cases, the friend can be a staff member of the VCC whose influence on recruitment is stronger than that of sales agents. Because of this heterogeneity, we refrain from predicting or interpreting the channel’s role in recruitment but assign to it a separate dummy variable for the purpose of this analysis.

In principle, an applicant referred by an agent who is also a friend might designate his or her referrer as a friend rather than an agent on the application, which would be a problem for our coding scheme and analysis. In practice, this is highly unlikely because, as our conversations with HR personnel and agents show, applicants strongly believe that being referred by another agent presents an advantage, in particular because the questionnaire also asks to give the name of the referrer and thus affords applicants a chance to signal their social proximity to the firm and familiarity with the job implied from it.

We coded each referring agent by the individual agent ID assigned by the VCC, which allowed us to link these data to referrers’ performance records. In 332 cases, we failed to match the referrer’s name provided by the applicant with the VCC’s database of agents. Thirty seven referrals provided only their referring agent’s first name or initials; 19 applicants indicated that they were referred by an agent but left out the name completely. These 388 cases are coded as “unrated agent” and included in the analysis along with the 1,777 cases for which we were able to identify the referring agent and his or her performance.

A referrer’s performance was measured by the utilization rate. Because the agent is paid a fixed rate per minute on the phone, the utilization rate is proportional to the hourly wage, which is not perfect but is certainly an adequate indicator of the agent’s performance in our setting. Essentially, it measures the agent’s fit

to the job. The utilization rate varies with the overall demand for the VCC’s services; therefore, we construct the performance variable as relative performance by dividing the utilization rate of the focal agent for a two-week pay period by the mean utilization rate for the same period. We then average it over all the pay periods worked by the agent during the observation window of our study.

Control Variables

To control for the factors that affect a job candidate’s progression through the recruitment stages, we coded the background information provided on the application. Three dummies—“university” and “advanced degree” with “secondary school” as a reference category—capture candidates’ education level. Relevant skills are measured by the dummies’ “call center experience” and “telemarketing experience” and by the continuous variable “sales experience” coded in six 2-year increments: 1–2, 3–4, 5–6, 7–8, 9–10, more than 10 years. The overall job experience is measured by the number of jobs the applicant has had over his or her career.

The VCC is particularly interested in recruiting agents with excellent Spanish skills. The dummy variable “excellent Spanish” reflects that concern; it is equal to 1 if the applicant reports excellent spoken and written Spanish. In accordance with antidiscrimination laws, the VCC is not allowed to solicit information on the gender and race of job applicants. Because the VCC’s sales agents are predominantly women, gender may be an issue for both recruitment and performance (Reskin and McBrier 2000, Fernandez and Sosa 2005).

To control for this, we coded a dummy “female” from a respondent’s first name in three steps. First, we used the lists of male and female names from the U.S. census, which allowed us to code the vast majority of English and Latino names. Next, we compiled a list of non-Hispanic European, Asian, and Arabic names and asked students who are native of these areas to identify the gender. Finally, we analyzed information in application files (e.g., “stay-at-home mom”) to determine the gender of the applicants whose names were in this regard ambiguous (e.g., Alex, Dana) or who provided only their initials. For 328 records (2.5% of the initial pool), we were unable to identify the gender.

To control for race, we use as proxies the percentages of blacks, Hispanics, and Asians in the zip code area where the agent resides. We also take into account the area’s overall economic prosperity and job opportunities by measuring its per capita income. The zip code–level variables come from the 2000 U.S. Census data.

Because the VCC is concerned about the geographic diversification of its agent pool, an applicant’s chances of passing the approval stage may be affected by the number of available agents and other applicants from the same state in the same time period. To control for this

situation, we construct a variable that counts the number of active agents from the same state at the time when the application is screened for approval.

Statistical Model

Our dependent variables are observed on progressively smaller subsamples of the original pool of applicants; for those who fail the previous stage, the value of the dependent variable for the following stage is undetermined. This well-known sample-selection problem can lead to biased conclusions about the effects of specific variables. For example, to properly evaluate the relationship between referrals and the likelihood of successfully passing the training stage, the VCC would need to allow all the applicants to enter the training stage. Instead, only those who accepted the VCC's job offer may go into training. To the degree that the selection process removes less-capable applicants, whether referred or not, the survivors should be more uniformly qualified, and therefore any advantage of referrals, if it existed, should decline. At the extreme, an analysis of surviving referrals will lead us to the false conclusion that they are equally qualified with nonreferrals.

To address this problem, we estimate a regression model with selection. Basically, it consists of two models. The first is a selection model of an applicant's chances to proceed to the stage under consideration; the second one is the probit model that estimates the applicant's chances of success at that stage. Both models are estimated simultaneously using the full-information maximum-likelihood method, which provides consistent and asymptotically efficient estimates for all the parameters (StataCorp 2003, pp. 75–84).

The variable "performance of a rated agent" is defined only in those cases when the hiring channel is an agent whose performance can be rated, that is, when the agent has been working for at least one, two-week pay period before referring the applicant. At the same time, to obtain the effect of a referral, we have to estimate our models for all the applicants, whether they are recruited with the help of a rated agent or not. This can be done if the dummy variable X_1 for a rated agent as a hiring channel and the continuous variable X_2 for the performance of a rated agent are included in a model in the following way:

$$aX_1 + bX_1X_2 = (a + bX_2)X_1,$$

where a and b are estimated coefficients. This specification fits exactly the propositions we are testing; namely, it suggests that the effect of a referral expressed as $(a + bX_2)$ varies with the referrer's performance X_2 .

Results

Table 1 contains the descriptive characteristics of the variables included in the analysis. It is split into two

panels, A and B, for categorical and continuous characteristics, respectively.

As Panel A shows, 9,008 job seekers completed an application form on the VCC's website, thereby initiating the recruitment process. More than 80% of them are women, which is consistent with other evidence that work at home attracts primarily females, stay-at-home mothers in particular. More than two-thirds of the applicants hold university degrees and another 7% advanced degrees, which is a high level of education for a sales agent job. The average applicant comes from an area with about \$20,000 annual income per capita. The applicants appear well qualified for the job. More than half of them have worked for call centers before, slightly less than half have telemarketing experience, and the average tenure in sales is about three years.

About 24% of the applicants found out about vacancies from a sales agent currently working for the firm; another 24.8% received the same information from a friend who is not an agent. Thus, 48.8% of the applicants learned about the job through personal contacts, which is remarkably similar to numerous previous studies (for review, see Granovetter 1995, Marsden and Gorman 2001). As job candidates progress through the hiring stages, the proportion of those referred by other agents slowly but steadily increases. The proportion of those who learn about the job from friends who are not agents fluctuates around the 25% mark, and the percentage of those who get job information from the Internet gradually decreases from 35.9% at the reading and logic tests stage to 26.1% at the training stage. The category "other" is responsible for about 14%–15% of candidates, which is significant for a residual category. We do not have additional information to decompose it further.

As one could expect, the mean performance of rated agents is close to one, because a referring agent's performance is, essentially, his or her utilization rate divided by the average utilization rate (although the averaging is done within each pay period rather than over the whole observation period of the study). An interesting point is that the mean performance gradually increases from 0.9 to 1.1 as the recruitment process progresses from one step to the next. This suggests that at least on the descriptive level, a referrer's performance is positively related to his or her protégé's chances to succeed.

Table 2 shows the applicants' chance of succeeding across the stages of the recruitment process by selected individual characteristics. Men do slightly better on tests, although this does not help them at the critical approval and training stages, where women are more successful. Not surprisingly, more highly educated people do better on the reading and logic tests. However, they look slightly less fit for the job at the training stage, where candidates with secondary education are more successful than those with higher and advanced degrees. This

Table 1
Panel A. Frequency Distribution for Selected Categorical Characteristics of Job Candidates

	Steps of the recruitment process											
	Reading and logic tests				Voice test		Approval		Offer acceptance		Training	
	Taken		Passed		N	%	N	%	N	%	N	%
	N	%	N	%								
Hiring channel												
Rated agent	1,777	19.7	1,579	21.8	1,279	22.7	1,167	24.1	704	23.9	526	29.4
Unrated agent	388	4.3	327	4.5	258	4.6	226	4.6	144	4.9	99	5.5
Friend	2,236	24.8	1,834	25.3	1,371	24.3	1,188	24.5	714	24.3	462	25.8
Internet	3,234	35.9	2,414	33.4	1,897	33.7	1,558	32.1	957	32.6	466	26.0
Other	1,373	15.3	1,082	15.0	827	14.7	709	14.6	417	14.2	235	13.1
Female	7,489	83.1	5,999	82.9	4,643	82.4	3,991	82.3	2,461	83.8	1,499	83.8
Education												
Secondary	2,141	23.8	1,696	23.4	1,184	21.0	1,015	21.0	586	20.0	330	18.5
Higher	6,221	69.0	5,013	69.3	4,011	71.2	3,445	71.1	2,112	71.9	1,304	72.9
Advanced	646	7.2	527	7.3	437	7.8	388	8.0	238	8.1	154	8.6
Call center experience	4,817	53.4	3,990	55.1	3,181	56.5	2,812	58.0	1,869	63.6	1,162	64.9
Telemarketing experience	3,972	44.1	3,292	45.5	2,582	45.8	2,269	46.8	1,466	49.9	895	50.0
Excellent Spanish	412	4.6	328	4.5	236	4.2	208	4.3	172	5.8	116	6.5
Total	9,008		7,236		5,632		4,848		2,936		1,788	

Panel B. Means and Standard Deviations for Selected Continuous Characteristics of Job Candidates

Performance of rated agent	0.9	0.9	1.0	1.0	1.0	1.1
	0.4	0.4	0.4	0.4	0.4	0.4
Sales experience	3.1	3.1	3.1	3.2	3.5	3.6
	3.3	3.3	3.3	3.3	3.3	3.4
Previous job experience	1.1	1.1	1.1	1.1	1.1	1.1
	1.1	1.1	1.1	1.0	1.0	1.0
Asians in zip area (%)	1.8	1.8	1.7	1.7	1.7	1.7
	2.8	2.8	2.7	2.7	2.7	2.8
Blacks in zip area (%)	15.5	15.8	15.5	15.9	15.4	15.7
	22.1	22.2	21.9	22.3	21.8	21.9
Hispanics in zip area (%)	10.5	10.7	10.6	10.9	11.4	11.5
	17.2	17.3	17.2	17.6	18.3	18.3
Whites in zip area (%)	69.9	69.3	69.8	69.0	68.9	68.4
	27.2	27.4	27.3	27.6	27.7	27.9
Income in zip area (in \$1,000)	20.6	20.5	20.7	20.7	20.7	20.7
	6.8	6.8	6.9	6.9	6.9	6.9
Number of agents from same state	195.5	201.1	199.9	204.3	181.4	197.9
	203.2	204.6	205.3	208.3	186.7	194.7
Total	9,008	7,236	5,632	4,848	2,936	1,788

suggests that the reading and logic tests may lack external validity as measures of an applicant's qualifications for the job.

The transition rates by hiring channel shed first light on the main theme of this paper. We see that through all the steps of the recruitment process except approval, the applicants referred by other experienced agents do much better than anybody else. We carry out regression analysis to find out whether this advantage is still present when other factors are controlled for and whether it varies by the performance of the referrer. It should also help us understand the exceptional status of the approval stage. Table 3 shows the coefficient estimates for the models

with the variable for the referrer's performance included. To relate our results to previous studies, Table 4 reports the coefficients for hiring channels when referrals are not differentiated by the performance of the referrer.

Some effects of the control variables in Table 3 shed light on the inner workings of the recruitment process at the VCC. Despite being less likely to pass the reading and logic tests, female applicants are given a priority by the HR staff at the approval stage. The inconsistency between the objective criterion and subjective opinion more likely indicates that the tests are not comprehensive measures of all the job requirements, rather than proving evidence of the HR personnel's bias.

Table 2 Rates of Transition Across Steps of the Recruitment Process by Selected Characteristics of Applicants

	Steps of the recruitment process											
	Reading and logic tests				Voice test		Approval		Offer acceptance		Training	
	Taken		Passed		Enter <i>N</i>	Pass %	Enter <i>N</i>	Pass %	Enter <i>N</i>	Pass %	Enter <i>N</i>	Pass %
	Enter <i>N</i>	Pass %	Enter <i>N</i>	Pass %								
Hiring channel												
Rated agent	1,777	88.8	1,579	81.0	1,279	91.2	1,167	60.3	704	74.7	526	84.4
Unrated agent	388	84.2	327	78.8	258	87.5	226	63.7	144	68.7	99	74.7
Friend	2,236	82.0	1,834	74.7	1,371	86.6	1,188	60.1	714	64.7	462	75.6
Internet	3,234	74.6	2,414	78.5	1,897	82.1	1,558	61.4	957	48.7	466	73.6
Other	1,373	78.8	1,082	76.4	827	85.7	709	58.8	417	56.3	235	74.0
Gender												
Female	7,489	80.1	5,999	77.3	4,643	85.9	3,991	61.6	2,461	60.9	1,499	77.4
Male	1,519	81.4	1,237	79.9	989	86.6	857	55.4	475	60.8	289	74.4
Education												
Secondary	2,141	79.2	1,696	69.8	1,184	85.7	1,015	57.7	586	56.3	330	79.4
Higher	6,221	80.5	5,013	80.0	4,011	85.8	3,445	61.3	2,112	61.7	1,304	76.2
Advanced	646	81.5	527	82.9	437	88.7	388	61.3	238	64.7	154	78.0
Call center experience												
Yes	4,817	82.8	3,990	79.7	3,181	88.4	2,812	66.5	1,869	62.2	1,162	75.8
No	4,191	77.4	3,246	75.5	2,451	83.0	2,036	52.4	1,067	58.7	626	78.9
Telemarketing experience												
Yes	3,972	82.8	3,292	78.4	2,582	87.8	2,269	63.7	1,466	61.1	895	77.3
No	5,036	78.3	3,944	77.3	3,050	84.5	2,579	57.0	1,470	60.7	893	76.5
Excellent Spanish												
Yes	412	79.6	328	71.9	236	88.1	208	82.7	172	67.4	116	73.3
No	8,596	80.3	6,908	78.1	5,396	85.9	4,640	59.6	2,764	60.5	1,672	77.2
Total	9,008	80.3	7,236	77.8	5,632	86.0	4,848	60.6	2,936	60.9	1,788	76.9

A higher level of education helps the applicants with the reading and logic tests but becomes irrelevant as the recruiting process unfolds, which is not surprising, because it is not a prerequisite for a sales agent. Call center experience makes a difference on all the stages but the last two. Telemarketing experience does not add much on any of the stages. Sales experience is highly desirable, and therefore it is not surprising that it plays a significant role in the approval stage. The negative effect of the number of the current agents in the applicant's state on approval reflects the VCC's concern about the geographic diversity of the agent population.

Following the logic of our theoretical arguments, we interpret the effects of a referrer's performance on the two objective steps: test passing and training. On the test passing step, an applicant is required to score at least 60 points (out of 100) on two different tests, which measure his or her reading and analytical abilities. As shown in Table 3, the *Rho* coefficient has a high value of 0.948 and is statistically significant, which implies that the probit model with selection is superior to the conventional probit model. The coefficient for performance is close to zero, which implies that Proposition 1 is not supported on the test-passing stage. Figure 2 demonstrates that the referrer's effect on the likelihood of passing tests is statistically negligible and does not change with the referrer's performance. The estimates in Table 4 show that an applicant referred by a current agent is not better than an

Internet applicant, but that an applicant from the other channels fares significantly worse. One plausible explanation is that it is not necessarily the difficulty of the test per se, which prevents applicants referred by nonagent friends from scoring well,⁴ but it may be their unfamiliarity with Internet-based tests. Internet applicants are probably computer savvy, and for a person referred by an agent, the gap can be closed if the agent explains to the applicant how the computer-based application works.

For the training stage, the probit model with selection does not improve the fit in comparison with the conventional probit model (the *Rho* coefficient is insignificant), and the estimates of the coefficients vary slightly in magnitude but not in the significance level between the models. Table 3 shows that the likelihood of passing the training stage increases with the referrer's performance. Figure 6 illustrates the pattern of the increase. Low-performing referrers do not differ from nonreferrers. As the referrer's relative utilization rate reaches 0.8, the effect of the referral on the applicant's success in training becomes statistically different from zero. In substantive terms, the impact of the highest performing referrers is almost double the impact of medium-performing referrers. Thus, Proposition 1 holds on the training stage.

To test Proposition 2, we look at the effects of referrers on self-selection steps of the recruitment process: test taking, voice test, and offer acceptance. In all these

Table 3 Probability of a Job Candidate Completing a Step of the Recruitment Process: Bivariate Probit Model with the Agent—Referrer’s Performance as a Predictor, Controlling for Selection at the Previous Steps

Type of selection	Steps of the recruitment process					
	Tests taking self-selection	Tests passing objective	Voice test self-selection	Approval subjective	Offer acceptance self-selection	Training objective
Hiring channel (Internet)						
Rated agent	0.308 (0.094)***	0.003 (0.091)	0.190 (0.117)	-0.258 (0.104)**	0.110 (0.137)	-0.013 (0.186)
Performance of rated agent	0.263 (0.090)**	-0.024 (0.083)	0.089 (0.109)	0.202 (0.099)*	0.532 (0.157)***	0.486 (0.191)*
Unrated agent	0.333 (0.080)***	-0.061 (0.079)	0.126 (0.096)	0.083 (0.101)	0.470 (0.153)**	0.119 (0.192)
Friend	0.247 (0.039)***	-0.171 (0.040)***	0.131 (0.049)**	-0.001 (0.052)	0.360 (0.079)***	0.070 (0.116)
Other	0.124 (0.045)**	-0.111 (0.047)*	0.109 (0.057)	-0.075 (0.056)	0.161 (0.074)*	0.045 (0.112)
Female	-0.011 (0.041)	-0.097 (0.042)*	0.023 (0.050)	0.160 (0.046)***	0.051 (0.069)	0.094 (0.089)
Education (secondary)						
Higher	0.024 (0.036)	0.274 (0.035)***	-0.086 (0.046)	0.021 (0.056)	0.105 (0.082)	-0.067 (0.106)
Advanced	0.063 (0.066)	0.374 (0.068)***	0.010 (0.084)	-0.023 (0.092)	0.192 (0.133)	-0.006 (0.167)
Call center experience	0.216 (0.031)***	0.103 (0.034)**	0.150 (0.039)***	0.289 (0.072)***	0.077 (0.128)	-0.024 (0.127)
Sales experience	0.007 (0.005)	-0.005 (0.005)	0.019 (0.006)***	0.031 (0.007)***	0.005 (0.011)	0.015 (0.012)
Excellent Spanish		-0.167 (0.069)*	0.110 (0.097)	0.891 (0.114)***	-0.018 (0.145)	
Previous job experience	0.062 (0.015)***	0.057 (0.016)***				
Telemarketing experience		-0.028 (0.033)		0.039 (0.040)	-0.047 (0.053)	0.047 (0.071)
Agents from same state (1,000s)				-0.976 (0.107)***	0.631 (0.186)***	-0.491 (0.168)**
Income	0.004 (0.051)					
Asians		-1.099 (0.519)*				
Blacks		-0.192 (0.067)**				
Hispanics		-0.111 (0.088)				
Constant	0.399 (0.510)	-0.044 (0.496)	1.156 (0.072)***	0.345 (0.267)	-0.099 (0.665)	0.352 (0.795)
Sample size	9,008	7,236	5,632	4,848	2,936	1,788
Rho (chi 2)		-0.948 (9.100)**	-0.867 (8.140)**	-0.467 (2.490)	-0.177 (0.170)	0.169 (0.190)
Log likelihood	-4,342.649	-8,083.300	-8,019.486	-9,102.341	-7,315.992	-5,192.880

Notes. The model for the first step is simple probit. The selection models for the subsequent steps are omitted and available from the authors upon request. Significance levels: * < 0.05, ** < 0.01, *** < 0.001 (two-tailed test). Reference categories and standard errors are given in parentheses.

Table 4 The Probability of a Job Candidate Completing a Step of the Recruitment Process: Bivariate Probit Model with the Agent—Referrer as a Predictor, Controlling for Selection at the Previous Steps

	Steps of the recruitment process					
	Tests taking	Tests passing	Voice test	Approval	Offer acceptance	Training
Hiring channel (Internet)						
Agent	0.509 (0.042)***	-0.027 (0.042)	0.246 (0.052)***	-0.052 (0.076)	0.250 (0.104)*	0.103 (0.146)
Friend	0.247 (0.039)***	-0.171 (0.040)***	0.131 (0.049)**	-0.003 (0.051)	0.187 (0.074)*	-0.066 (0.095)
Other	0.124 (0.045)**	-0.111 (0.047)**	0.109 (0.057)	-0.076 (0.055)	0.098 (0.060)	-0.012 (0.101)
Sample size	9,008	7,236	5,632	4,848	2,936	1,788

Notes. Only the coefficient estimates for the hiring channels are shown. The other coefficients are identical to their counterparts in Table 3.

cases, the estimated coefficient for the variable agent in Table 4 is positive and statistically significant; on average, the referrals are more likely to self-select into continuing the recruitment process. The findings in Table 3 reveal that on two self-selection stages, test taking and offer acceptance, the likelihood of passing increases with the referrer’s performance. For example, as shown in Figure 1, the impact of a referring agent whose performance is twice as high as the average performance is more than double the impact of a referring agent whose performance is at the lower end (0.835 coefficient versus 0.361). Similar patterns appear on Figures 3 and 5 for the voice test and offer acceptance stages, although

the slope of the line is not statistically significant for the former.

Finally, we look at the subjective approval stage. As shown in Table 3 (Column 4), the likelihood of an applicant being approved increases with the referrer’s performance. However, HR personnel’s judgments work differently from objective criteria regarding to the treatment of referrals; as Figure 4 shows, applicants referred by low-performing agents are more likely to be rejected than Internet applicants, and this negative effect persists until the referrer’s relative utilization rate reaches 0.4; above that, referrals are undistinguishable from nonreferrals, no matter how strong the referrer’s performance.

Figure 1 Effect of Referrer's Performance on Likelihood of Taking Tests

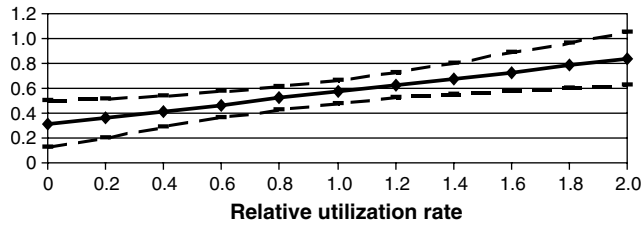


Figure 2 Effect of Referrer's Performance on Likelihood of Passing Tests

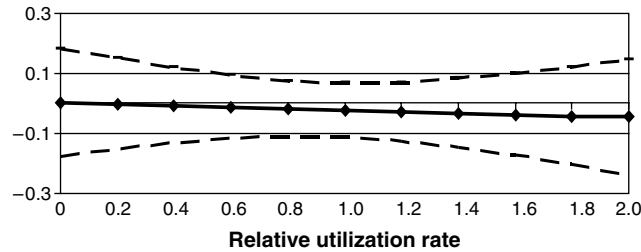


Figure 3 Effect of Referrer's Performance on Likelihood of Taking Voice Test

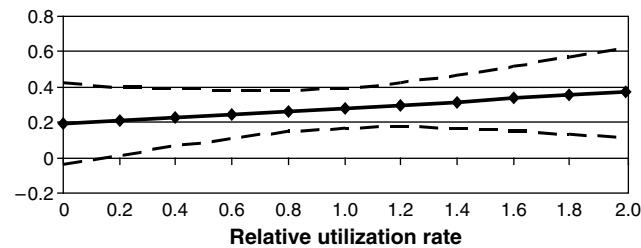
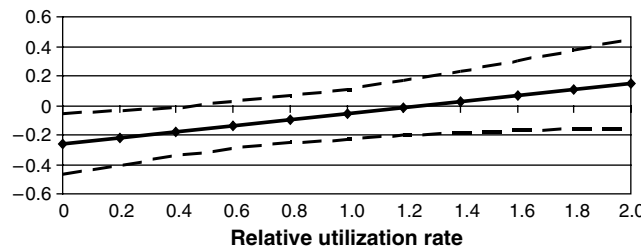


Figure 4 Effect of Referrer's Performance on Likelihood of Being Approved



Discussion

A number of recent case studies of recruitment to a single organization document advantages of referrals (e.g., Fernandez et al. 2000, Petersen et al. 2000). However, they neither link these advantages to the characteristics of referrers nor show whether they result from objective strengths of referrals or recruiting managers' subjective belief in their superiority. Our paper addresses these problems by separating recruitment stages, both analytically and empirically, into objective selection, subjective selection, and self-selection. We present evidence that

Figure 5 Effect of Referrer's Performance on Likelihood of Accepting Offer

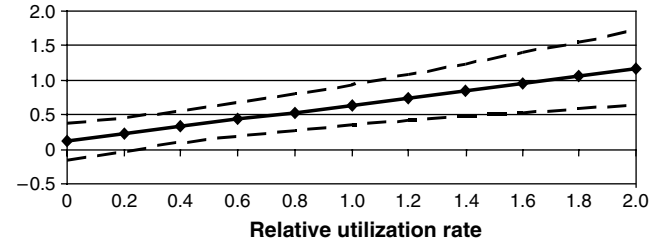
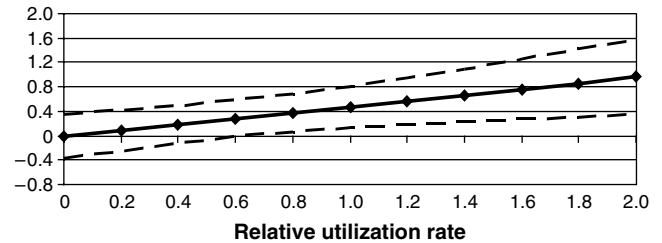


Figure 6 Effect of Referrer's Performance on Likelihood of Passing Training Stage



the objective superiority of referrals, their persistence through self-selection stages, and the subjective perception of their abilities and skills by HR personnel improve with the performance of the referrer. The fact that the same effect, which we call the referrer's performance effect, does not surface on the reading and logic tests does not invalidate our theoretical framework and empirical findings but reminds us about the critical importance of external validity of performance measures. As designed, the tests screen out the candidates who lack very basic general skills but do not differentiate among low and high performers in telemarketing.

We document the pervasiveness of self-selection at various points of Internet-based recruitment, which underscores the importance of the prompt screening of applicants, because better-qualified individuals are likely to encounter opportunities elsewhere and lose interest in the position if not contacted quickly enough. In the long run, the continuous disappointment of qualified candidates as well as excessive numbers of unqualified ones may exacerbate adverse selection, which will turn online recruitment into another formal channel with low reputation (Autor 2001).⁵

Our findings are made possible because of a unique research design and an extensive trail of accurate electronic data that a virtual organization offers. Our referrers occupy the same position that their referrals apply to, which allows us to accurately compare the performance across referrers and relate it to referrals' progress through recruitment stages. Detailed electronic data help split the VCC's recruitment process into clearly defined stages of objective selection, subjective selection, and self-selection, and construct reliable performance measures.

On the downside, one can argue that our findings are hard to generalize from one case study to the universe of organizations that practice recruitment through referrals. We demonstrate the existence of the referrer's performance effect for contingent workers rather than employees. Contingent employment, with the implied need to constantly defend one's position against internal and external competitors, creates a disincentive for referring and training strong candidates who can in turn threaten the referrer. The referrer's performance effect can result from this factor being particularly salient for weaker workers who do not enjoy high reputation with the employer and feel more insecure in the job.

Studies in other organizational contexts should help clarify whether these scope conditions are critical. Even if they are, the domain defined by them appears wide. The Bureau of Labor Statistics' 2001 Current Population Survey finds that about 12.5 million workers, or 9.4% of the labor force, practice alternative forms of employment as independent contractors, on-call workers, temporary help agency workers, and contract company workers (Bureau of Labor Statistics 2001). As restructuring and downsizing become a way of life for American firms, security, in-kind benefits, and career trajectories traditionally offered by long-term employment relationships are being left in the past (Barker and Christensen 1998, Cappelli 1999). As a result, even traditional forms of employment become driven by competitive forces, eroding the reputational concerns and loyalty typically associated with them. Thus the experiences of independent contractors may teach us something about traditional employment relationships as well.

By the same token, independent contractors may not exactly be the free agents the literature portrays them to be. For example, the VCC maintains a chat room where sales agents go to not only resolve technical problems, but to engage in social interactions with the colleagues who work with them on the same shift. Relationships forged in such interactions may strengthen agents' group identity and their attachment to the workplace.

In addition to independent contractors, another important contextual detail of this paper's setting is the completely informal role of the recruitment through networks at the VCC. So far, the best empirical studies on the topic rely on data accumulated as a byproduct of employers' formal referral policies. Fully aware of the utility of social networks in recruitment, employers treat them as a key component of such policies. Social networks become a tool for screening for talent and reaching out to potential job candidates who otherwise would not apply (Breaugh and Mann 1984, Fernandez and Weinberg 1997, Fernandez et al. 2000, Petersen et al. 2000). Paradoxically, researchers manage to shed new light on informal structures, only to the degree in which those are formalized. Our study benefits from the fact that any activity on the Internet leaves a record, whether

the actors desire one or not. The employer we study neither rewards its sales agents for referrals nor advertises its vacancies. We empirically show that in this more informal setting, referrals maintain an important labor market role, which brings the literature on referrals closer to its origins on organizations' embeddedness in informal social networks.

Acknowledgments

The authors benefited enormously from in-depth discussions with Roberto Fernandez and are grateful to Matthew Bothner, Stanislav Dobrev, Isabel Fernandez-Mateo, Katherine Klein, Damon Phillips, and the *Organization Science* editors and anonymous reviewers for insightful and constructive comments. Kristy Lagle and Michael LaGuardia provided critical support with data collection. The research was conducted with financial support from the University of Chicago Graduate School of Business and the Entrepreneurship Research Grant from the Kauffman Foundation.

Endnotes

¹In fact, one difficulty with an accurate test of the homophily argument is that referrers more often than not hold jobs different from the ones to which they refer. Fernandez and Castilla (2001) find that workers with prior experience on a job are more likely to refer candidates to that job. However, they do not have access to performance records from previous jobs, which makes it difficult to evaluate the homophily argument.

²In reality, Stage 1 is intertwined with the registration process, because applicants are allowed to provide the background information and take tests in any order they wish. However, a negligibly small number of applicants moves to tests before submitting background information.

³In principle, a referrer may complete the training on her behalf of the applicant; although in practice it is highly unlikely. At the end of the day, the protégé is the one who needs to make a living, because there is no reason why the referrer may want to work under another name at the same VCC. Moreover, the VCC punishes severely for misrepresentation, that is, logging in its system under another agent's ID.

⁴Our interviews with the VCC's HR personnel and observations of the company's operating procedures suggest that the tests are not designed to precisely identify *certifiable* candidates. They are purposefully designed to be pretty liberal and to reject only a priori weak and unmotivated applicants.

⁵The results of our research, which are not reported here, show that the longer it takes the VCC to screen an applicant, the more likely it is that the applicant will refuse to proceed to the offer acceptance stage because he or she is not interested in the job anymore. This is particularly true for better-qualified candidates.

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