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Who You Know: Pre-Entry Contacts and Post-Entry Social Structure

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Who You Know: Pre-Entry Contacts and Post-Entry Social Structure

By

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B.S., Ohio State University, 2002

Advisor: Peter Roberts, Ph.D.

An abstract of
A dissertation submitted to the Faculty of the
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Abstract

Who You Know: Pre-Entry Contacts and Post-Entry Social Structure
By Adina D. Sterling

A growing body of research suggests that disparities in workers' networks propel them into stratified opportunities in organizations. Workers that are embedded in organizational networks have greater resources and career rewards than less socially-connected workers. Little is known, however, about how structural differences in workers' networks arise.

This dissertation presents and tests a theory on the origins of structural differences in workers' networks. The theory points to the significance of pre-entry relationships that influence access to networks in organizations. I argue that pre-entry relationships are a product of an external structure that conditions interaction opportunities between organizational insiders and outsiders. When workers are hired with pre-entry relationships they form more social ties in organizations than workers without pre-entry relationships.

After establishing the relationship between pre- and post-entry social structure, I develop arguments on how these structures impact mobility in organizations. Past research indicates that all other things equal, individuals with relationships to organizational members are more likely to be hired by employers. Here I suggest that pre-entry contacts also influence career outcomes after individuals join organizations. I examine the influence of pre- and post-entry social structure on post-entry mobility.

I test these predictions using data collected from graduate students in business and law that completed internships. I investigate the effect of pre-entry relationships on the networks that graduate students formed and on their acquisition of post-graduate job offers from employers. An important concern when testing this prediction is that pre-entry contacts are not randomly assigned. My context affords me the chance to observe graduate students' networks at the university. I use their university networks as a proxy for network behavior in regression Models. Additionally I use a two-stage IV technique to determine if external structures condition the likelihood of having pre-entry relationships that subsequently impact post-entry networks and career rewards. Finally I conduct semi-structured interviews to gain qualitative insights on pre- and post-entry social structures and careers. Quantitative and qualitative evidence suggests that networks and mobility outcomes are rooted in pre-entry relationships.

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Table of Contents

List of Figures

List of Tables

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The Social Structure of Opportunity in Organizations

A great deal of research suggests that disparities in workers' networks propel them into stratified opportunities in organizations. Individuals with extensive social ties perform better and obtain greater career rewards than less socially-connected workers. Well-connected workers have more social support (Wellman and Wortley 1990) and access to aid from more – and more diverse – social circles (Wellman 1992). Well-connected workers are also more likely to be in a position to control resources and employ them for their own gain (Burt 1992; Marsden 2002). Organizations reward workers for their network-based social capital because they outperform their peers. Workers with extensive ties complete tasks more quickly (Reagans, Zuckerman and McEvily 2004) and produce higher quality outcomes for organizations (Tsai 2002).

While the significance of social structure in organizations has become increasingly clear, less understood is why workers' networks come to differ in the first place. As a result we lack theories that explain structural emergence (Coleman 1986). The majority of research takes networks as a 'given' and studies their consequences rather than how networks come about. This has little to do with a lack of scholarly interest in structural formation. Scholars from a diverse range of fields, including sociology, organizational theory, social psychology and others have called for more research on network formation (e.g. Emirbayer and Goodwin 1994; Granovetter 1995; Kilduff, Tsai and Hanke 2006).

Understanding how networks form is particularly relevant for research on inequality. Inequality refers to the allocation of rewards based on factors other than or in addition to an individual's work qualifications (Lin 2000). Differential access to social networks is argued to be a dominant reason that inequality exists in the workplace. However past research has struggled to discern the causal effect of social networks on career rewards (Manski 1993; Mouw 2006). To

see why consider the network structure of a high-ability manager. The manager is well-equipped to exchange knowledge and advice with others in the organization and as a result her network is extensive. The success the manager attains appears to come from her network but her ability may be the underlying impetus for her career rewards.

Scholars have made recent and notable attempts to account for individual characteristics when estimating the causal effects of social structure. Researchers have utilized empirical approaches such as fixed-effect models, instrumental variable techniques, and longitudinal analysis to determine structural effects (see Mouw 2006 for a review). These studies have been useful. However, they offer little in the way of a theoretical explanation of why individuals' networks differ.

Sociologists have long indicated that initial conditions such as social origins can affect outcomes like education or income earned over a lifetime (e.g. Blau and Duncan 1967; Kerckhoff 1976; Krymkowski 1991). A significant initial condition that may influence how networks develop within organizations is workers' relationships with organizational members prior to entry. Much research indicates that individuals vary in their pre-entry relationships due to supply and demand forces in the labor market. On the supply side of the labor market information about jobs flows through social relations (Granovetter 1973). Job-seekers learn about jobs through alumni networks, neighbors, former co-workers and friends. On the demand side of the labor market organizations encourage employees to relay job opportunities to their social contacts (Fernandez, Castilla and Moore 2000; Fernandez and Sousa 2005). For instance organizations institute employee referral programs to reward employees for recommending their social contacts to jobs.

Dissertation Overview

The purpose of this dissertation is to develop a theory on why structural inequities in organizations exist. The primary focus is the influence of pre-entry contacts—organizational members that individuals know prior to starting—on the development of workers' networks and career rewards post-entry. I argue that variation in pre-entry relationships stems from social structure external to organizations. External structure or the "groups, institutions, laws, population characteristics, and sets of social relations that form the environment of organizations" (Stinchcombe 1965: 142) shapes interaction opportunities between organizational incumbents and job-seekers. This leads to variability in workers' pre-entry relationships.

In Chapter 1 I investigate the effect of pre-entry relationships on access to social networks post-entry. I argue that having a pre-entry social contact increases the number of new ties individuals form. Pre-entry contacts integrate new entrants into organizational networks by providing referrals and introductions to organizational members. Pre-entry contacts also provide information on the norms, values and behaviors of organizational members. As a result new entrants increase their social similarity to incumbents and form a greater number of social ties.

In Chapter 2 I investigate how pre- and post-entry social structure impacts mobility outcomes. Partly due to the rise of market-mediated employment arrangements, organizations increasingly hire temporary workers for a fixed period of time to screen them for long-term positions. This period of 'trial employment' allows organizations to observe the behavior and performance of potential employees. These hiring decisions are important to organizations: finding and hiring the right workers influences an organization's ability to meet environmental demands. These hiring decisions are also an important aspect of job mobility for workers. Job

security and benefits increase when workers have permanent rather than temporary positions. I argue that pre-entry contacts affect the likelihood that temporary workers are given permanent job offers.

I test my hypotheses with survey data collected from graduate students in business and law at a private university before and after their internships. In the United States and in other countries internships are the primary way that law and business students are matched to employers for post-graduate jobs (Roth and Xing 1994). They are an ideal context to study nascent network formation because they are the earliest point-of-entry into organizations for many business and law professionals. I investigate the effect of pre-entry relationships on the networks that graduate students form and on their acquisition of post-graduate job offers from employers.

Results indicate that pre- and post-entry social structures are related. Individuals that entered with pre-entry contacts went on to form more social ties in strategic information and professional friendship networks. Moreover having pre-entry contacts was affected by external structure. An employer's geographic location and hiring practices impacted the likelihood that interns had pre-entry relationships. Results also indicate that social structure plays a significant role in determining mobility outcomes in trial employment. Interns that entered with pre-entry contacts in organizations were more apt to obtain permanent offers from their organizations.

This dissertation moves our understanding of structural emergence and inequality forward in substantive ways. By and large the study of social networks and labor market outcomes (e.g. Granovetter 1974) and social networks and career attainment (e.g Burt, 1992; Podolny and Baron 1997) have been the focus of two separate literatures that have rarely been studied in tandem. I argue and find, however, that there is validity in examining the carry-over

effects of labor market networks in organizations. Pre-entry social contacts influence structural dynamics and mobility after workers cross the organizational boundary.

Chapter 1

Who You Know: Pre-Entry Contacts and Post-Entry Social Structure

A fundamental aspect of a sociological perspective on careers is that networks influence the recognition and rewards individuals receive in the workplace. Accordingly, many studies examine aspects of networks that propel careers forward. Other things being equal, individuals with extensive networks perform better and enjoy superior career rewards. Managers with a large number of advice and information ties are promoted at faster rates (Podolny and Baron 1997). Law associates with a greater number of ties to co-workers document more billable hours than associates with fewer ties (Lazega 2001). And yet, while much has been learned about networks and career rewards surprisingly little attention has been paid to how network inequities come about. Organizations seem to afford greater entry into networks for some than others but an explanation on why this occurs is underdeveloped. A deeper understanding of how networks form is needed to "enhance our understanding of inequalities in social capital as an explanatory framework for inequality in social stratification and mobility" (Lin, 1999:483).

This chapter develops and tests a theory on why workers differ in their embeddedness in organizational networks, or why some workers come to have many social ties and others are less socially-connected. I focus on understanding embeddedness in workplace networks such as professional friendship and strategic information that are enduring and do not erode when workers' tasks change (Podolny and Baron 1997). Like social ties in other contexts (Putnam 2000), these ties are conduits for resources such as advice, information and social support in the workplace.

The main proposition developed herein is that embeddedness in organizations is influenced, in part, by external structures (Stinchcombe 1965). External structures produce

opportunities for individuals to interact with members of organizations prior to being hired. These interaction opportunities become embodied in pre-entry contacts. Organizations hire workers that vary in pre-entry relationships with incumbents which affects how embedded workers become in networks post-entry.

To test my proposition I collect data from 251 graduate students in business and law at a private university that formed 1015 social ties during internships. Internships are the earliest point-of-entry into organizations for professionals. In the United States and other countries internships are the primary way students in "learned professions" like management and law are matched with employers for post-graduate jobs (Roth and Xing 1994).

I study pre-entry relationships as a form of structural constraint on post-entry network development, net of individual characteristics. Quite conceivably, individual characteristics such as gregariousness, strategic orientation, relational ability and others influence how networks form at school and at work. This context affords me the chance to observe graduate students' networks at the university and I use this as a proxy for network behavior in regression models. Next, because there may be unobserved differences in the likelihood of having pre-entry contacts, I use an instrumental variables technique to restrict variation in pre-entry contacts to only that portion that is due to exogenous factors. I access in-depth information on employer visits and other factors that lead interns to have different opportunities to interact with employers prior to the start of the internship. Finally, I conduct semi-structured interviews with interns to gain insights on how their networks developed. Quantitative and qualitative evidence suggests that access to networks within organizations is rooted in pre-entry relationships.

Structural Inequality in the Workplace

In internal labor markets workers compete for better positions and movement up an organization's hierarchy (Althauser 1989; Doeringer and Piore 1971). Studies across a range of occupations including bankers (Mizruchi and Stearns 2001), technology managers (Burt 1992; Podolny and Baron 1997), accountants (Morrison 2002) and lawyers (Lazega 2001) indicate that intraorganizational networks stratify workers into divergent career trajectories. Individuals with extensive networks receive higher income and other rewards because they are privy to high quantities of information, mobilize others to perform tasks, and outperform their lesser-connected peers (e.g. Gargiulo, Ertug and Galunic 2009; Mizruchi, Stearns and Fleischer 2010; Obstfeld 2005). Individuals with meager networks are perceived to be less committed to the organization (Morrison 2002) and are more likely to leave (O'Reilly, Caldwell and Barnett 1989).

One prominent argument on why structural disparities exist is that workers have differential access to social capital at work (see Lin 2000 for a review). Differential access to social capital is argued to result from environmental constraints that affect the opportunities individuals have to interact with others. For instance, studies have found that the size of one's work organization relates to their number of social ties (McPherson and Smith-Lovin 1982; Moore 1990). Workers that join small organizations have less extensive networks because they have fewer individuals with whom to interact. Other studies indicate that a worker's level within an organizational hierarchy affects network size (Fombrun 1983; Lincoln and Miller 1979). Higher levels of authority lead to larger networks because more workers are under one's control. While these studies provide useful insights, they limit their focus to constraints on networks that exist across organizations, levels and work roles. However career contests for wages and other

rewards take place among workers in internal labor markets that are exposed to a similar set of organizational constraints (e.g. size). Existing research has not addressed how the networks of workers within organizations and levels come to vary.[1]

One potential cause of network inequities is that workers start out with different chances to form networks due to their pre-entry relationships with incumbents. Approximately one-half of job seekers have pre-entry contacts in the organizations that they join (see Marsden and Gorman 2001 and Granovetter 1995 for reviews). All other things equal, organizations give preference to job candidates with social contacts (Fernandez and Weinberg 1997). However organizations are required to consider workers for jobs that are both tied and untied to members at entry. While informal hiring policies do not directly violate the National Labor Relations Act, hiring strictly through networks can violate the antidiscrimination in employment provision of the Civil Rights Act of 1964. Women and racial minorities, particularly in white-collar jobs, are less likely to have pre-entry contacts in organizations (Reskin and McBrier 2000; Seidel, Polzer and Stewart 2000; Smith 2005). Caucasians and males are less apt to have pre-entry contacts in other types of jobs (Fernandez and Fernandez-Mateo 2006; Fernandez and Sousa 2005).

Variation in workers' pre-entry relationships also stems from institutional and environmental constraints. Informal hiring produces homosocial reproduction, or the recruitment of employees that are the same race, gender, and socioeconomic background as an organization's demographic majority (Kanter 1977). As a result hiring through networks reduces diversity in the workplace, a legitimate recruiting goal for organizations (Kalev, Dobbin and Kelly 2006). Moreover, even if it were permissible to hire workers entirely through networks, it may be difficult to do so due to the supply of qualified workers in the labor market. Even in small

[1] One such example is Morrison's (2002) study of accountants. She finds that new entrants that were a part of the same cohort have meaningful differences in their networks after working less than a year in an organization.

organizations, hiring solely through networks may not be possible. By broadening their consideration set of potential hires, organizations can better meet labor demands.

These legal, institutional and environmental factors result in the variability in workers' pre-entry relationships that has been documented in numerous studies (e.g. Castilla 2005; Marsden and Campbell 1990; Petersen, Saporta and Seidel 2000; Yakubovich and Lup 2006). Organizations engage in informal recruiting practices (Fernandez, Castilla and Moore 2000), but complement these practices with formal recruiting strategies (Mello 2005). As a result, workers entering the same organization vary in their relationships to incumbents. The question I examine in the next section is whether initial differences in pre-entry relationships relate to access to networks post-hire.

Pre-Entry Contacts, Post-Entry Networks and Macro-Micro Links

When individuals enter organizations they are largely viewed as outsiders by incumbents. They face constraints in how their networks form (Burt 1998; 1992). Constraints arise because informal networks are influenced by social closure. The idea of social closure was first developed by Weber (1968) and refers to processes whereby insiders withhold and restrict access to their resources from outsiders in order to reinforce their economic and social standing. In work organizations, incumbents may be unwilling to incorporate new entrants into networks that yield social and economic resources.

A pre-entry contact is someone with whom a job-seeker knows and trusts in the organization prior to starting. Pre-entry contacts have an attachment to job-seekers that extends beyond the formal hiring process. These individuals channel information to prospective candidates that they may not otherwise receive. For example, an informant in Granovetter's

classic study on job-finding stated that a pre-entry contact "gives more than a simple job-description—he may also indicate if prospective workmates are congenial, if the boss is neurotic, and if the company is moving forward or stagnant" (1981:23).

After individuals enter organizations, pre-entry relationships likely influence how embedded they become in organizational networks. A pre-entry contact may serve as a broker that helps integrate new entrants into networks post-entry. The term broker used here refers to the Simmel's definition of an intermediary or "third who joins" two disconnected actors together (Obstfeld 2005; Simmel 1950).

Trust is an important component of social ties (Granovetter 1985). Pre-entry contacts serve as brokers by vouching for the trustworthiness and reliability of the new entrant to incumbents and vice versa. Granovetter emphasizes the significance of intermediaries as brokers in resource exchange noting, "better than the statement that someone is known to be reliable is information from a trusted informant that he has dealt with that individual and found him so" (1985: 490). Trust in the pre-entry contact stands in for a lack of trust between the new entrant and incumbents (McEvily, Perrone and Zaheer 2003; Uzzi 1996). Pre-entry contacts compensate for a new entrant's lack of history in the organization and facilitate their integration into intraorganizational networks (Tilly 1998).

Second, the new entrant with pre-entry contacts may be more likely to form social ties because the pre-entry contact socializes the new entrant (Fernandez, Castilla and Moore 2000). Organizational scholars refer to socialization as learning the norms, behaviors and values of organizational members (Van Maanen and Schein 1979). Researchers have found that job-seekers with pre-entry contacts have better knowledge of the norms in organizations prior to starting (Fernandez and Weinberg 1997; Seidel, Polzer and Stewart 2000). Cultural knowledge is

tacit, complex and difficult to communicate (Schein 1990; Van Maanen and Barley 1985). Pre-entry contacts help relay information to newcomers about the organization's culture. This influences tie formation because norms and values are important bases of social similarity. Social similarity facilitates interpersonal attraction (Berscheid and Walster 1969) and improves the likelihood that ties form (DiMaggio 1992; Erickson 1988).

If the pre-entry contact is a social isolate this limits her effectiveness as a broker and socializer in the organization. Pre-entry contacts are not social isolates, however. Pre-entry contacts serve as a type of informal gatekeeper that monitors which individuals are allowed to enter organizations (Fernandez and Gould 1994; Merton 1973). Gatekeepers are influential and derive influence, in part, from social networks. They are well-connected members of organizations that can aid new entrants in accessing organizational networks.

If pre-entry contacts impact post-entry networks this suggests a mechanism through which macro external structure influences micro structure in the workplace. Individuals have pre-entry contacts if they have the opportunity to form relationships with incumbents outside of the formal hiring process. External structure or the "groups, institutions, laws, population characteristics, and sets of social relations that form the environment of organizations" (Stinchcombe 1965: 142) shapes interaction opportunities between organizational incumbents and job-seekers. For instance neighbors provide information to one another about job openings. Parents that volunteer at their children's school inform one another when their organization is hiring. Former university classmates chat about new hiring opportunities where they work. These interaction opportunities become embodied in pre-entry relationships between job-seekers and incumbents. Once workers are hired, pre-entry contacts serve as brokers and socializers that

increase access to networks. I predict that *workers with pre-entry contacts form more new social ties in organizations than workers without pre-entry contacts.*

Research Setting

Prior studies of how networks emerge in organizations are rare. A primary reason for this is that data that enable inferences about the causes of social structure is not readily available. First, data must be collected at the appropriate point in time. Network surveys are more apt to reflect a person's network structure when they inquire about contemporaneous relations. Second, when making causal inferences it is important to isolate the effects under study (Manski 1993). Experimental approaches do this through randomly assigning individuals to various treatment or control groups, and then administering a pre-test to evaluate group differences prior to treatment. Network emergence is difficult to study in an experiment, however. Also, networks that form in an experiment may not be very similar to the networks that form in work organizations.

I chose to investigate pre- and post-entry structures in a field study. Internships are well-suited for a study on network formation. They are short-term work assignments that students complete prior to graduation. Internships are common in the United States and Japan, though they are present in labor markets in a number of countries. Internships are the earliest point-of-entry into organizations for many professionals. Roth and Xing note that "because many firms fill the majority of their hiring needs by hiring students who have been their summer associates, the competition to recruit and hire the most promising summer associates has become a proxy for entry-level hiring" (1994:1005).

A second appealing aspect of this research context is that it provides a way to minimize the problem of reverse causality. As individuals spend time in organizations their networks may not only cause career-related outcomes but reflect them (Mouw 2006). Internships afford an

opportunity to observe network formation in the absence of conditions present later in a worker's career.

Sample and Research Design

My sample is business and law students at a private university that completed internships during the summer of 2009. I recruited Master of Business (MBA) students for the study during a professional development course in the spring. I assured students that participation in the study was voluntary and that any information they provided was strictly confidential. At the start of the summer I sent an email to the MBA students with a link to a survey about the people they knew in their internship organization prior to starting. I sent three follow-up emails to non-respondents over the next three weeks, reminding them of the survey and requesting their participation. At the end of the summer I sent an email with a link to a second survey on social ties that formed during the internship.

I also recruited law school interns to participate in the study when they returned to campus in the fall of 2009. I combined the pre- and post-entry survey into a single survey for the law students, where respondents first answered questions about their networks during their internship and then answered questions about pre-entry relationships. The law school study was sponsored by the Director of the Law School Career Management Center. The Director sent students an email inviting them to participate in the research. Students took the survey during a researcher-sponsored lunch or in their free time. To further encourage participation, both the MBA and law students in the study received a report of their results that compared their social networks to those of their peers.

All surveys were pretested prior to being administered. In-depth interviews were conducted with respondents to improve the clarity of the survey questions. I administered a

pretest to 19 MBA interns at the end of the summer of 2008. Additional pretesting was completed with law school students in the fall of 2009.

The response rate was high for the MBA student sample: 114 out of 126 MBA students (90 percent) filled out the pre-internship survey. Of those that took the first survey, 104 completed the second survey for a total response rate of 83 percent over both rounds of research. Of the law students eligible to participate, 162 students out of 437 (37 percent) completed the study. Since the response rate for the law students is somewhat low I calculate univariate statistics on demographic characteristics and class rank to determine if law sample is biased. The only difference between the student population and respondents is that women are overrepresented in the sample ($t=3.98$, $p<0.001$). Therefore I control for the gender of the respondents in all regression models. I remove 15 observations from the sample because respondents did not work outside of the law or business school (i.e. they had a research assistantship for a professor) or because their data is missing or incomplete.[2] In total, the subject pool is 251 MBA and law student interns.

Post-Entry Ties Formed

The number of post-entry ties formed is a count of the new ties respondents developed with organizational members (not other interns or summer associates) during their internship. The post-entry survey consists of two name-generating questions that elicited the names of the network contacts individuals had in the organization during their internship. I administered the surveys electronically and took several steps to avoid biasing the number of contacts respondents

[2] There are only four observations with missing data. There is no evidence that data is missing for systematic reasons (Allison 2002) so listwise deletion is used.

listed in the survey.[3] First, I provided respondents space to list up to 28 names – more space than respondents needed in survey pretests. Second, I instructed respondents there were no expectations regarding the number of contacts they might list. Third, subjects listed their contacts using a two-stage recall process. After the respondents answered the name-generating questions, I provided them a list of their responses and asked if there was anyone that had not been included. Research indicates that when subjects are prompted to consider whom they have listed, and if there is anyone missing, their reported networks are more accurate (Marsden 2005).

The post-entry survey questionnaire contains name-generating questions on two person-centered networks: strategic information and professional friends. Podolny and Baron (1997) developed a typology of network types and suggested that network ties can be classified as either between persons or positions. Position-centered networks are based on job interdependencies such as the specific inputs and outputs that one needs from others to perform one's role. Even if an individual would wish to avoid certain others in position-centered networks, this may not be possible because interaction with these individuals is a part of the role. Person-centered networks tap into general content that is not confined to a particular task. They are between people rather than positions and endure after work roles change.

The strategic information question was adapted from Podolny and Baron (1997). Respondents were asked "over the course of your internship, are there full-time employees that have provided you with information about what was going on within the organization – people who have given you special insight into goals and strategies of important individuals, work

[3] In a study of online network surveys, Vehovar et al. (2008) found that the number of contacts listed in a network was influenced by number of text name boxes provided in the survey. Respondents' number of ties clustered by quantity depending on the number of spaces provided (e.g. when five spaces were supplied, there was a higher tendency for respondents to list the names of five contacts even though name-generating questions did not prompt respondents for a set number of ties). I executed the steps above to avoid biasing respondents.

groups, or perhaps even the organization as a whole?" The professional friends question was adapted from Ingram and Roberts (2000). Respondents were asked "at your internship organization, are there any full-time employees that you consider professional friends? A professional friend is someone whom you like and would feel comfortable going to about confidential issues or problems at work."

Naturally if respondents knew people prior to starting it is likely that some of these contacts would be listed as a part of a respondent's post-entry network. Respondents were asked to provide the first and last name of their contacts. The contacts' first and last names allowed me to identify individuals that were listed on both the pre- and post-entry survey. I removed these individuals from the count because these relationships did not form post-entry. The number of post-entry ties formed is the total number of individuals named across the strategic information and professional friendship networks that respondents did not know prior to starting. Generally, there were few new friends listed that were not also information contacts. Since the new professional friendship network was sparse, I combined the friends and information contacts into a single measure of post-entry ties.

Pre-entry Contacts

The pre-entry contact variable is dichotomous (1= one or more pre-entry contacts, else 0). On the pre-internship survey subjects were asked to list anyone they knew in the organization prior to starting. Interns listed anyone they were able "to recognize by sight and by name" before their internship. Additional questions asked about the frequency of interaction between the intern and those listed, the duration and closeness of the relationships, and the roles of the individuals listed.

Pre-entry contacts are distinguished by the frequency that they interacted with the graduate students prior to the internship. Using frequency to measure pre-entry contacts is consistent with idea that social ties are repetitive interactions (Laumann and Knoke 1986). Frequency is a more reliable measure of relationships than relational perceptions. Individuals are biased in their perceptions of relationships, particularly in reporting on people that they feel close to (Gagne and Lydon 2004).

Slightly more than half of the respondents (51 percent) did not list anyone that they could recognize by face and name prior to starting. This is many more students than I anticipated and I probed graduate students to understand why this occurred. The primary reason given was that while they met employees before hand, they would not be able to 'recognize them on the street.' They met many employees, particularly during on-site interviews, and they could not put names with faces afterwards. Others stated that while they could have recognized someone immediately following the recruiting process, they could not do so before starting their internship. Several months transpire between recruiting season and the start of internships. For law students almost a year passes between the start of internships and recruiting season. The timeline varies for business students. Figure 1.1 compares the frequency with which law and business students could recognize someone by name and by face prior to starting.

[INSERT FIGURE 1.1 HERE]

Even those that respondents could recognize were not necessarily people they had a relationship with outside of the formal hiring process. I count pre-entry contacts as anyone that an intern spoke with more than three times in the 12 months prior to starting, or more than what the formal recruiting process required. The typical recruiting process requires two to three

interactions with employees in the organization prior to starting. Prospective interns begin with a screening interview and if they pass this stage, they proceed to off-site interviews at the organization. In the final step of recruitment they are informed about their internship offer. If an intern interacted with someone more than three times, these interactions were likely voluntary and would occur because interns and employees liked and trusted one another. To assess this further I investigated differences on the perceived level of closeness and trustworthiness for those designated as pre-entry contacts versus others listed in the survey. Table 1.1 compares the level of trust, closeness and duration of relationships for those designated as pre-entry contacts versus others. Interns knew pre-entry contacts for a longer length of time before starting, felt closer to pre-entry contacts and trusted them more than others they listed in the survey.[4]

[INSERT TABLE 1.1 HERE]

Control Variables

Size of the Local Organization. Organizational size influences the opportunities individuals have to form ties. Evidence suggests that people form more work-related ties as the size of their organizations increase (Moore 1990). I control for the size of a respondent's local organization using the categories in table 1.2.[5]

Percent Alumni in the Organization. A measure of the percentage of alumni in the organization is also included as a control. School identity is an important basis of social similarity and attraction (Mael and Ashforth 1992). Interns with a higher concentration of alumni in the firm

[4] Of course it is possible that employees the intern spoke to less frequently were also liked and trusted by the intern. If there are individuals that are being missed in this measure this makes my estimates more conservative .
[5] This was done because pre-testing revealed that respondents had an approximate understanding of the size of their organization.

may have broader access to relationships because interns and incumbents share a strong basis of identity (Oyer and Schaefer 2010). I gathered a count of the number of alumni at the firms using the law and business schools' alumni databases. The percent alumni variable is calculated by dividing the number of alumni by the size of the organization using the maximum of the category. For the largest category (above 150 employees), I used 250 employees as the size.[6]

The *functional area* variables are dummy variables that control for the type of work interns completed during their internship. I include dummy variables for the following functional areas: consulting, general management, brand, marketing, operations, finance and law.

Number of other internship offers is included to control for the degree to which interns were able to be selective about their employer. Pre-hire selectivity has been argued to be an important indicator of the fit an individual can expect to have within an organization (e.g. Chatman 1991). Interns that had more offers may be better able to optimize their employer choice. This variable also controls for the quality of the intern. Interns with many job offers are likely to be higher quality.[7] The number of internship offers is a count of job offers in excess of the offer they had from their internship employer.

Foreign is a dummy variable equal to one if respondents reported their country of origin as outside the United States. I also include variables for the gender and race of the respondents (i.e. African-American, Hispanic or Asian-American).

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[6] I also ran analyses using the actual counts of alumni and the results presented below do not change.

[7] An alternative measure of quality considered was the student's rank in the law or business school. In analyses (not shown) I included a dummy variable for students that were in the top 20 percent of their class. This variable was positive but not significant, and the inclusion of this variable in regression Models did not have any substantive effect on the results shown.

Endogeneity Bias

A field-based study does not permit random assignment of individuals to pre-entry structural conditions. This is particularly a concern here because individuals who are better at forming networks in organizations may also be better able at forming relationships with incumbents before starting. That is, individual characteristics may influence both the likelihood of having a pre-entry contact and the number of ties individuals form in organizations. These unobserved characteristics could lead to upwardly biased coefficients in my models.

This research context allows me to observe networks across two settings—school and work. It stands that the same factors that make individuals more or less able to form networks while at school also affect individuals' likelihood of forming ties in organizations. Access to peer networks is a primary motivation for students to get professional degrees (Holtom and Inderrieden 2006). Graduate students are encouraged by faculty, career service advisors and other personnel to form relationships with their peers while in school.

If a proxy variable is included that adequately measures an omitted variable, the model coefficients are unbiased (Wooldridge 2002). The proxy variable I employ is the number of peer ties the graduate student has in his or her school network. I gave respondents a full roster of their peers and asked them to indicate "names of students that you go to regularly for information or advice on school and/or career-related matters." The *school ties* variable is the number of peers the interns regularly sought out for information or advice in the business or law school.

Empirical Analysis

The primary dependent variable, the number of new ties formed, has non-negative integer values. I test for the effect of pre-entry relationships using negative binomial regression models. Poisson models are appropriate for non-negative count outcomes, but I choose negative binomial models rather than Poisson models because my data shows evidence of overdispersion. When overdispersion is present, Poisson regression can give biased estimates and result in spuriously small p-values (Cameron and Trivedi 1986). Negative binomial regression models correct for overdispersion by adding an additional parameter. The negative binomial model takes the following form (Greene 2003):

$$\ln \lambda_i = \beta x_i + \varepsilon_i \qquad (1)$$

where λ_i is the conditional mean and variance of y_i, x_i is a vector of covariates and $\exp(\varepsilon_i)$ is the gamma distributed error term.

Results

Table 1.2 provides means, standard deviations, and correlations for all the variables in the analysis. On average, respondents worked in organizations in which 7 percent of the employees are alumni. Half of the sample is male and 19.1 percent are from outside of the United States. Black, Hispanic, and Asian-Americans make up 12 percent, 7 percent, and 11 percent of the sample, respectively.

[INSERT TABLE 1.2 HERE]

Table 1.3 provides descriptive statistics on post-entry social ties. The number of ties formed post-entry is higher for those with pre-entry contacts ($p < 0.01$, two-tailed). Those with

pre-entry contacts formed 2.2 more new ties on average overall. This is shown graphically in figure 1.2.

[INSERT TABLE 1.3/FIGURE 1.2 HERE]

In table 1.3, differences in post-entry ties for those with and without pre-entry contacts do not control for individual or organizational variables that affect the formation of social ties. Table 1.4 presents multivariate analysis to control for these effects. In Model 1 I regress the number of post-entry ties on all the control variables. Law school students form significantly fewer ties post-entry than business school students. Foreign students form significantly fewer ties post-entry than domestic students. The dummy variables for organizational size are not shown but provide a consistent pattern based on what we should expect size: working in smaller organizations has a significant and negative effect on forming post-entry ties. Model 1 also includes the *school ties* variable as a proxy for network behavior. The school ties variable is not significantly related to the number of post-entry ties formed.

Model 2 adds the pre-entry contact variable. The effect of a pre-entry contact is positive and statistically significant ($p<0.05$, two tailed). A one standard deviation increase in the pre-entry contact variable results in 1.11 more ties post-entry, or a 28.5 percent increase. Overall Model 2 provides support for the main proposition—having one or more pre-entry contacts leads to a greater number of post-entry ties. In Model 3a and 3b, I investigate this result further by including the pre-entry contacts variable as a count of the number of pre-entry contacts. It is probable that more pre-entry contacts lead to more gains in post-entry networks because interns have a greater number of individuals serving as brokers and socializers in the organization.

Model 3a estimates the effect of pre-entry contacts without controlling for organizational size and work function, while Model 3b includes the size and functional dummies. The number of pre-entry contacts is significant in Model 3a and Model 3b. The coefficient on the pre-entry contacts variable in Model 3b indicates that each pre-entry contact increases the number of post-entry ties formed by 10.3 percent.

[INSERT TABLE 1.4 HERE]

The results above indicate that, as predicted, individuals with pre-entry contacts form more ties post-entry. It would be useful to know if the integration benefits for some types of pre-entry contacts are greater than for others. For instance, one might expect pre-entry contacts to have a positive effect on post-entry ties the more the new entrant's performance has implications for the pre-entry contact.

One important implication is the pre-entry contact's reputation (Fernandez, Castilla and Moore 2000; Rees 1966; Saloner 1985). If the new entrant performs badly this reflects negatively on the pre-contact. Some pre-entry contacts in this study had little to no reputational risk. Several months transpired between the time interns were hired and when they began their internships. Some relationships between interns and pre-entry contacts evolved after a hiring decision was made. In these instances, the pre-entry contact would not have been the one to recommend the intern for a position. This is different than what occurs in traditional settings where employees take on reputational risk because they refer their friends and acquaintances to jobs. This suggests that the estimates of the effect of pre-entry contacts may be conservative versus what we should expect in traditional (i.e. non-internship) settings.

The pre-entry contacts who were recruiters however were likely subject to some of the same reputation pressures as pre-entry contacts in traditional settings. Recruiters made recommendations about which interns to select to their employer. They would be apt to vouch for the quality of the candidates with whom they have a relationship. Thus pre-entry contacts that were recruiters were likely motivated to help the interns post-entry. In Model 3c I restrict the pre-entry contact measure to only those individuals that were recruiters. The coefficient is positive and significant. Each pre-entry contact that was a recruiter increases the number of post-entry ties interns formed by 21.1 percent.

Another type of pre-entry contact that may be particularly interested in the performance of the new entrant is supervisors. There is likely something significant about having a relationship with a supervisor in place in advance of starting. Interactions between supervisors and new entrants may lay a foundation for trust and liking to develop pre-entry. Once interns begin working, supervisors they know and trust may be particularly likely to help because their work performance has implications for the supervisor. In Model 3d I limit pre-entry contacts to those who were intern supervisors. Each of these pre-entry contacts increases an intern's network by 31.5 percent.[8]

Finally, a pre-entry contact that we might expect to help a new entrant form ties is a friend. Friends may be motivated to help because of the affective bonds that exist in the relationship. In addition, network transitivity suggests that when two disconnected persons share a close tie to the same person a relationship is likely to form between them.

In Model 3e I restrict the pre-entry contacts variable to only those that were listed as friends. Surprisingly, the coefficient is positive but not statistically significant. In order to

[8] Most interns only worked for one supervisor, so a dichotomous pre-entry contact measure is likely more appropriate. The dichotomous supervisor PEC measure indicates a 39.4 percent increase in new post-entry ties.

understand why this is the case I inspected the networks of the 17 respondents that indicated they had friend in the organization prior to starting. Interestingly, four out of nine MBA interns and three of eight law school interns did not have their pre-entry friend become a part of their organizational network.

It seems puzzlingly that any pre-entry contacts designated as friends would fail to become a part of interns' workplace networks. One possibility driving this effect may be that friends worked away from the intern in physical or technical space and thus were unlikely to interact with the intern in the workplace. Some of the interns in this study worked in large, multinational corporations. Perhaps friends worked in other units, departments or office locations.

I examine differences in those friends that were and were not integrated into interns' organizational networks. Respondents could list their pre-entry contacts in multiple categories.[9] Pre-entry friends that became a part of workplace networks were listed not only as friends but in other categories such as recruiters and colleagues. Friends who were not listed in any other category were less likely to be incorporated into an intern's workplace network. The number of friends is small so I take caution in drawing conclusions. However, these findings suggest limits to when pre-entry contacts increase access to post-entry ties. It is not enough to have a relationship with someone prior to starting. In order to see post-entry integrative benefits, the pre-entry contact should be someone that the new entrant can interact with in the workplace.

Robustness Checks

In table 1.4, estimates of the effect of pre-entry contacts on the number of post-entry ties formed include a proxy variable, *school ties,* as a measure of the likelihood interns have pre-

[9] Some of these categories had very few individuals listed, and I focus on the primary categories in the discussion above.

entry contacts due to individual-level factors. However, given that this variable is not significant in the models, the proxy variable may not adequately account for interns' propensities to form ties. To test if unobserved heterogeneity is a problem I use the Wu-Hausman F-test [3.56 d.f. (1,226); $p = .06$], and Durbin-Wu-Hausman Chi-square test [3.89 (1); $p = .049$]. These two tests taken together suggest it is best to reject the null that the pre-entry contact variable is exogenous.

In order to account for unobserved heterogeneity across individuals I use an instrumental variable (IV) technique. An IV technique allows me to restrict variation in pre-entry contacts to only that portion that is due to exogenous factors. In an instrumental variable approach the endogenous variable is first regressed onto instruments and the covariates in order to get predicted values. In the second stage these predicted values are substituted for the endogenous variable. I include the predicted value of having a pre-contact and all other covariates in the following model

$$Y = \alpha + \beta'X + \sigma\grave{W} + \varepsilon \qquad (2)$$

where Y is the number of ties formed post-entry, $\grave{W}$ is the predicted values from the first-stage regression, and X is a vector of covariates.

My dependent variable is a count and therefore violates a main assumption of IV estimation. IV estimation specifies that unobservable factors – the errors – be separable from the observable factors (Mullahy 1997). Before using an IV-technique, it is necessary to turn the multiplicative count model into an additive one by logging the count variable and estimating it with an additive model like OLS. Thus, I estimated a two-stage least squares model by first transforming the dependent variable into the logged number of new ties formed post-entry.

External Structure

Using an IV technique not only helps me address endogeneity concerns, it also helps me to more explicitly test my argument that external structures impact the likelihood that individuals have pre-entry contacts. My chosen instruments affect the likelihood of having pre-entry contacts due to the external environment with which organizations reside. My first instrument is the geographic location of the university in relation to the internship organization. When an internship organization is local, students and incumbents of organizations have the opportunity to seek out one another and form relationships. For example, during an interview a MBA student stated that he set up time to meet with employees of his internship organization before he started. He was able to meet employees over lunch because the firm was a short distance from the university. I create a dummy variable to indicate if the office where a respondent worked is located in the same city as the university that he or she attends (1=co-located, else 0).

My second instrument captures the variability in organizational recruiting practices at the university. Literature on organizational recruitment focuses on the range of practices organizations use to attract candidates (see Rynes 1991 and Barber 1998 for reviews). Many practices involve first-hand opportunities to interact with employees of firms in informal settings (Barber et al. 1999). Recruiting intensity increases as organizations send more representatives on campus or make more frequent visits. As recruiting intensity increases, students have a greater chance of interacting with incumbents in the organization. I measure a firm's recruiting intensity at the university, indicated by the events employers were involved in during the year prior to students' internships. Interaction opportunities stemming from recruiting intensity are measured on a scale (0=no intensity/presence or no recruiting events to 3=high intensity/presence or many recruiting events). I consulted archival records of recruiting presentations, on-campus

interviews, employer-sponsored activities, and panel discussions to get a count of interaction opportunities. Because recruiting at the business school was quite varied across employers, I asked the Director of the Career Management Center to independently rate the recruiting intensity of each firm. The Director had first-hand knowledge of not only the number of events employers took part in but how many employees the firms sent to campus. We were broadly similar in our ratings, but where there were discrepancies I deferred to the Director's ratings rather than my own.

In order to qualify as an instrument a variable must (1) be correlated with the endogenous variable, (2) have no correlation to the dependent variable once the other covariates in the model are included, and (3) be a strong instrument in the sense that it is partially correlated with the endogenous variable even after the other covariates are included (Wooldridge 2002). My primary instrument is a three-way interaction between law, recruiting intensity, and co-location. Theoretically, we should expect individuals to be more likely to have pre-entry contacts when the external environment provides low search costs and low opportunity costs to form relationships with incumbent members. Recruiting intensity lowers search costs because the organization provides easy access to its members. Co-location lowers opportunity costs because it makes seeking out members of the organization easier pre-entry. The three-way interaction indicates that the combined effect of recruiting intensity and co-location is more important for law students than business students.[10] The significant effect of the three-way interaction in the first stage model in table 1.5 indicates that this condition is met.[11] Because I use multiple instruments in my first stage model I check to see if overfitting is an issue using the Sargan test.

[10] Law students appear likely less inclined to seek out relationships with incumbents in organizations, so it matters more that an organization is in close proximity and recruits at the university or at university-related events. Perhaps because most law students lack experience in the workforce (business students often work for a few years prior to graduate school but law students do not) they are less likely to seek out relationships with incumbents.

[11] See Table 1.7 for bivariate correlations for the instruments used in the IV regression

An inability to reject the null hypothesis, as is the case here, indicates that the model is not over-fitted [Chi-square = 1.80 (1); not significant].

The predicted values from the first stage model are substituted for the pre-entry contact variable in a second-stage OLS regression. As mentioned earlier the dependent variable is a log-linear transformation of the number of post-entry contacts individuals formed. Model 5 and Model 6 in table 1.6 show the control variable and IV regressions. Model 5 and Model 6 are consistent with Model 1 and Model 2, with the variables having largely the same sign and significance levels. The effect of having pre-entry contacts is shown in Model 6 and indicates pre-entry contacts have a positive and significant effect on the number of ties formed post-entry.

[INSERT TABLE 1.5/TABLE 1.6 HERE]

I did several additional tests to check for the robustness of my results. Selection bias is problematic if the choice of an intern's employer is influenced by the presence or absence of pre-entry contacts. I have little concern about selection bias in this study because students had very little choice in internship employers. In the summer of 2009 job prospects for new professionals in management and law were poor. The graduate students in this study averaged less than two internship offers. Nonetheless in Model 7 I ran the IV model and excluded any individuals that had more than one internship offer (i.e. I removed those that had a choice in employers) in table 1.6.[12] The sample size is reduced and statistical power limited, yet the effect of having a pre-entry contact remains marginally significant (p-value = 0.058).

[12] Interviews with students and Career Management Center personnel suggest that even when students had more than one internship offer, these offers arrive sequentially and then expire if not acted upon immediately. Students rarely decided between multiple offers at the *same time*. Also, students had the most leeway in selecting who they applied to rather than who they ended up working for, but my interviews suggest that students applied broadly

Second, I argued that pre-entry contacts are distinct from other individuals in the organization that a person meets before starting. To probe this idea further I include the number of employees that interns listed on the survey with whom they had few interactions prior to starting as the *other employees* variable in Model 8 in table 1.8. Consistent with my expectations this variable does not have a significant effect on post-entry ties.

[INSERT TABLE 1.8 HERE]

Another possibility is that my pre-entry contact measure is capturing those interactions that pertain only to the hiring process, not deeper relationships between individuals that extend beyond hiring. To explore this idea further I ran an additional model that limits the pre-entry contacts variable to only those with whom interns had high levels of affective-based trust. Affective-based trust indicates the level of liking and concern present in relationships with incumbents prior to entry. This is apt to be low in purely transactional interactions that pertain to the hiring process, but higher when individuals have formed a relationship that extends beyond this transaction. Affective-based trust is measured following an approach used by Chua, Ingram, and Morris (2008) and adapted from McCallister (1995). Respondents were asked to indicate, on a scale from 1 "not at all" to 5 "to a great extent," the extent to which they felt comfortable going to each of the listed contacts to 1) share their personal problems and difficulties and 2) share their hopes and dreams. The correlation of these two measures is 0.69. In Model 9 I include

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(rather than selectively) for internships. For instance, when I asked a law school student how many internships he applied to he replied, "I couldn't tell you – forty at least."

only pre-contacts with whom interns also had high levels of affective-based.[13] The effect of the number of pre-entry contacts is positive and statistically significant.

An alternative explanation for my results is that they are driven by homophily. Homophily is the tendency for individuals to form relationships with others that are socially similar. The presence of homophily could lead to spurious results: individuals that are socially similar to people in the organization may be more likely to have pre-entry contacts and form more post-entry ties. In Model 10 I consider the effect of pre-entry contacts on the post-entry ties formed for foreign students that completed internships in the United States (i.e. where individuals are socially dissimilar from organizational members).

Model 10 indicates the influence of pre-entry contacts on post-entry embeddedness is positive and significantly significant despite a low sample size. One reason for this effect despite a reduction in power may be that pre-entry contacts are particularly important for this demographic group. Foreign students are apt to be less familiar with social norms and cultural aspects of organizations in the United States than domestic students and may have a harder time forming ties. Also, foreign workers are more costly to hire, so organizations in the United States may be less likely to make foreign students full-time job offers compared to domestic students. Therefore, incumbents may be less likely form ties with foreign students during internships because they do not perceive them to likely candidates for post-graduate employment. When a foreign student has a pre-entry contact however, the pre-entry contact may be useful in overcoming these obstacles and getting integrated into post-entry networks.

Finally it is possible that individuals with pre-entry contacts form more new ties but this has minimal effects on their overall network. This could happen, for instance, if new entrants

[13] These are individuals in whom interns had moderate to high levels of trust (i.e. greater than or equal to 3 on a five point scale).

replace their pre-entry contacts with new ties such that there is no substantial effect on embeddedness. In Model 11 I examine the effect of pre-entry contacts on the *total* ties individuals have post-entry. The total tie number for individuals with pre-entry contacts is more than 3.5 ties higher on average than those without pre-entry contacts and the effect of each pre-entry contact on total ties is significant. Each pre-entry contact corresponds to a 0.8 tie increase in post-entry ties.

Mechanisms

The above analysis indicates that variation in pre-entry contacts, driven by external structures impacts the formation of social networks in organizations. I now turn attention to the mechanisms that may be driving this effect. I suggested that pre-entry contacts are useful to newly hired workers for two reasons. First, I suggested that pre-entry contacts serve as brokers or intermediaries that help introduce or refer new entrants to people in the pre-entry contact's network. I look for evidence that the intern became connected to new contacts (people s/he did not know prior) that are also connected to the pre-entry contact. In order to investigate this I asked respondents who each alter in their network went to in order discuss work-related matters during their internship (Burt, 1992; Podolny and Baron 1997). I limited this question to the MBA interns because pre-testing revealed that they were generally attuned to relationships of others in their network. The law students revealed less confidence in knowing who knew each other, perhaps because many activities lawyers are engaged in get discussed behind closed doors.

If the intern is connected to new contacts in the organization that are also tied to the pre-entry contact, this provides some indication that the pre-entry contact brokered the relationship. I count the new alters in each of the intern's networks that were tied to the pre-entry contact. My

analysis indicates that the pre-entry contact connects interns to one new tie on average, roughly the same as what the regression models suggest.

My second mechanism is socialization. I argued that individuals with pre-entry contacts are more socialized and this translates into greater social similarity and integration into networks post-entry. To investigate the effect of socialization I use a scale developed by Morrison (1995) on an individual's normative proficiency which measures an individual's understanding of an organization's norms, behavior, goals, and values (Feldman 1981). Prior to their internships starting, MBA students were asked the extent to which they received information from others, i.e. people, rather than websites or written materials (1=none at all, 2=to a very little extent, 3=to a moderate extent, 4=to a great extent, 5=to a very great extent). The scale items include information on appropriate ways to behave and interact with organizational members, what it takes to succeed in the organization, the organization's customs and rituals, promotion or hiring criteria in the organization, the organization's philosophy, goals, and values, the history of the organization, and the behaviors and attitudes the organization expects. Cronbach's alpha for the scale is 0.91. Confirmatory factor analysis indicates that the items from the scale load on a single factor.

Figure 1.3 compares the normative proficiency across those with and without pre-entry contacts. Interns with pre-entry contacts had a higher level of normative proficiency (2.76 vs. 2.30, $p < 0.05$).

[INSERT FIGURE 1.3 HERE]

Next, I examine if having a higher level of normative proficiency increases post-entry ties. I conduct a test of partial mediation (Baron and Kenny, 1986) by first regressing the number of post-entry ties formed on the pre-entry contacts variable and covariates for the MBA sample. The results are shown in table 1.9. The coefficient for pre-entry contacts is positive and statistically significant in Model 13. In Model 14 I regress the number of post-entry ties on the socialization variable. The coefficient is positive but is not statistically significant. Taken together, this suggests that individuals with pre-entry contacts are socialized by their pre-entry contacts, but this does not seem to translate into better access to networks post-entry.

Finally, I conducted qualitative research to gain a better understanding of how the proposed mechanisms may or may not influence post-entry tie formation. I interviewed 27 graduate students in business and law that completed internships during the summer of 2008 or 2009. These semi-structured interviews lasted between 10 and 35 minutes. The interviewees were asked questions about their responses to the network surveys, and in particular, how their pre- and post-entry relationships formed. I restrict the discussion below to 18 respondents that completed qualitative interviews and participated in the 2009 survey.[14]

Of the 2009 interns interviewed, 12 of the 18 had one or more pre-entry contacts. All of these interns said they kept in touch with their pre-entry contact(s) during the internship. I asked these interns what sorts of things they discussed with their pre-entry contacts. The interns mentioned that pre-entry contacts helped them in a variety of ways. They provided social support and advice to them during their internships. Another persistent theme was that pre-entry contacts helped them form relationships with other organizational members. One way they did this was by telling the interns that forming networks is important. For instance a consulting intern said,

[14] The 2008 qualitative interview findings were quite similar, but because these interviews were more preliminary in nature, I restrict discussion to only interviews conducted in 2009.

I was trying to figure out how you are assigned to teams and projects. And so we had lots of conversations about that. And he [pre-contact] told me that the way you get assigned to teams is through your network. The more people you talk to and the more people who know who you are, the better. So I really have that in mind. The first couple days that I was there I didn't feel awkward introducing myself or saying hello or what I was doing there. I was able to say, "you know I'm the intern here."

Pre-entry contacts also provided interns with information about who to target when forming relationships. For example, an intern at a law firm described her discussions with her pre-entry contact in the following way:

I would always tell him [pre-entry contact] what I was working on. Obviously he knew the partners that were in his group very well. I told him I was working for this one law firm partner. He's like oh, she's great. She has a lot of business so if you get on her good side, you'll be in a good spot when you come back and work here full time. She works on infrastructure and business is booming. You should really get in with her, with that partner and that group.

Another way that pre-entry contacts affected the generation of post-entry ties was by providing the intern with referrals or introductions to others in the organization. An intern in marketing put it this way,

He [pre-entry contact] told me anything that I talked to him about was totally off the record. And he gave me some advice about people I should talk to as well. He was able to steer me towards people that were on his side of the business or that had been his mentors and things like that. So it was helpful because it kind of gave me a broader reach across the company.

In contrast, those without pre-entry contacts indicated that they felt less empowered to access networks in the organization. For instance, one intern was concerned that if she reached out to others for information or advice there would be negative consequences. She stated,

Because of the internship kind of being a twelve week interview situation, I was always very conscious of who I talked to about anything. I wouldn't ask anyone in the company for career advice. All I was there to do was to display how much I wanted to be there for that company. So I had all sorts of questions but I kept all of those for people outside, not connected to the company.

In sum, the qualitative interviews indicate that pre-entry contacts helped individuals form networks by being brokers. Pre-entry contacts connected interns to people whom they would be otherwise unlikely to meet or whom they would not have known to seek out. During interviews there was little mention of cultural knowledge being useful in network formation, which is consistent with a lack of an effect for socialization in the quantative analysis. Having a grasp of the appropriate norms and behaviors in the organization depended on one's initial relationships, but this did not necessarily translate into more social ties in the organization.

Discussion

This chapter connects two extensive streams of literature, one on social networks and job-finding and the other on social networks and post-entry career outcomes, to develop and test a theory on differential access to social networks in organizations. I argued that when workers are hired with pre-entry relationships they have broader access to networks and form a greater number of social ties. Consistent with this argument I find that interns that had pre-entry contacts formed more new ties in strategic information and professional friendship networks during their internships. Quantitative and qualitative evidence points to the importance of brokerage as a mechanism.

I also argued that pre-entry relationships are a product of an external structure that conditions interaction opportunities between insiders and outsiders in organizations. I used a two-stage IV regression approach to test if external structures condition the likelihood of having pre-entry relationships. Consistent with these arguments, I find that constraints such as geographic proximity to an employer and an employer's recruiting practices conditioned the likelihood that interns had pre-entry contacts in organizations.

Limitations and Future Work

There are limitations to this study that suggest avenues for future research. While the number of ties individuals have in an organizations is significant for understanding a variety of outcomes, future research should investigate other aspects of network structure. For example, past research shows benefits are gleaned from actors being located in a brokerage position between two disconnected alters (Burt 1992). Pre-entry structural variation may shed light on how individuals end up in social networks with different levels of brokerage. Individuals enter organizations with a cohort of people that they form relationships with due to demographic similarity and shared experiences. Individuals with pre-entry contacts may be more likely to become brokers in organizations between new entrants and incumbents because they have relationships with both groups.

To explore this possibility further in my data I examine the strength of ties between interns and their contacts. Strength of ties is not a measure of structure, but can be an indicator, as a large number of weak ties tend to indicate a network with more brokerage. I divided ties into strength based on measures of closeness and frequency of interaction. I regress the total number of weak and strong ties on the number of pre-entry contacts interns at had entry. Table 1.10 shows the results. In Models 16 and 18, the number of weak ties is significantly greater for those with pre-entry contacts. However, Models 15 and 17 indicate that this is also true for the number of strong ties. Further research is needed to determine if, and how, pre-entry contacts relate to other aspects of network structure.

Another important question is whether or not organizations can recreate some of the post-entry integration benefits of pre-entry contacts. Organizations may want to do this because integration of new members helps knowledge sharing (Hansen 1999; Kane, Argote and Levine

2005; March 1991). When workers have extensive ties to other members tasks are completed more quickly (Reagans, Zuckerman and McEvily 2004). Interpersonal ties across work units lead to greater knowledge transfer across an organization (Tsai 2001).

Mentors are believed to be of use to their protégés because they help them form network ties (Moore 2001). In fact, organizations invest in mentoring programs to help improve employee commitment, particularly among its diverse members (Kalev, Dobbin and Kelly 2006). Here I explore whether or not mentors can act as a "substitute" for pre-entry contacts in the development of social ties. In this study 61 percent of the participants were assigned a mentor by their organization. However, the results suggest that having a mentor did not lead to more post-entry ties (see table 1.11). The results here suggest that an exogenously determined pre-entry relationship is powerful and its benefits cannot be easily replicated by organizations.

In addition, future research should examine how contextual factors like pre-entry contacts in organizations differ across individuals. One way of approaching this is to examine for whom pre-entry contacts are the most critical. Scholars are continuing to pinpoint the influence of individual characteristics, including the effect of personality (e.g. Mehra, Kilduff and Brass 2001) and cognition (Janicik and Larrick 2005; O'Connor and Sauer 2006). For instance, Mehra et al. found that self-monitoring, a personality trait regarding the degree to which an individual becomes aware of and is willing to adapt to her surroundings, influences how central she is within certain types of networks. This is because individuals differ fundamentally in their network trajectories based on their self-monitoring tendencies (Kilduff and Tsai 2003). High self-monitors tend to have larger networks and are more likely to have ties to people who are not connected to each other, whereas low self-monitors have smaller and denser networks (Oh and Kilduff 2008).

I measure self-monitoring using Snyder and Gangstead's 18-item scale (Snyder and Gangestad 1986). The questions were administered in a survey as a classroom exercise for MBAs and as a part of the main network survey for law school students. Following Mehra et al., I categorized respondents as high and low self-monitors based on their aggregate scores.
I would expect that because high-self monitors are already prone to form an expansive number of relationships, a pre-entry contact would be more important to low-self monitors. Low self-monitors lack the internal drive to form large networks that prove to be useful in organizations. Results are shown in table 1.12. The influence of self-monitoring on the number of new ties formed is positive and significant ($p < 0.05$) and the effect of pre-entry contacts is marginally significant ($p<0.051$). This again suggests, similar to the results presented in the main portion of the study, that the pre-entry contact variable is a structural variable that influences post-entry networks beyond what individual factors alone predict. However, Model 22 in table 1.12 suggests that there is no interaction effect.

Another possibility is that the effect of pre-entry contacts on post-entry social structures differs for members of various demographic groups. Studies indicate that women and minorities are less structurally embedded in networks than their white male peers (Brass 1985; Ibarra 1995; McGuire 2000). Women and minorities may also be less likely to have pre-entry contacts in many of the organizations they join. Racial and ethnic minorities are often located at the periphery of an organization's social structure in Caucasian and male-dominated organizations (Brass 1985; Ibarra 1995). Ascriptive characteristics such as gender, race, or nationality affect who is seen as legitimate members of organizations (Reskin and McBrier 2000; Ridgeway 1991). When individuals are viewed as less legitimate exchange partners they face barriers forming

social connections (Burt 1998). If disadvantaged members have access to pre-entry contacts they may form social ties that otherwise would be difficult to obtain.

I look for evidence of this by interacting each of the demographic variables with the pre-entry contact variable. The number of individuals in each demographic group is small so the results in table 1.13 are only suggestive. In Model 23 having a pre-entry contact is more important to post-entry tie formation for Hispanics ($p<0.05$) Asian-Americans ($p<0.10$) and foreign students ($p < 0.05$). Surprisingly, the coefficient on the pre-entry contact variable is negative and significant for blacks. The interaction is not significant for gender, which is less surprising given that in this sample the z-value the coefficient on gender is less than one, indicating that gender has no bearing on post-entry embeddedness in this study.

In sum, this chapter presents and tests a theory on why workers' networks differ in organizations. I argued that pre-entry relationships play a significant role in generating access to networks post-entry. Consistent with this argument, results indicate that those that enter with pre-entry contacts go on to form more social ties in organizations. External structures provide interaction opportunities for those within organizations to interact with individuals outside. These interaction opportunities manifest in pre-entry relationships that avail access to networks after individuals are hired.

In the next chapter I turn my attention more explicitly to the impact of pre- and post entry social structure on inequality. Inequality refers to the allocation of career rewards based on factors other than or in addition to an individual's work qualifications (Lin 2000). Much research exists that suggests social networks impact inequality in the labor market. I argue that pre-entry and post-entry social structures affect careers after individuals enter organizations.

I examine my arguments in the context of trial employment. During trial employment organizations hire workers for a temporary period of time in order to screen them for jobs. At the end of the trial employment period organizations choose whether or not to offer workers more permanent positions. In the next chapter, I discuss why trial employment outcomes are important for organizations and how social structures during trial employment influence inequality in the workplace.

Chapter 2

Social Structure and Hiring after Trial Employment

In order for organizations to adapt and survive they must be able to hire and retain workers to carry out organizational activities. Organizations that hire workers that are a good match—that have the right mix of skills, abilities, and personal characteristics—are better able to meet environmental demands (Granovetter 1981; Uzzi and Barsness 1998). Hiring well-matched workers staves off training costs because individuals come in with the requisite skills to do their jobs (Chatman 1991; Cohen and Pfeffer 1986) and lowers attrition costs because well-matched workers are less likely to turnover (Fujiwara-Greve and Greve 2000). Therefore, organizations invest heavily in recruiting and screening potential candidates. However, hiring the right employees is difficult. Even lengthy pre-hire assessments and other screens do not completely capture what employees are required to do on a day-to-day basis (Neckerman and Kirschenman 1991).

One of the ways organizations deal with information deficiencies that imbue hiring is through 'trial employment.' During trial employment individuals are hired for a temporary period of time. This allows organizations to observe the behavior and performance of potential employees before longer-term hiring decisions are made. At the end of the period, organizations choose whether or not to offer temporary workers more permanent positions. For example, organizations hire seasonal workers for a busy season and then provide a portion of the workers permanent jobs.

Trial employment is an outgrowth of non-standard employment arrangements that have increased markedly in the last several decades (Davis-Blake and Uzzi 1993; Kalleberg 2000).

Trial employment is increasingly being used by employers to screen workers for long-term jobs (Christensen 1995; Houseman 2001). And yet, despite indications that trial employment is a key aspect of organizational selection, little research has examined how organizations select individuals for longer-term positions. Insights on the use of trial employment to select employees may shed light on how organizational advantages that stem from matching workers to organizations are generated (Pfeffer 1994).

Understanding how workers are selected after a trial employment period also yields insights on career mobility. Internal workers—those that organizations have hired for permanent positions—are privy to internal labor markets characterized by greater stability, higher wages and more upward mobility (Althauser 1989; Doeringer and Piore 1971). External workers—those in temporary jobs in equivalent professions—receive comparatively lower wages and benefits, lower status and have little legal protection (Davis-Blake and Uzzi 1993; Kalleberg, Reynolds and Marsden 2003). Movement from "temp to perm" positions within organizations is an important aspect of mobility.

This chapter investigates the impact of pre-entry and post-entry social structure on employer selection after trial employment. The influence of social structure on employer selection has been documented in numerous studies of traditional hiring (see Granovetter 1995 and Marsden and Gorman 2001 for reviews). In traditional hiring, organizations rely on social structures to provide information to aid job matching (Granovetter 1981; Fernandez and Weinberg 1997). All else equal, job-seekers with social contacts in the hiring organization are more likely to get offered jobs. In trial employment uncertainty about a job candidate's abilities and skills are lower because organizations have been able to assess a candidate first-hand. Yet, during trial employment, the social structure of temporary workers may matter. I argue that pre-

and post-entry social structures affect the chances that temporary workers are offered permanent positions in organizations.

Non-Standard Work and Trial Employment in Organizations

> "[During trial employment] I have the opportunity to observe this person over a period of time. I don't have just a half-hour snapshot to go by as in an interview. I can get to know the person, get to know their background a little bit, get to know what their behaviors are, what motivates them, what possible problem areas I might have with the individual." (Houseman, Kalleberg, and Erickeck, 2003: 122)

Trial employment is an outgrowth of non-standard employment arrangements that have increased markedly in the last several decades (Davis-Blake et al., 1993; Kalleberg, 2000). During post-World War II industrialization almost all employment structures were "standard work arrangements in which it was generally expected that work was done full-time, would continue indefinitely, and was performed at the employer's place of business under the employer's direction" (Kalleberg 2000: 341). In the 1970s, employment structures changed in response to greater global competitive pressures and increased uncertainty (Cappelli et al. 1997; Cappelli 1999). Organizations became much more likely to use external employment structures such as temporary workers, contract workers, and other market-mediated arrangements to lower costs and control labor.

Organizations may start workers in a market-mediated employment structure and then internalize some of the workers (Abraham 1990; Houseman 2001; Kalleberg, Reynolds and Marsden 2003). Organizations select to internalize a portion of external workers to increase administrative control. Internalizing workers also improves an organization's ability to incent workers to make firm-specific investments in skills and training (Davis-Blake and Uzzi 1993).

The period of time when workers are hired in market-mediated employment arrangements serves as a type of 'trial employment.' Organizations obtain first-hand information about workers' skills and abilities. Evidence indicates trial employment is a key aspect of organizational selection. In one study of large corporations, over half of the respondents indicated that they used temporary assignments to screen prospective permanent workers (Christensen 1995). Houseman (2001) found that over one-fifth of the firms that she surveyed used trial employment to select long-term employees.

Trial employment lowers information asymmetries between prospective workers and employers in ways that are not possible in traditional hiring. In traditional hiring, even when employers go through interviews, skill-based assessments and other intensive search techniques, workers know more about their skills, abilities, and preferences than what they may reveal to employers. The greater depth of information that is gleaned during trial employment have led scholars to suggest that an outcome of trial employment "to screen workers for permanent positions, then, is a more productive workforce" (Houseman et al. 2003: 110).

In traditional hiring social networks help address information asymmetries in the labor market. Networks channel finer-grained information to prospective employees and employers that allows them to opt into or out of job opportunities (Granovetter 1981). The information provided through networks in the labor market helps aid employer-employee matching. As a result, it has become a common practice for organizations to encourage and even reward their employees for referring their informal contacts to jobs (Fernandez, Castilla and Moore 2000). The organization benefits from their employees' careful assessment of their personal contacts, as the employees do not want to damage their reputations by referring poor performers (Rees 1966).

The employee can vouch for a potential recruit's trustworthiness and provide his contact first-hand information on working for the employer (Granovetter 1974).

Because trial employment lowers information asymmetries between employers and prospective long-term employees, we should expect that there is no effect of social structure on the likelihood that temporary workers receive permanent job offers. Organizations have been able to assess the productivity of workers and are no longer reliant on employee referrals or endorsements of the quality of prospective employees. There may be reasons, however, that social structure impacts trial employment outcomes.

Pre-Entry Social Structure and Trial Employment

Organizations provide very little training to non-standard workers. Rather, the expectation of non-standard workers is that they can 'hit the ground running.' This is not only the case for workers in low-skill occupations. White collar professionals make up a large contingency of those doing non-standard work in organizations (Applebaum 1987) and the expectation is that these individuals have developed the appropriate skills before being hired (Barley and Kunda 2001). If a non-standard worker is not performing at an adequate level, the organization simply chooses to let the worker go. The amount of training and development employees are provided is one of the primary distinctions between 'core' employees in whom organizations make ample investments, and peripheral workers (Kalleberg 2000; Kalleberg, Reskin and Hudson 2000).

Although non-standard workers receive little training, they are still expected to complete many of the same tasks as permanent employees. For instance, Mayer and Jackson (2005) found that outside contractors completed many of the same projects as internal knowledge workers and

worked interdependently with them. Jarmon, Paulson and Rebne (1998) found that non-standard and permanent workers that are software engineers complete similar types of assignments.

Given the little prior training that non-standard workers receive, relationships that they have with organizational members when they enter are likely to be important. Researchers refer to the relational benefits of those that have pre-entry contacts as 'social enrichment' (Fernandez et al., 2000). Pre-entry contacts can help non-standard workers learn 'the ropes' in organizations. They act as mentors and help them get accustomed to a new setting (Coverdill 1998; Granovetter and Tilly 1988). Non-standard workers receive aid from pre-entry contacts that is likely to increase non-standard workers' productivity in the organization. For instance, Castilla (2005) found that workers that were referred to the organization by a social contact had a higher initial level of performance than those that did not have pre-entry relationships, even after accounting for quality differences across workers.

In addition to productivity enhancement, the socialization benefits inherent in pre-entry relationships are likely to be important for non-standard workers for many of the reasons argued in the previous chapter. Those with pre-entry contacts are likely to be more socialized or to have a greater grasp of the norms, values and dominant frameworks in an organization (Van Maanen and Schein 1979). Non-standard workers with pre-entry contacts are able to learn about the culture of the organization from someone they know and trust. This enhances the degree that cultural information is transferred (Hansen 1999; Levin and Cross 2004). It also increases the level of conformity of non-standard workers to norms and values. As a result, the organization believes that the non-standard worker is a good fit in the organization (Chatman 1991). Finally, because conflict often exists between non-standard workers and permanent employees, organizations may hire trial workers for permanent positions whom have demonstrated they can

'get along' with organizational members such as pre-entry contacts. For these reasons, I predict the following.

Hypothesis 1. Individuals with pre-entry contacts are more likely to receive offers after trial employment than individuals without pre-entry contacts.

The Mediating Effect of Post-Entry Social Structure

Broschak and Davis-Blake (2006) found that internal and external employee designations operate similarly in organizations as ascriptive characteristics such as race and gender, whereby people categorize others as in- or out-group members (Jehn, Northcraft and Neal 1999; Turner 1985). Permanent members of organizations see non-standard workers as out-group members and are unlikely to trust these employees. In turn, non-standard workers may have a difficult time forming relationships.

However non-standard workers with pre-entry contacts likely have help getting access to social ties. As discussed in the previous chapter, pre-entry contacts help integrate individuals into organizational networks. They can help integrate non-standard workers in networks by introducing them or referring them to organizational members. Integration into networks provides non-standard workers with information, advice and other resources. This improves the productivity of workers above and beyond the direct help the pre-entry contact provides. Therefore, I predict the following.

Hypothesis 2. The effect of pre-entry contacts on obtaining job offers is partially mediated by the number of ties temporary workers form in the organization post-entry.

Research Setting

My research setting is internships for graduate students in business and law. One of the primary purposes of internships is for employers to select future employees (Baron and Kreps 1999). Internships serve as an extended "job interview" whereby individuals are screened for their longer-term prospects in the organization (Beenen and Rousseau 2010). For instance, the Graduate Management Admission Council® surveyed 690 employers of MBAs in 2003, and three-quarters of the organizations reported using interns to fill positions prior to opening up an employee search to the broader labor market.[15] Law firms source many of their full-time recruits from their internship programs. Wertheim (1988: 24) notes, "The internship experience provides the employer a significant value in recruiting. Interns who perform at the highest levels, fit into the corporate culture and develop expertise in an area of the firms' practice are ideal candidates for permanent employment. The hiring procedures based upon actual performance are best as they use a known quantity and eliminate the need for a recruiter's guesswork based upon a resume and interview."

Business and law schools monitor the rates that their students are placed in internships and the rate that interns receive full-time offers. Internship placement and post-graduate employment are closely linked and strongly influence the rankings of business and law schools. Due to the significance of internships, external organizations monitor the behavior of employers, universities, and students during intern recruiting. The MBA Career Services Council provides national reporting standards on internships for graduate business school students. The National Association for Law Placement (NALP) monitors recruitment of interns at ABA-approved law

[15]See reports at http://www.gmac.com/GMAC/newsandevents/gmacannualreports.htm.

schools in the United States. For instance, the NALP stipulates the point that employers are allowed to recruit students for internships during law school.

Sample and Research Design

My sample is a subset of the business and law graduate students that was analyzed in the previous chapter. The primary difference in the sample used here is that only law and business students who completed an internship in the summer prior to their last year in school are included. This drops graduate students between their first and second year of law school. In addition, I removed 36 respondents from the sample that had terminal internships, internships that extended beyond the time period of the study, had not received notification of their long-term employment status from their employer at the time of the close of the study, or had other data that was missing or incomplete.[16] My final sample is 93 business students and 68 law students or a total of 161 interns.

Dependent Variable: Job Offer

Full-time job offers is a dichotomous variable (=1 if offer was received, else 0). Offer data was collected from respondents on surveys administered by the Career Management Centers. The Career Management Centers use data collection and reporting procedures that are consistent with the guidelines of their national governing organizations (i.e. NALP or the Career Services Council). If the students had not received notice from their employers on their offer by the time the Career Management Center surveys were administered I contacted the respondents by phone or email about their offer status in the spring of the following year.

[16] Terminal internships refer to those that are offered by organizations to students, but where long-term employment is not possible. For instance, Education Pioneers© hires graduate students for internships only.

Independent Variables

The pre-entry contact variable is dichotomous (=1 intern had a pre-entry contact, else 0) and measured as it was in Chapter 1. The number of new post-entry ties formed is also identical to the measure in the previous chapter. It is the count of the new ties respondents developed with organizational members (not other interns or summer associates) in strategic information or professional friendship networks.

Control Variables

I control for several organizational and industry factors that are likely to influence whether or not an organization makes an offer to an intern for full-time employment. Large organizations are more likely to hire new workers than smaller organizations. Their hiring needs are greater due to attrition and the number of employees the organization requires to carry out tasks. I control for the size of the respondent's local organization with size intervals as I did in Chapter 1.

Organizations that have hired from business or law schools in the past may be more likely to hire from those schools again. The organization may value the training students receive from the educational institution or alumni may hold positions of power in the organization (see Parkin 2007). I gathered a count of the number of alumni at the organizations using the law and business schools' alumni databases. The counts are skewed so a log transform of the number of alumni is used as a control variable.

I also include industry controls to net out the effects of working in various industries. I included industry dummies for the eight main industries in which interns worked: financial services, government and/or not-for-profit, consulting, consumer products, legal services,

pharmaceuticals/biotech, manufacturing/technology, and retail/entertainment. Finally, I control for the demographic background of the respondents using the same variables as in the previous chapter.

Analyses and Results

Table 2.1 describes the means and correlations for the variables in the analysis. Less than half of the interns received full-time offers from their employers (42 percent). They worked in organizations that had 3.78 alumni on average. About 12 percent of the interns worked for a government or a not-for-profit organization, while 34 percent worked in law offices, and 44 percent worked for a private-for-profit business organization (i.e. financial services, consulting, etc). Half of the respondents in the sample are male (50 percent) and 26 percent of the respondents are from outside of the United States.

[INSERT TABLE 2.1 HERE]

All my hypotheses are directional so all statistics and hypothesis test results reported are one-tailed. Table 2.2 compares the job offers for those with and without pre-entry contacts: 61 percent of interns with pre-entry contacts and 34 percent without pre-entry contacts received offers. The difference in means is significant ($p<0.05$, $t=3.12$). Table 2.2 also provides statistics for those working in large organizations (with more than 100 employees) versus those working in smaller organizations. The mean difference in offer levels suggests that having a pre-entry contact is an advantage regardless of organizational size: 73 percent and 39 percent of those with pre-entry contacts received offers in large and small organizations respectively, significantly

more than those without pre-entry contacts ($p<0.05$, $t= 1.94$; $t=1.79$). A comparison of means is shown graphically in figure 2.1.

[INSERT TABLE 2.2/FIGURE 2.1 HERE]

In Table 2.2 differences in full-time offers for those with and without pre-entry contacts do not control for factors that might affect the acquisition of job-offers. Table 2.3 presents multivariate analysis to account for these factors. I run a logit, which models the log odds ratio of an intern receiving an offer to not receiving an offer.

$$\ln \frac{P(Y=1)}{1-P(Y=1)} = \alpha + \beta' X + \varepsilon \qquad (1)$$

where P(Y=1) is the probability of getting an offer.

Model 1 shows the effects of the control variables. Interns that worked for the government or non-profit organizations are significantly less likely to obtain job offers from their intern employers, while students that interned in organizations in the high tech industry are more likely to obtain offers. Being Asian-American or from outside the United States has a negative and significant effect on receiving a job offer. The variables for organizational size are not shown but are consistent with expectations for how organizational size relates to job offers – those working in smaller organizations are significantly less likely to get offers from their employer.

Model 2 adds the pre-entry contact variable without the industry dummies included in the model. The effect of a pre-entry contact is positive and statistically significant ($p<0.05$). The

coefficient for the pre-entry contact variable is the change in log odds ratio. Model 2 indicates that the odds ratio of getting an offer to not getting an offer goes up by a factor of 2.48 with a pre-entry contact. If a person has a 50 percent probability of getting an offer (i.e. an odds ratio of 1), this probability goes up to 71.3 percent if s/he has a pre-entry contact. Model 3 adds the industry dummies. The coefficient for the pre-entry contact variable is positive and significant ($p < 0.05$) and the odds ratio increases by a factor of 2.10.

In Model 4a I restrict the sample to only interns that were paid by their employers during their internships. Whether or not an employer paid an intern may indicate an employer's intentions regarding long-term hiring. An employer that was unwilling or unable to pay for work during the internship may be unlikely to hire the intern for employment post-graduation.[17] There were 134 paid interns in the sample. After restricting the sample to only paid interns, the effect of a pre-entry contact remains positive and significant ($p<0.05$).

Another concern is that the quality of the interns may influence offers. Employers likely favor giving the high ability students job offers. I control for student quality in Model 4b by including a variable on student rank. The variable distinguishes students that are ranked in the top 20 percent of their class. In Model 4b the rank variable is not significant. As it turns out, student rank is highly correlated to other variables already included in the model, including the size of the organization (the high ranking students tend to work for large organizations) and citizenship (the high ranking students tend to be from the United States). With inclusion of the rank variable the effect of pre-entry contacts remains positive and significant ($p<0.05$). Evidence from Models 2-4 indicate that hypothesis 1 is supported.

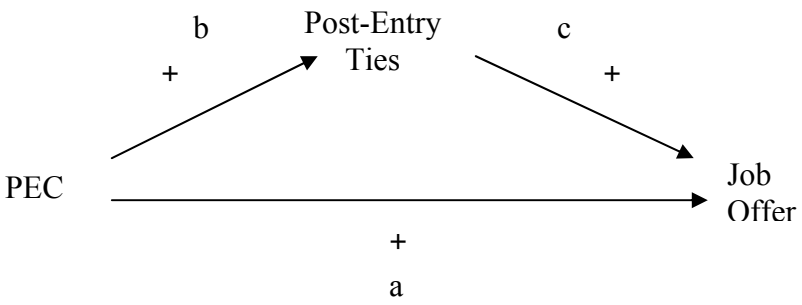
[17] Under UNITED STATES law an employer is required to pay interns for their work, though employers are exempt under certain scenarios and unpaid internships are quite common (http://www.nytimes.com/2010/04/03/business/03intern.html)

[INSERT TABLE 2.3 HERE]

The logit model is a non-linear probability model such that variables do not have the same effect across the entire range of the dependent variable. For individuals that have a very high or a very low probability of getting offers the influence of having a pre-entry contact is less than those with a moderate probability. To illustrate this further Table 2.4 provides three examples of the predicted probability of getting offers using the coefficients from Model 3. The first case is the likelihood of a non-domestic male student interning in an office with 20 or fewer employees in the finance industry getting full-time job offer. The probability of such an intern obtaining a full-time job offer is only 3 percent, driven primarily by the negative effects of working in a small office and not being from the United States. The probability of him obtaining a job only goes up to 5 percent with a pre-entry contact. By comparison, the influence of pre-entry contacts for those in the second and third scenarios is much higher. The effect of a pre-entry contact for a domestic male student working in a large office in the consulting industry is a 13.5 percent increase in probability of getting an offer. For a black female student working in large law firm the effect is a 17.6 percent increase in probability.

[INSERT TABLE 2.4 HERE]

Next I test hypothesis 2, the partial mediation hypothesis. In order to establish partial mediation I must have evidence of the relationships shown below (Baron and Kenny 1986).



Path a is tested in hypothesis 1. Having a pre-entry contact is positively related to obtaining a job offer at the end of the internship. Path b was established in chapter 1. Next I regress job offers on the number of new ties interns formed in their organization (path c). The coefficient is positive but not significant in Model 5. This indicates that even before including the pre-entry contact variable in the model, the effect of the number of new ties is not significantly related to getting a job offer. Therefore partial mediation is not present and hypothesis 2 is not supported.

Robustness Checks

As mentioned in Chapter 1 an important concern in testing causal predictions in this study is that pre-entry contacts are not randomly assigned. Underlying differences in individuals' ability, intelligence, charisma, motivation and other factors may simultaneously influence having pre-entry contacts and getting full-time offers. For instance, individuals with a strong desire to work for the organization after graduation may be more likely to seek out and form relationships with employees of the organization before interning and may also work harder during their internships. If this is the case, the positive relationship between having a pre-entry contact and obtaining a full-time job offer is spurious.

In order to address this issue I use a two-stage instrumental variables approach, again restricting variation in the pre-entry variable to only that portion that is due to exogenous factors.

I include the predicted value of having a pre-contact and all other covariates in the following model

$$Y = \alpha + \beta'X + \sigma\grave{W} + \varepsilon \qquad (2)$$

where Y is the offer outcome, $\grave{W}$ is the predicted value from the first-stage regression and X is a vector of covariates.

Instrumental Variables

My instruments are similar but not identical to those used in Chapter 1 because my dependent variable is different. My first instrument is the geographic distance in miles between an intern's work location and the university. Geographic distance influences opportunities for interaction (Festinger, Schachter and Back 1950). When an internship organization is close by students and employees of the organization have more opportunities to interact prior to the student starting.

My second instrument captures the interaction opportunities students have prior to starting their internships due to different recruiting practices across business and law schools. Employer's recruiting practices differed for law and business school students. The National Association for Law Placement (NALP) is highly concerned about intern recruitment being a distraction to law students. The guidelines and governance practices put in place by NALP restricts the interaction opportunities law students have with employers. Meanwhile, business students have several opportunities to interact with employers at social events, case competitions, employer presentations and student meetings. I use a dichotomous variable (1=law school, else

0) to capture difference in opportunities to interact with employees in organizations across schools.

A concern when using IV regression is that low instrument strength can lead to biased estimates (Woolridge, 2002). I include an interaction between law and geographic distance to increase instrument strength. The interaction term indicates that geographic distance of an organization from the university may be more detrimental to having pre-entry contact depending on the school (business or law) that a student attends. Theoretically we should expect individuals to be more likely to have pre-entry contacts when there are low search costs and opportunity costs to form relationships with incumbent members. I expect a negative interaction between the law school dummy variable and geographic distance because the opportunity costs for law school students to seek out employees of organizations prior to internships is higher. [18]

Because I use multiple instruments in my first stage model, I check to see if the model is overfitted using the Hansen-Sargan test. The null hypothesis is that the instruments are valid instruments, i.e. uncorrelated with the error term. Under the null, the test statistic is distributed as chi-squared in the number of over-identifying restrictions. An inability to reject the null hypothesis, as is the case here, indicates that the model is not over-fitted [$\chi2(2)$, $p > 0.05$]. In addition, the instruments should not be correlated to the dependent variable once accounting for the partial correlation of the other exogenous variables (Wooldridge 2002). This was the case for the instruments used here (see table 2.7).

Lastly before using two-stage IV, I check for the presence of heteroskedasticity. In the presence of heteroskedasticity the 2SLS estimator is not efficient (Wooldridge 2002). The Breusch-Pagan test indicates that heteroskedasticity is present [$\chi2(1) = 4.51$, $p=0.03$] and so I use

[18] The opportunity costs may be higher for law school students because of grades are quite important to employers, and thus coursework tends to receive much attention. Note that this interaction effect is not significant in the first-stage model . The effects of the other two instruments are significant with the predicted sign (see table 2.6).

a GMM robust estimator instead, which increases efficiency by giving higher weight to low variance moments (Baum, Schaffer and Stillman 2003).

Model 6 shows the OLS regression with the control variables and robust standard errors and Model 7 shows the two-stage IV GMM estimation. Models 5 and 6 are consistent with the previous results in table 2.3. Model 6 shows that the control variables are the same sign and have the same significance as those in Model 1. In Model 6 the pre-entry contact variable is positive and significant. This indicates that after stripping away the endogenous aspects of the pre-entry contact variable, a difference in the likelihood of obtaining a job offer remains for those that have a pre-entry contact and those that do not. Individuals with pre-entry contacts are more likely to obtain offers after a trial employment period.

[INSERT TABLE 2.6 HERE]

Discussion

This chapter examines how social structure in the form of pre-entry social contacts affects the selection of workers after trial employment. Interns in business and law with pre-entry contacts are more likely to obtain permanent job offers. This effect holds after accounting for employer intentions. This effect also remains after accounting for differences in the characteristics of individuals that could affect offers.

This is the first study to my knowledge that examines the role of social structure in trial employment. This is important because the use of non-standard employment is on the rise in many industrialized countries. Organizations are increasingly using trial employment as a way to screen workers for standard jobs. By providing evidence that movement from non-standard to

standard employment is facilitated by social contacts this study provides useful insights into organizational selection processes.

This study also sheds light on the relationship between social structure and mobility in trial employment. Standard workers are privy to internal labor markets characterized by greater stability and higher wages. Movement from "temp to perm" positions within organizations is an important aspect of mobility. Results indicate that pre-entry relationships affect trial employment outcomes. Those endowed with pre-entry relationships have better prospects of being employed in standard positions.

I did not find evidence that the number of post-entry ties affects the likelihood of obtaining a permanent offer from employers and the partial mediation hypothesis is not supported. One possibility for the null result is that post-entry ties matter less in trial employment settings. In trial employment workers are employed for short periods of time. The social ties that emerge after individuals enter organizations may matter less because they do not make a substantive impact on the social resources individuals receive. Only those social ties that are present at the start and that allow trial workers to 'hit the ground running' may be effective. Future work should examine this further by investigating pre- and post-entry social structure in traditional settings and comparing the effects to those uncovered here.

Future work should also examine under what conditions a pre-entry contact is more or less important to mobility. Perhaps when it is hard to assess workers' skills during trial employment pre-entry contacts matter more to an employer. This would be consistent with extant theory on the role of social networks in lowering information asymmetry. Investigating social structural effects with direct measures of productivity would also be useful. This may shed light

on not only whom organizations hire, but whom they ought to hire. This would increase our understanding of how pre- and post-entry social structure affects employer-employee matching.

Conclusion

Several decades of labor market research reveals a prevailing fact: individuals rely on social contacts when looking for work. As a result some individuals enter organizations with relationships to organizational members in place. In this dissertation I examine how variation in pre-entry relationships affects the formation of networks and mobility in organizations. The purpose of this chapter is to summarize my theoretical predictions and empirical results, outline the main contributions of my dissertation and provide direction for future research.

Summary of Chapter 1

In Chapter 1 I develop and test a theory on how pre- and post-entry social structures are related. I argue that pre-entry contacts are brokers that generate access to organizational networks. In addition I argue pre-entry contacts socialize new entrants by passing on knowledge about norms, values and behaviors of organizational members. This increases new entrants' social similarity to incumbents. As a result of these mechanisms, I predict that pre-entry contacts increase the number of new ties individuals form in organizations.

I test my prediction using a unique dataset collected from graduate students in business and law at a private university. I surveyed graduate students on their social networks before and after they completed internships. 251 graduate students formed 1015 new ties during their internships. One-quarter of the students (24 percent) had one or more pre-entry contacts in the organization prior to starting.

Consistent with my main theoretical prediction, results indicate that having a pre-entry contact leads to advantages in networks post-entry. Individuals with pre-entry contacts formed more social ties and were more embedded in organizational networks overall. Evidence suggests

that this occurred because pre-entry contacts serve as brokers that generate access to organizational networks. Interns formed new ties to organizational members that were also connected to the pre-entry contact.

Socialization is not supported as a mechanism. I found evidence that pre-entry contacts provided information that increased interns' knowledge about the norms, behaviors and values in the organization. However in mediation analysis there is not evidence that being socialized translated into new ties. In semi-structured interviews interns provided few examples of how organizational knowledge aided in forming relationships with incumbents. In contrast, interns frequently mentioned ways that pre-entry contacts serve as brokers.

The lack of evidence for the socialization mechanism does not necessarily indicate that it does not matter to forming networks in organizations under all circumstances. Institutions such as universities expend significant resources socializing young professionals (DiMaggio and Powell 1983). Those with pre-entry contacts were socialized to a greater extent, but perhaps because all or most students grasp professional norms, socialization did not have a meaningful effect on network formation in this study. Socialization may come to bear in other settings where professional norms are not as institutionalized.

In analyzing the results of Chapter 1, the importance of a boundary condition on effectiveness of pre-entry contacts emerged. Pre-entry contacts had limited effects on post-entry networks when the interns' work had little overlap with the pre-entry contact's work. Specifically, when interns had friends prior to entry that did not serve in any work-related role, these friends did not become a part of the intern's organizational network and did not increase the number of new ties individuals formed in the organization. Meanwhile, pre-entry contacts that were supervisors or had other work-related roles had a positive and significant effect on the

number of post-entry ties formed. This suggests limits to post-entry integration benefits based on the type of work and perhaps the physical location of the pre-entry contact. For instance, when an accountant in New York has a pre-entry friend that works in a manufacturing plant in Illinois, the accountant may be unlikely to experience integration benefits.

In Chapter 1 I also suggest that workers come to vary in their pre-entry relationships with incumbents due to an organization's external structure. External structure including geography, institutions, interorganizational relations and other factors afford some individuals an opportunity to interact with organizational members before they are hired. In this research context I suggested that the location of the university in relation to the internship organization and the employer's recruiting practices influence the opportunities that prospective interns and employees had to interact. I used these as explanatory variables (instruments) in a first stage model to predict the likelihood that individuals had pre-entry contacts. Results indicate that propinquity and employer hiring practices had their expected effect on pre-entry contacts. The second stage regression results indicate that the exogenous component of the pre-entry contacts variable, stemming from external structure, increases the number of post-entry ties individuals form.

Chapter 1 makes several important contributions. Its main contribution is that it develops and tests a theory on why workers' networks differ. Sociologists and organizational theorists have argued that differential access to social ties explains variation in career rewards. As evidence of differential access, scholars document network differences among workers and implicitly assume they are the product of external constraint. This is problematic for understanding the causal effects of networks. Strategically-minded individuals construct their networks in ways that make estimates of the effect of networks on career rewards difficult to

assess. Without understanding how networks emerge apart from the characteristics of individuals, it is hard to pinpoint their effects on careers.

In addition, the little work that has examined constraints that affect network formation has concentrated on factors that differ across organizations and work levels. Yet, structural differences have been documented in numerous studies of workers within organizations. The income and career rewards individuals receive depend on intraorganizational networks. The constraints investigated in prior research cannot explain structural differences that exist for workers within the same organization or job level.

The theory presented here moves a sociological perspective of inequality forward in substantive ways. Sorensen notes that "the distinctive approach by sociology to the study of inequality is probably the idea that social structure is somehow relevant for the creation of inequality. . . that properties of positions in social structure are relevant for how much income and other rewards occupants of these positions obtain independently of the characteristics of these occupants" (1996: 1334). Thus, a key to a sociological perspective on inequality is an explanation of how individuals come to obtain different structural properties that impact rewards apart from individual factors. This dissertation tests a theory for why individuals' networks differ that implicates the importance of the initial set of relationships with which individuals enter organizations.

Perhaps a criticism of this theory is that it is overly reliant on pre-entry network structure in its arguments, and thus does not provide a true explanation of how networks emerge in organizations. In other words, one might say that by focusing on pre-entry relationships I have by-passed explaining how networks emerge. First, I would argue that individuals are rarely if ever 'free' from the influences of social structures rooted in the past. In society at large, people

are born into a family, and these early ties may influence how their networks develop in at least two ways (Lin 1999). Early kinship ties affect a person's social contact with others as parents or other kin take it upon themselves to integrate a child into the broader world. Secondly, parents, kin, and caretakers socialize children. Early socialization influences people's norms and perspectives and choices. These in turn are thought to influence who people form ties with later in life (DiMaggio and Mohr 1985). Similarly in work organizations, individuals are affected by relationships that began in the past.

Second this study sheds light on macro-micro structural links that have long been of interest to scholars of social structure (e.g. Granovetter 1973). Social structures external to organizations influence interactions between organizational incumbents and outsiders. Interaction opportunities are generated by external structures such as geography, interorganizational relations, institutions, population dynamics, demography and other factors. In turn, macro structure produces variation in social relations at the point of entry that condition access to post-entry networks.

The results of this dissertation suggest new ways to think about organizations and inequality. Work organizations are argued to play a central role in generating inequality in industrialized societies (Baron 1984; Kalleberg and Van Buren 1994). Organizations create jobs that vary in wage structures and advancement opportunities. Organizations affect individuals' economic prospects by choosing who to hire and what jobs to allocate them to within an organizational hierarchy. And yet the arguments presented here suggest that even if organizations were to implement fully equitable hiring and staffing practices, inequality is likely to persist due to individuals differing in their chances to form social networks in organizations. Pre-entry social structure is correlated to an individual's socioeconomic background, institutional

affiliations and ascriptive characteristics (e.g. Wilson, 1987; Marx & Leicht, 1992; Korenman & Turner, 1996; Briggs, 1998; Smith, 2005). Because external structure conditions opportunities for interaction between organizational members and outsiders, inequality within society may be reflected within organizations through pre- and post-entry structural links.

These arguments about inequality within organizations echo Granovetter's sentiments about inequality on the pre-entry side of the labor market. He notes that "because pre-existing networks are unevenly distributed across individuals, whatever social processes led to these networks will create an uneven playing field in the labor market without any actor necessarily having intended to do so" (2005:36-37). In organizations this may happen because pre-entry social structure affords access to networks for some and not others. Career-related outcomes such as turnover, upward mobility, work performance, visibility, power, influence, and others may be impacted by who people know prior to entering. In turn organizations may come to reflect broader societal disparities without ever having intended to do so.

Summary of Chapter 2

In Chapter 1 I set out to offer an explanation for differences in workers' networks that did not rely on individual characteristics. In Chapter 2 I turn my attention to how exogenously determined structural antecedents in the form of pre-entry contacts impact mobility in organizations. The outcome I investigate is hiring decisions after a period of trial employment. I suggest that pre- and post-entry social structure impact job offers after a trial employment period. Pre-entry contacts provide trial workers with information and advice on how to perform their jobs and increase their productivity during trial employment. Pre-entry contacts also help integrate trial workers into organizational networks, which further increases their productivity. I

predict trial workers with pre-entry contacts are more likely to get permanent offers, and this is partially mediated by the number of new ties trial workers form in organizations post-entry.

I test these arguments with a subset of the interns—those that were eligible to receive offers—from Chapter 1. Internships are a quintessential form of trial employment for professionals in business and law, as employers use them to screen graduate students for post-graduate positions. I control for the students' demographic characteristics, the size of the organization, industry and the number of alumni in the organization. In order to account for differences in human capital across students I collect data on school rank. After controlling for these factors, the results indicate that interns with pre-entry contacts are more likely to obtain permanent jobs. I again use a two-stage instrumental variable technique to model having pre-entry contacts in the first-stage before using the predicted values in a second stage model. Results of the IV regression indicate that those with pre-entry contacts are more likely to receive offers, which is driven, at least in part, by external structure.

New ties were not found to increase the likelihood of getting job offers (i.e. the partial mediation prediction is not supported). This is a somewhat surprising result. Much research suggests that individuals with expansive networks in organizations increase their chances of upward mobility. A possible explanation is that networks in trial employment operate differently than in traditional settings. During trial employment individuals work for a fixed-period of time, often for just days or weeks. It may be that new ties do not lead to a significant increase in resources and productivity because these ties are not in existence for a long enough period of time. In these settings it is reasonable that pre-entry social ties are much more important.

Chapter 2 also makes important contributions. In traditional hiring, organizations rely on social networks to provide information to aid job matching (Granovetter 1981; Fernandez and

Weinberg 1997). All else equal, job-seekers with social contacts in the hiring organization are more likely to be offered the job. In trial employment we should not expect social networks to have an impact on hiring. Uncertainty about a job candidate's abilities and skills are lower because organizations have been able to assess a candidate first-hand. Yet the results of this study indicate that pre-entry contacts affect employer hiring decisions.

Chapter 2 also furthers our understanding of inequality in the workplace. Permanent workers have jobs with greater stability, higher wages and more upward mobility than temporary workers. Movement from temporary to permanent positions within organizations is an important aspect of mobility. This study indicates that external structures produce variability in pre-entry contacts that impact the likelihood that workers get job offers after a period of trial employment.

On a final note, the generalizability of this dissertation requires discussion. The key finding in Chapter 1—that pre-entry relationships influence how networks emerge in organizations—is likely to generalize beyond this context. The effect of pre-entry contacts on post-entry networks may be even stronger in traditional settings than in this study on internships. Internships provide many opportunities for graduate students to interact with employees. Interns have ample chances to meet employees during social events, off-site trips and other activities. Organizational members expect interns to 'get on their calendars' for lunch or other meetings. And yet, even in this setting where chances for social interactions were prevalent, pre-entry contacts influence the development of new ties. In traditional settings individuals may face stronger barriers forming social ties, and the effect of pre-entry contacts may be more amplified that what we see here.

I would also argue that the results are likely generalizable in Chapter 2. It is reasonable to wonder if pre-entry relationships mattered more in this study than in traditional work settings

because interns were hired for a short period of time. This is a question that deserves further examination. However, there are reasons to suggest that pre-entry contacts influence mobility in traditional settings as well. The short-term job assignments investigated here are not entirely different from career contests in internal labor markets (Rosenbaum 1979). In internal labor markets workers compete to advance up an organizational hierarchy. Early career advantages persist because organizations sort high performers from low performers early in workers' careers (Berlew and Hall 1966). In this sense internships mirror early career tournaments where individuals need to prove themselves early or risk being placed on low-level career trajectories.

In sum this dissertation advances a theory that explains structural inequities based on pre-entry relationships. By building on research on social networks in labor markets and social structures in organizations it offers new insights into structural emergence and career inequality in the workplace. In the next section I discuss ideas for future research.

Future Research

This dissertation suggests a number of avenues for future research. First this dissertation provides suggestive evidence that networks emerge according to a cumulative advantage process. Cumulative advantage refers to the Matthew Effect where "initial comparative advantage of trained capacity, structural location, and available resources make for successive increments of advantage such that the gaps between the haves and have-nots widen" (Merton 1988: 606). Sociologists have found evidence of cumulative advantage processes in a variety of contexts, including career rewards, health, crime, and economic earnings (see Diprete and Eirich 2006 for a review).

Results from Chapter 1 indicate that an early difference in who individuals know prior to starting grows post-entry. For networks to form according to a cumulative advantage process, the increase in ties between t=0 to t=1 that I document here would need to continue to increase in subsequent time periods (i.e. t=2, 3, 4). It is not a stretch that a cumulative advantage process ensues in the development of organizational networks. Once an individual forms a new tie through a pre-entry contact, both the pre-entry contact and new contact are available to provide referrals and introductions to others. Thus the pre-entry contact is a starting mechanism that produces further incremental advantages. Given the energy and time it takes to maintain networks (Granovetter 1973), a person's network may reach a size limit, but even then, other aspects of the networks may continue to grow. For instance, the quality of the contacts may continue to increase with time.

In order to begin to explore the cumulative advantage hypothesis, I investigate the variation that MBA students had in the number of weeks they worked for their internship employer. A cumulative advantage process suggests that disparities in post-entry ties increase the longer individuals are employed. Those with pre-entry contacts may form more new ties the longer they work, because they have pre- and post-entry contacts that act as brokers and facilitate their integration into organizational networks. To explore this further I began by performing a propensity score match using the observations. The purpose of propensity score matching is to simulate a natural experiment by first matching observations as closely as possible on important attributes so that they differ primarily on the treatment (i.e. pre-entry contacts). I match respondents on the number of weeks they worked, the size of the organization in which they worked, their school ties, and their citizenship status using the psmatch2 procedure in Stata. I then calculated the mean number of post-entry ties respondents form based on the number of

weeks that they worked. Figure 3.1 shows the results. Consistent with a cumulative advantage process, those with pre-entry contacts form more ties, and this difference seems to grow with the number of weeks. Future research should examine this further using data that has been collected over a longer period of time.

[INSERT FIGURE 3.1 HERE]

Future research should also investigate how characteristics of pre-entry contacts impact the networks of individuals they are tied to post-entry. One characteristic apt to be important is the status of the pre-entry contact. Networks tend to display status homophily, or to connect actors of the same and similar status (Lazarsfeld and Merton 1954). The status of the pre-entry contact likely affects the status of new alters that join the new entrant's network. An individual with a pre-entry tie to someone of high status is likely integrated into networks with high status alters. There may be limits to the variability in pre-entry contact status. As mentioned previously, social isolates (those apt to be low status members of organizations) are unlikely to have their outside acquaintances and friends join organizations. But even given a limit to status variability, the pre-entry contact's status may still shed light on new entrant's networks.

Future research should also investigate the pre-entry contact's network. The pre-entry contact's network may shed light on the level of brokerage or closure in the new entrant's network. Autonomy refers to the presence of a low level of constraint (i.e. disconnected alters). If the pre-entry contact's network has a high level of autonomy we may expect new entrants to be introduced to individuals that are themselves untied to one another. Therefore we should expect networks to have a high level of brokerage. On the other hand if the pre-entry contact's

network has a low level of autonomy we may expect the new entrants' network to display this same characteristic. Variation in the pre-entry contact's network may lead to different network properties for the new entrant.

There are conditions under which we may expect a new entrant's networks to reflect properties of the pre-entry contact's network as discussed above. Yet there may be contingencies to this. One likely contingency is that the pre-entry contact has a role where he interacts with the new entrant in the workplace. If the pre-entry contact and new entrant are too distant in either physical or technological space, then the pre-entry contact may have little affect on the new entrant's post-entry network. Future research should further investigate this and other contingencies.

Future work should also continue to examine trial employment. Trial employment is a theoretically intriguing context. In these settings extant theory suggests that social contacts lower information asymmetry for employers and potential recruits. However, in trial employment information asymmetry is already low. That social contacts affect trial employment outcomes, as they did in this study, suggests that networks matter for reasons other than information asymmetry. While I have proposed one here–productivity gains–future work should investigate this further. For instance, researchers should collect information on trial workers' performance to see how it varies for tied and untied workers.

Researchers should also investigate other explanations for why pre-entry contacts influence trial employment outcomes. Pre-entry contacts may influence permanent hiring because organizational selection processes favor those with pre-entry contacts. For instance, organizations may want to appease their employees by hiring their friends.

In order to further our understanding of networks and inequality it would also be useful to investigate how the economic returns to pre- and post-entry social structure differ across demographic groups. There have been few studies that investigate differential returns across groups. Burt (1998) found that women received fewer economic gains from being brokers in organizations than their male counterparts. Along these same lines, McGuire (2002) found that black and white women with ties to powerful employees received less work-related help from these employees than their white male counterparts. This suggests that lower status members of society may receive few integrative and mobility gains from having pre-entry contacts in organizations.

On the other hand, it may be that low status members benefit more from pre-entry contacts because they face more barriers in forming ties. A persistent finding in studies on inequality is that women and racial minorities are overrepresented in the lower ranks of organizations and underrepresented at the top. A lack of access to social ties that provide career advice, political information, and social support is argued to cause this disparity (Burt 1998; Ibarra 1995; Petersen, Saporta and Seidel 2000). If there are post-entry structural gains to be had from pre-entry contacts, this is likely to be particularly relevant for the career outcomes of disadvantaged groups.

Finally, future work should also investigate whether pre- and post-entry structural links that influence individuals also affect the networks of organizations. Just as individuals vary in who they know when they enter organizations, organizations vary in their interorganizational ties when they enter new product domains. Variation in the pre-entry social structure of organizations may condition their interorganizational networks that in turn influence their performance and survival.

Conclusion

In conclusion, Granovetter called research on the network processes by which inequities are produced the single greatest research gap that needs to be filled by mobility scholars (1995:176). Since then, while research has continued to demonstrate the importance of networks to careers little work has examined how network inequities come about. This dissertation develops and tests a theory on how structural inequities are generated in the workplace. While scholars have long focused on the influence of social networks on labor market outcomes this dissertation indicates that social contacts in the labor market have carry-over effects on the networks and mobility outcomes of workers after they enter organizations. By examining the interrelatedness of social structure across labor markets and organizations, this dissertation yields deeper insights than what could be gained from studying either in isolation.

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Tables and Figures

Figure 1.1 The Frequency that Interns Recognize Employees in their Internship Organization Prior to Entry

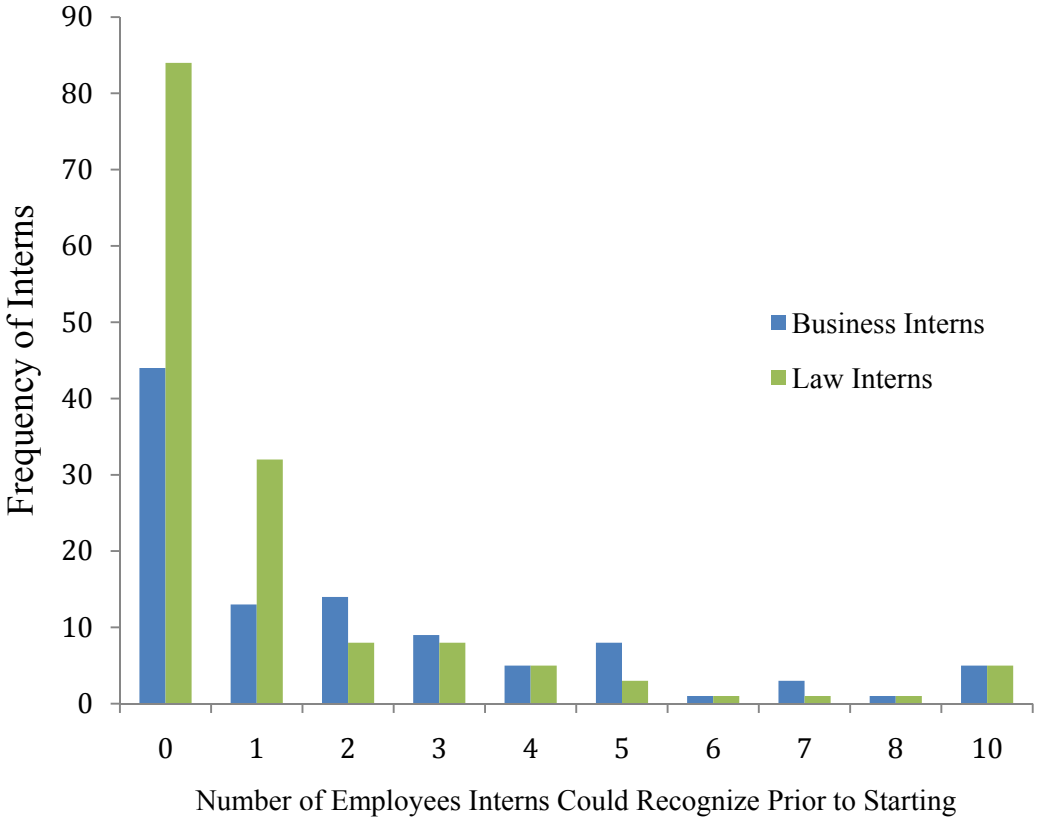


Figure 1. 2 Average Number of Post-Entry Ties Formed

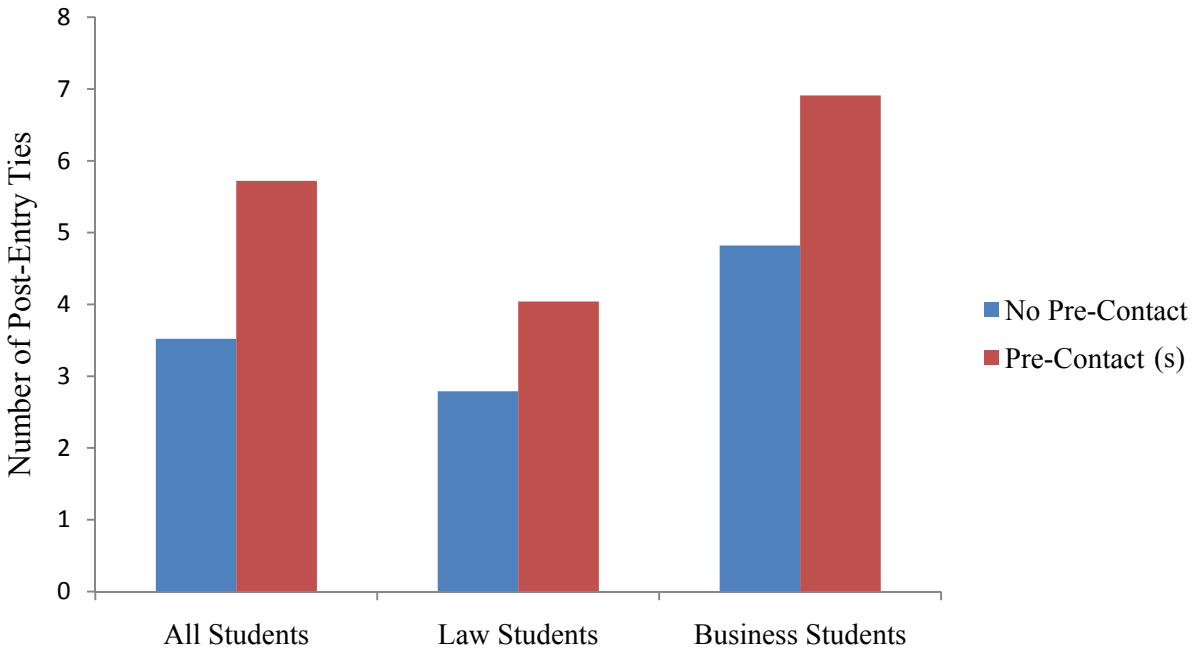


Table 1.1 Relational Characteristics of Pre-Entry Contacts

	Pre-Entry Contacts *(Interacted with Intern More Than 3 Times in Twelve Previous Months)*	Other Employees *(Interacted with Intern 3 Times or Less in Twelve Previous Months)*	Scale Difference†
Average Duration of Tie	7-12 months	4-6 months	4.18 vs. 3.26*
Average Closeness	Close	Less Than Close	2.56 vs. 1.61*
Average Trust	Moderate	Low	2.96 vs. 1.94*
N	126	283	–

*$p<0.001$

†Duration was measured as 1=Less Than 1 Mo., 2=1-3 Mo., 3=4-6 Mo. 4=7-12 Mo., 5=1-2 Yr, 6=3-5Yr, 7= More Than 5 Yr; Closeness was measured as 1=Distant, 2=Less Than Close, 3=Close, 4=Especially Close; Level of Trust was measured on a scale about comfort discussing personal matters 1=Not At All Comfortable, 5=Comfortable To A Very Great Extent

Table 1.2 Means, Standard Deviations, and Correlations

Variable	Mean	Std	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Post-entry Ties Formed	4.04	3.80	1.00												
2. Number of PECs	0.47	1.07	0.23*	1.00											
3. School Ties (Ln)	1.49	0.84	0.12	0.13*	1.00										
4. Percent Alumni	0.07	0.14	-0.02	0.06	0.03	1.00									
5. Law	0.59	0.49	-0.33*	-0.20*	-0.03	0.02	1.00								
6. Other Offers	0.78	1.23	0.20*	0.05	0.14*	0.07	-0.07	1.00							
7. Male	0.49	0.50	0.00	-0.08	-0.03	-0.04	-0.13*	-0.05	1.00						
8. Foreign	0.19	0.39	0.02	0.10	-0.08	-0.05	-0.54*	0.05	0.09	1.00					
9. Black	0.12	0.32	-0.01	-0.02	-0.08	0.01	0.10	-0.09	-0.13*	-0.18*	1.00				
10. Hispanic	0.07	0.25	-0.09	0.04	-0.07	0.02	0.16*	0.02	0.02	-0.13*	-0.10	1.00			
11. Asian-American	0.11	0.31	-0.03	0.02	-0.06	-0.06	0.03	-0.02	-0.11	-0.17*	-0.13*	-0.09	1.00		
12. Size1 (0-10) †	0.20	0.40	-0.28*	-0.15	-0.06	0.12	0.29*	-0.08	-0.02	-0.14*	-0.05	0.19*	-0.01	1.00	
13. Size2 (11-20)	0.11	0.32	-0.09	-0.08	0.04	-0.03	0.06	-0.11	0.08	-0.01	-0.01	-0.05	-0.04	-0.17*	1.00
14. Size3 (21-40)	0.13	0.33	-0.09	0.00	0.02	-0.09	0.17*	-0.09	-0.04	-0.06	-0.03	-0.10	0.06	-0.19*	-0.14*
15. Size4 (41-60)	0.06	0.24	-0.02	0.04	0.01	-0.08	0.01	-0.04	-0.01	0.05	-0.09	0.00	-0.03	-0.12*	-0.09
16. Size5 (61-80)	0.08	0.27	0.00	0.00	-0.14*	-0.06	0.09	-0.06	-0.07	-0.02	0.13*	0.04	0.00	-0.14*	-0.10
17. Size6 (81-100)	0.04	0.19	-0.02	-0.02	0.05	-0.05	0.07	-0.05	0.11	-0.04	0.00	0.03	0.07	-0.10	-0.07
18. Size7 (101-150)	0.08	0.28	0.08	0.00	-0.03	0.10	0.02	0.05	-0.01	-0.04	0.07	0.03	0.03	-0.15*	-0.11
19.Consulting	0.06	0.24	0.04	0.02	0.01	0.02	-0.31*	-0.02	-0.03	0.16*	0.01	-0.07	-0.09	-0.05	0.01
20.Management	0.03	0.17	0.06	0.22*	0.12	-0.04	-0.2*	-0.03	-0.02	0.16*	0.01	-0.05	-0.06	-0.08	0.02
21.Brand	0.07	0.26	0.24*	0.11	0.11	-0.01	-0.33*	0.19*	0.00	0.10	0.04	-0.01	0.00	-0.14*	-0.10
22.Marketing	0.08	0.27	0.13*	-0.04	-0.18*	0.02	-0.34*	0.09	-0.01	0.28*	-0.06	-0.02	0.00	-0.06	-0.10
23. Operations	0.02	0.13	-0.04	0.03	-0.03	0.03	-0.15*	0.00	0.13*	0.26*	-0.05	-0.03	-0.04	-0.06	0.06
24. Finance	0.09	0.29	0.07	0.02	-0.02	0.03	-.38*	-.12*	.18*	0.23*	-0.07	-0.09	-0.07	-.16*	0.02

Variable	14	15	16	17	18	19	20	21	22	23	24
14. Size3 (21-40)	1.00										
15. Size4 (41-60)	-0.07	1.00									
16. Size5 (61-80)	-0.05	-0.07	1.00								
17. Size6 (81-100)	-0.08	-0.05	-0.06	1.00							
18.. Size7 (101-150)	0.00	-0.08	-0.09	-0.06	1.00						
19. Consulting	-0.04	0.00	-0.01	-0.05	-0.08	1.00					
20. Management	-0.07	-0.04	-0.05	-0.03	-0.05	-0.04	1.00				
21. Brand	0.18*	-0.07	-0.02	-0.05	0.08	-0.07	-0.05	1.00			
22. Marketing	-0.03	0.18*	-0.03	-0.06	0.08	-0.07	-0.05	-0.08	1.00		
23. Operations	-0.02	-0.03	-0.04	-0.02	-0.04	-0.03	-0.02	-0.04	-0.04	1.00	
24. Finance	1.00	-0.02	-0.04	0.09	-0.05	-0.08	-0.05	-0.09	-0.09	-0.04	1.00

N=251, *p < .05 , †Number of employees in the organization

Table 1.3. Comparison of Post-Entry Ties Formed for Law and Business Student Interns

	No Pre-entry Contacts		One or More Pre-entry Contacts			
	Mean	N	Mean	N	Difference	t-test
All Students	3.52	191	5.72	60	2.20	4.04**
Law	2.79	123	4.04	25	1.24	2.04*
Business	4.82	68	6.91	35	2.09	2.28*

N= 251, **p<0.01, *p<0.05 (two-tailed)

Table 1.4.1 Negative Binomial Regression Models of Post-entry Ties Formed

	Model 1	Model 2	Model 3a	Model 3b
Constant	1.839**	1.729**	1.638**	1.699**
	(0.225)	(0.221)	(0.175)	(0.206)
School Ties (Ln)	0.095	0.092	0.057	0.087
	(0.064)	(0.063)	(.066)	(0.063)
Percent Alumni	-0.181	-0.284	-0.276	-0.243
	(0.367)	(0.363)	(0.381)	(0.378)
Law	-0.545**	-0.494**	-0.690**	-0.464**
	(0.18)	(0.169)	(0.120)	(0.162)
Num Other Offers	0.061	0.055	0.112	0.061
	(0.04)	(0.041)	(0.043)	(0.041)
Male	-0.015	0.006	-0.007	0.001
	(0.107)	(0.107)	(0.107)	(0.105)
Foreign	-0.341*	-0.327*	-0.437**	-0.377**
	(0.163)	(0.159)	(0.157)	(0.158)
Black	-0.071	-0.052	0.074	-0.060
	(0.178)	(0.182)	(0.204)	(0.181)
Hispanic	-0.254	-0.285	-0.335	-0.290
	(0.21)	(0.195)	(0.210)	(0.19)
Asian American	-0.249	-0.251	-0.223	-0.247
	(0.174)	(0.169)	(0.175)	(0.174)
Pre-Entry Contact		0.25*1*		
		(0.12)4)		
Number of PECs			0.117**	0.098*
			(.044)	(0.046)
Size Intervals	Included	Included	No	Included
Functional Dummies	Included	Included	No	Included
Log-Likelihood	-588.29	-586.37	-598.31	-586.29
N	251	251	251	251

**p < 0.01, *p<0.05, †p<0.10 (two-tailed), robust standard errors

Table 1.4.2 Negative Binomial Regression Models of Post-entry Ties Formed

	Model 3c	Model 3d	Model 3e
Constant	1.74* (0.21)	1.71* (0.2)	1.79* (0.21)
School Ties (Ln)	0.09 (0.06)	0.1 (0.06)	0.09 (0.06)
Percent Alumni	-0.24 (0.37)	-0.19 (0.37)	-0.18 (0.37)
Law	-0.48* (0.16)	-0.42* (0.17)	-0.52* (0.17)
Num Other Offers	0.06 (0.04)	0.05 (0.04)	0.06 (0.04)
PECs - Recruiters	0.19* (0.09)		
PECs - Supervisors		0.27* (0.15)	
PECs - Friends			0.16 (0.15)
Size Intervals	Included	Included	Included
Functional Dummies	Included	Included	Included
Demographic Variables	Included	Included	Included
Log-likelihood	-586.45	-586.85	-587.55
N	251	251	251

**p < 0.01, *p<0.05, †p<0.10 (two-tailed), robust standard errors

Table 1.5 Probit Model of Pre-Entry Contacts

	Model 4
Constant	-1.191†
	(0.631)
School Ties (Ln)	0.066
	(0.132)
Percent Alumni	1.522†
	(0.833)
Law	-0.043
	(0.561)
Num Other Offers	0.149†
	(0.089)
Male	-0.240
	(0.213)
Foreign	-0.443
	(0.331)
Black	-0.020
	(0.337)
Hispanic	-0.049
	(0.471)
Asian American	0.017
	(0.331)
Recruitment	0.446†
	(0.229)
Local	0.558
	(0.491)
Law x Recruitment x Local	2.247**
	(0.835)
2-way interactions	Included
Size Intervals	Included
Functional Dummies	Included
Log Likelihood	109.644
N	251

**p < 0.01, *p<0.05, †p<0.10 (two-tailed)

Table 1.6. IV-OLS Second Stage Regressions

	Model 5	Model 6	Model 7
Constant	1.826**	1.435**	1.374**
	(0.206)	(0.23)	(0.39)
School Ties (Ln)	0.076	0.055	0.089
	(0.059)	(0.058)	(0.082)
Percent Alumni	-0.102	-0.435	-0.351
	(0.308)	(0.322)	(0.462)
Law	-0.572**	-0.385†	-0.367
	(0.176)	(0.182)	(0.332)
Male	0.017	0.120	0.102
	(0.098)	(0.101)	(0.138)
Foreign	-0.399*	-0.262	-0.249
	(0.161)	(0.164)	(0.219)
Black	-0.145	-0.142	-0.008
	(0.17)	(0.17)	(0.195)
Hispanic	-0.187	-0.203	-0.260
	(0.161)	(0.152)	(0.26)
Asian American	-0.233	-0.246	-0.369†
	(0.163)	(0.153)	(0.195)
Num Other Offers	0.038	0.010	–
	(0.044)	(0.046)	
Pre-Entry Contact (Predicted)		1.094*	1.104†
		(0.378)	(0.577)
Size Intervals	Included	Included	Included
Functional Dummies	Included	Included	Included
R^2	0.215	0.236	0.290
N	251	251	144

**p < 0.01, *p<0.05, †p<0.10 (two-tailed)
Note: The log transformation of post-entry ties formed is the DV.

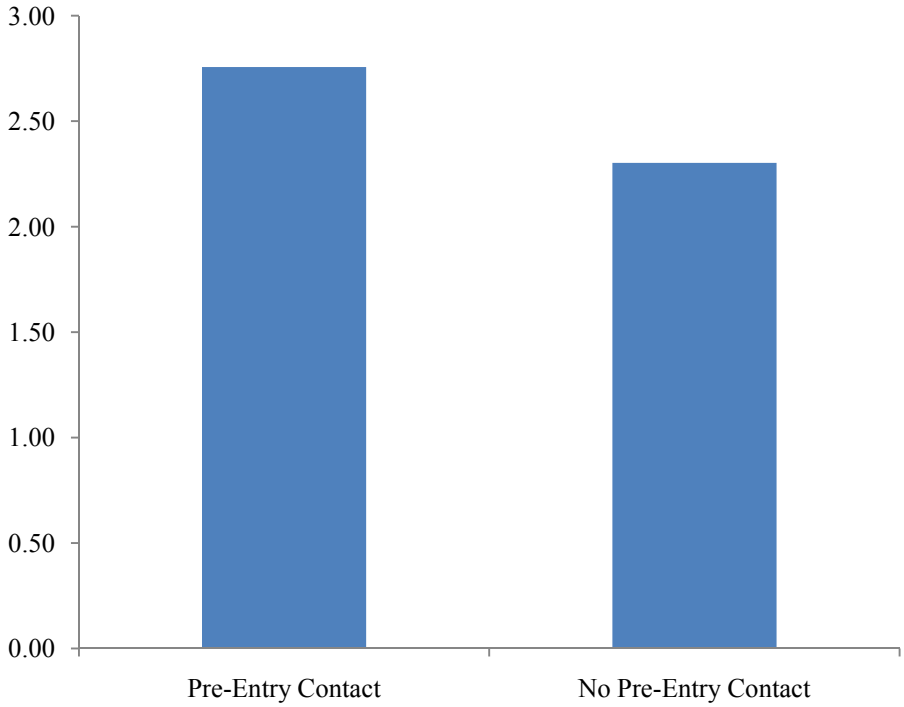
Table 1.7 Bivariate Correlations for Instruments used in Two-Stage IV Regression

	1	2	3	4	5	6	7	8
1. Post-Entry Ties	1.00							
2. PEC (Predicted)	0.34*	1.00						
3. Recruitment	0.27*	0.50*	1.00					
4. Local	-0.09	0.05	0.00	1.00				
5. LawxLocal	-0.22*	-0.11	-0.26*	0.66*	1.00			
6. RecruitxLaw	0.10	0.28*	0.60*	0.46*	-0.04	1.00		
7. RecruitxLocal	0.07	0.16*	0.14*	0.10	0.26*	0.15*	1.00	
8. RecruitxLocalxLaw	0.06	0.34*	0.11	0.29*	0.43*	0.27*	0.75*	1.00

*$p < 0.05$.

Note: Bivariate correlations are shown in the table. Partial correlations (i.e. those that net out the effects of covariates) indicate the instruments are partially correlated with the PEC variable but not the dependent variable.

Figure 1.3. Average Level of Normative Proficiency of Interns Pre-Entry



Note: Sample is MBA students only. Difference in the average level of normative proficiency is significant ($p<0.05$).

Table 1.8. Robustness Checks on the Effect of Pre-Entry Contacts on Post-Entry Ties

	Model 8 (New Ties)	Model 9 (New Ties)	Model 10 (New Ties)	Model 11 (Total Ties)
Constant	1.724**	1.682**	1.449**	1.678**
	(0.212)	(0.195)	0.41	(0.187)
School Ties (Ln)	0.092	0.088	0.032	0.095†
	(0.063)	(0.062)	(0.196)	(0.056)
Percent Alumni	-0.177	-0.207	-0.811	-0.132
	(0.371)	(0.384)	(0.792)	(0.326)
Law	-0.449**	-0.452**		-0.331*
	(0.168)	(0.158)	–	(0.155)
Num Other Offers	0.070†	0.062	-0.016	0.071*
	(0.042)	(0.04)	(0.13)	(0.036)
Male	-0.013	0.005	-0.061	-0.015
	(0.105)	(0.105)	(0.388)	(0.096)
Foreign	-0.396*	-0.399*		-0.406**
	(0.16)	(0.159)	–	(0.151)
Black	-0.047	-0.070		-0.079
	(0.18)	(0.181)	–	(0.16)
Hispanic	-0.319†	-0.304	–	-0.316†
	(0.185)	(0.185)		(0.173)
Asian American	-0.200	-0.240	–	-0.132
	(0.182)	(0.166)		(0.159)
Number of PECs	0.120*		0.153*	0.187**
	(0.051)		(0.063)	(0.042)
Other Employees	-0.045			
	(0.034)			
Number of PECs (High Trust)		0.180**		
		(0.065)		
Size Intervals	Included	Included	Included	Included
Functional Dummies	Included	Included	Not Included	Included
Log-likelihood	-585.28	-585.55	-108.88	-606.07
N	251	251	43	251

**p < 0.01, *p<0.05, †p<0.10 (two-tailed), robust standard errors

Table 1.9 Mediation Analysis

	Model 12	Model 13	Model 14
Constant	1.72**	1.60**	1.5**
	(0.28)	(0.25)	(0.42)
School Ties (Ln)	0.02	0.02	0.01
	(0.09)	(0.09)	(0.09)
Percent Alumni	0.37	0.31	0.32
	(0.46)	(0.5)	(0.47)
Num Other Offers	0.04	0.03	0.04
	(0.07)	(0.07)	(0.07)
Male	-0.04	0.01	-0.02
	(0.17)	(0.17)	(0.17)
Foreign	-0.5**	-0.5**	-0.52**
	(0.16)	(0.16)	(0.17)
Black	-0.45	-0.43	-0.48
	(0.36)	(0.37)	(0.36)
Hispanic	-0.39†	-0.37	-0.37
	(0.23)	(0.23)	(0.24)
Asian American	-0.39	-0.38	-0.37
	(0.24)	(0.24)	(0.25)
Num Other Offers	0.04	0.03	0.04
	(0.07)	(0.07)	(0.07)
Num of PECs		0.09*	
		(0.04)	
Socialization			0.01
			(0.02)
Size Intervals	Limited	Limited	Limited
Functional Dummies	Included	Included	Included
Log-Likelihood	-272.19	-270.96	-271.91
N	103	103	103

**p < 0.01, *p<0.05, †p<0.10 (two-tailed)
Note: Results above are for the MBA students only. Socialization variable uses factor loadings from confirmatory factor analysis.

Table 1.10 The Effect of Pre-Entry Contacts on the Number of Weak and Strong Ties

	Model 15 Strong Ties (Closeness)	Model 16 Weak Ties (Closeness)	Model 17 Strong Ties (Frequency)	Model 18 Weak Ties (Frequency)
Constant	1.417**	0.591**	1.700**	-0.407
	(0.271)	(0.407)	(0.23)	(0.401)
School Ties (Ln)	0.111	0.082	0.090	0.317*
	(0.071)	(0.111)	(0.06)	(0.127)
Percent Alumni	0.075	-0.524	-0.239	0.216
	(0.418)	(0.648)	(0.362)	(0.743)
Law	-0.508*	-0.422	-0.495**	-0.059
	(0.223)	(0.348)	(0.192)	(0.365)
Num Other Offers	0.067	0.085	0.068†	0.054
	(0.043)	(0.067)	(0.038)	(0.083)
Male	-0.057	-0.315†	-0.047	-0.492*
	(0.115)	(0.178)	(0.097)	(0.208)
Foreign	-0.136	-0.610*	-0.267	-0.459
	(0.17)	(0.255)	(0.146)	(0.28)
Black	0.111	-0.923**	-0.046	-0.235
	(0.179)	(0.326)	(0.157)	(0.302)
Hispanic	-0.305	-0.860*	-0.147	-0.820†
	(0.247)	(0.433)	(0.203)	(0.449)
Asian American	-0.156	-0.198	-0.105	-0.283
	(0.189)	(0.284)	(0.159)	(0.351)
Number of PECs	0.157**	0.187**	0.156**	0.229**
	(0.05)	(0.074)	(0.043)	(0.072)
Size Intervals	Included	Included	Included	Included
Functional Dummies	Included	Included	Included	Included
Log-Likelihood	-538.155	-358.742	-585.764	-239.568
N	251	251	251	251

**p < 0.01, *p<0.05, †p<0.10 (two-tailed)

Note: New post-entry ties are for strategic information networks. The weak tie measure (closeness) was a count of the number of ties listed as 'less than close or distant'. The weak tie measure (frequency) was a count of the number of ties listed with a frequency of interaction of less than one week.

Table 1.11 The Effect of Mentors on Post-Entry Ties Formed

	Model 19
Constant	1.85*
	(0.27)
School Ties (Ln)	0.09
	(0.06)
Percent Alumni	-0.27
	(0.36)
Law	-0.51*
	(0.17)
Num Other Offers	0.06
	(0.04)
Male	-0.004
	(0.11)
Foreign	-0.33
	(0.16)
Black	-0.04
	(0.18)
Hispanic	-0.28
	(0.2)
Asian American	-0.25
	(0.17)
Pre-Entry Contact	0.27*
	(0.12)
Mentor	-0.13
	(0.12)
Size Intervals	Included
Functional Dummies	Included
Log-Likelihood	-585.82
N	251

**p < 0.01, *p<0.05, †p<0.10 (two-tailed)

Table 1.12 The Effect of Self-Monitoring on Post-Entry Ties Formed

	Model 20	Model 21	Model 22
Constant	1.79* (0.22)	1.65* (0.24)	1.65* (0.23)
School Ties (Ln)	0.07 (0.06)	0.08 (0.06)	0.08 (0.06)
Percent Alumni	-0.32 (0.39)	-0.48 (0.39)	-0.45 (0.39)
Law	-0.57* (0.19)	-0.51* (0.19)	-0.5* (0.19)
Num Other Offers	0.06 (0.04)	0.06 (0.04)	0.06 (0.04)
Male	-0.1 (0.1)	-0.07 (0.1)	-0.07 (0.11)
Foreign	-0.24 (0.17)	-0.23 (0.17)	-0.24 (0.17)
Black	-0.03 (0.17)	-0.01 (0.18)	-0.01 (0.18)
Hispanic	-0.18 (0.21)	-0.21 (0.2)	-0.23 (0.2)
Asian American	-0.14 (0.18)	-0.14 (0.17)	-0.13 (0.17)
Self-Monitoring	0.28* (0.11)	0.27* (0.11)	0.24* (0.13)
Pre-Entry Contact		0.26* (0.13)	0.21 (0.17)
PEC x SM			0.1 (0.24)
Size Intervals	Included	Included	Included
Functional Dummies	Included	Included	Included
Log-Likelihood	-533.83	-531.89	-531.80
N	231	231	231

**p < 0.01, *p<0.05, †p<0.10 (two-tailed), robust standard errors

Note: A subset of the MBA sample completed the self-monitoring questionnaire and thus the sample is 231 rather than 251 respondents.

Table 1.13 Effect of Race and Gender on Post-Entry Ties Formed

	Model 23
Constant	1.726**
	(0.189)
School Ties (Ln)	0.134**
	(0.067)
Percent Alumni	-0.142
	(0.322)
Law	-0.535**
	(0.143)
Male	-0.023
	(0.121)
Foreign	-0.523**
	(0.191)
Black	0.135
	(0.188)
Hispanic	-0.484**
	(0.228)
Asian	-0.360
	(0.225)
Pre-Entry Contact (PEC)	0.105
	(0.171)
PEC x Male	0.027
	(0.214)
PEC x Foreign	0.542*
	(0.293)
PEC x Black	-1.101**
	(0.482)
PEC x Hispanic	0.870**
	(0.38)
PEC x Asian	0.526*
	(0.344)
Size Intervals	Included
Log-Likelihood	-581.4
N	251

p<.05**, *p< 0.1 (two-tailed), robust standard errors
Note: The demographic and pre-contact variables are dichotomous and left uncentered.

Figure 2.1. Percentage of Interns Receiving Offers

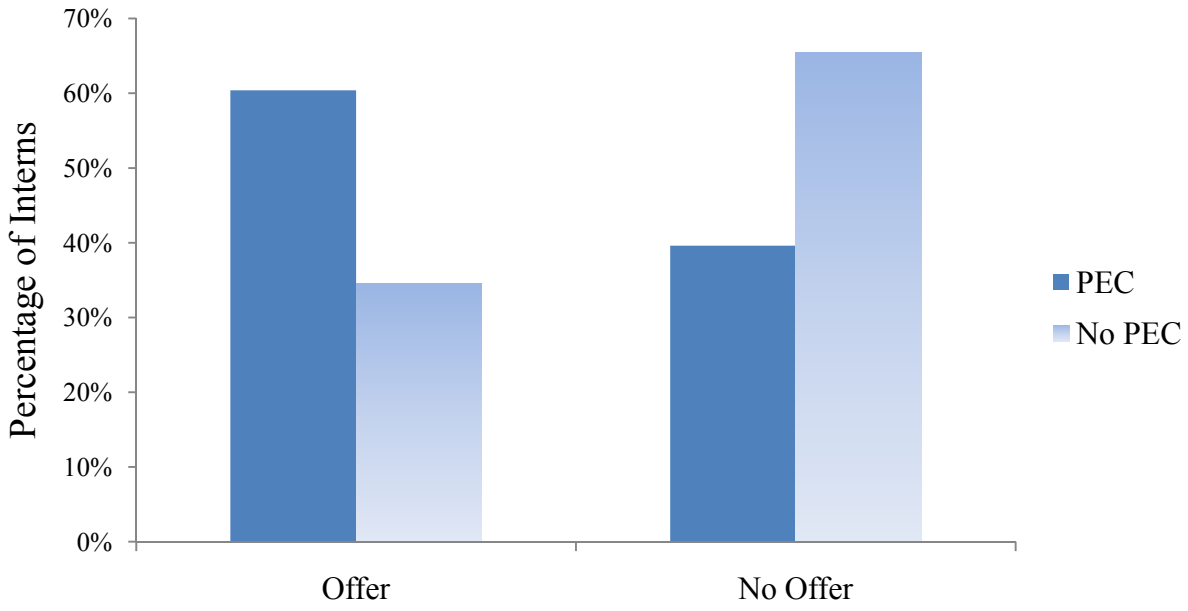


Table 2.1 Descriptive Statistics

	Mean	StDev	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Offer	0.42	0.50	1.00													
2. PEC	0.30	0.46	0.24*	1.00												
3. Alumni (Ln)	1.33	1.39	0.15	0.22*	1.00											
4. Government	0.12	0.32	-0.27*	-0.11	-0.16*	1.00										
5. Financial	0.11	0.32	-0.06	-0.06	0.15	-0.13	1.00									
6. Consulting	0.07	0.25	-0.03	-0.02	0.13	-0.10	-0.10	1.00								
7. Consumer Prod	0.12	0.32	0.19*	0.14	0.18*	-0.13	-0.13	-0.10	1.00							
8. Pharma/Biotech	0.09	0.29	0.07	0.12	0.09	-0.12	-0.11	-0.09	-0.12	1.00						
9. Technology	0.05	0.22	0.15	0.10	0.06	-0.08	-0.08	-0.06	-0.08	-0.07	1.00					
10. Retail/Ent't	0.10	0.30	0.01	-0.04	0.01	-0.12	-0.12	-0.09	-0.12	-0.11	-0.08	1.00				
11. Size 1 (<21)	0.22	0.42	-0.37*	-0.23*	-0.34*	0.31*	0.00	0.09	-0.20*	-0.17*	-0.12	-0.13	1.00			
12. Size2 (21-40)	0.11	0.31	0.03	0.09	-0.10	0.12	0.01	0.07	-0.13	-0.11	-0.08	-0.05	-0.18*	1.00		
13. Size 3 (41-60)	0.06	0.23	-0.10	0.08	-0.11	-0.01	0.00	-0.07	-0.09	0.02	-0.06	0.19*	-0.13	-0.08	1.00	
14. Size 4 (61-100)	0.09	0.28	-0.09	-0.06	-0.01	0.02	-0.11	0.00	-0.11	-0.10	0.13	0.04	-0.17*	-0.11	-0.08	1.00
15. Male	0.50	0.50	-0.03	-0.17*	-0.08	-0.02	0.16*	-0.08	-0.14	-0.02	0.11	0.12	0.03	-0.02	0.03	0.00
16. Black	0.11	0.32	-0.02	0.03	0.08	0.05	-0.13	-0.02	0.05	0.02	-0.08	-0.05	0.00	0.01	-0.09	0.03
17. Hispanic	0.06	0.23	-0.04	-0.04	-0.10	0.08	-0.09	-0.07	-0.01	-0.08	-0.06	-0.08	0.13	-0.08	0.06	0.12
18. Asian American	0.09	0.29	-0.06	0.02	-0.06	-0.05	-0.11	0.00	0.02	0.04	0.03	-0.04	-0.07	0.03	0.02	0.05
19. Non-UNITED STATES	0.26	0.44	-0.08	-0.02	0.10	-0.09	0.24*	0.12	0.00	0.00	0.19*	0.23*	-0.12	-0.07	0.10	0.02

	15	16	17	18	19
15. Male	1.00				
16. Black	-0.12	1.00			
17. Hispanic	-0.03	-0.09	1.00		
18. Asian American	-0.11	-0.11	-0.08	1.00	
19. Non-UNITED STATES	0.05	0.21*	-0.14	-0.19*	1.00

N= 161, p< 0.05*

Table 2.2 Mean Comparison of Job Offer Rates for Interns

	No Pre-Entry Contact		**Pre-Entry Contact**			
	Received Offer (percent)	N	Received Offer (percent)	N	Diff (percent)	t-test
All Interns	34	113	61	48	27	3.12*
Interns in organizations with 100 or fewer employees	19	59	39	18	20	1.79*
Interns in organizations with 100 or more employees	52	54	73	30	21	1.94*

* $p < 0.05$ (one-tailed)

Table 2.3 Logit Models of the Effect of Pre-Entry Contacts on Offers

	Model 1	Model 2	Model 3	Model 4a	Model 4b	Model 5
Constant	1.00*	0.83*	0.86	1.14*	0.98*	0.67
	(0.53)	(0.48)	(0.54)	(0.58)	(0.63)	(0.58)
University Alumni (Ln)	-0.09	-0.12	-0.13	-0.2	-0.20	-0.1
	(0.16)	(0.15)	(0.16)	(0.16)	(0.16)	(0.16)
Government	-2.18*		-2.00*	-0.75	-1.41*	-2.2*
	(1.14)		(1.12)	(1.24)	(1.25)	(1.13)
Financial Services	-0.28		-0.27	-0.41	-0.48	-0.29
	(0.73)		(0.74)	(0.75)	(0.77)	(0.73)
Consulting	0.26		0.28	0.16	0.05	0.15
	(0.86)		(0.87)	(0.88)	(0.89)	(0.87)
Consumer Products	0.6		0.51	0.38	0.32	0.48
	(0.67)		(0.68)	(0.69)	(0.70)	(0.68)
Pharma/Biotech	0.06		-0.06	-0.18	-0.13	-0.19
	(0.69)		(0.71)	(0.73)	(0.76)	(0.73)
Technology	1.83*		1.76	1.29	1.15	1.63
	(1.05)		(1.11)	(1.15)	(1.16)	(1.07)
Retail/Entertainment	0.38		0.37	0.93	0.84	0.2
	(0.72)		(0.72)	(0.81)	(.81)	(0.74)
Male	-0.27	-0.08	-0.2	-0.22	-0.15	-0.28
	(0.4)	(0.38)	(0.41)	(0.43)	(0.44)	(0.41)
Black	-0.64	-0.65	-0.63	-0.9	-0.74	-0.5
	(0.63)	(0.6)	(0.63)	(0.64)	(0.66)	(0.64)
Hispanic American	0.25	0.09	0.22	0.21	0.07	0.23
	(0.94)	(0.95)	(0.99)	(1.08)	(1.09)	(0.97)
Asian American	-1.22*	-1.02	-1.21*	-1.16	-1.09	-1.18
	(0.69)	(0.66)	(0.7)	(0.75)	(0.76)	(0.69)
Foreign	-1.17*	-0.89*	-1.17*	-1.25*	-1.03*	-1.07*
	(0.53)	(0.46)	(0.54)	(0.55)	(0.58)	(0.54)
Top 20 Percent					0.40	
					(0.60)	
Pre-Entry Contact		0.91*	0.74*	0.84*	0.81*	
		(0.42)	(0.44)	(0.47)	(0.47)	
Number of New Ties						0.07
						(0.05)
Size Intervals	Yes	Yes	Yes	Yes	Yes	Yes
N	161	161	161	134	134	161
Log-Likelihood	-83.52	-86.90	-82.05	-73.77	-73.00	-82.41

*p<0.05 (one-tailed tests), robust standard errors

Table 2.4 Change in the Probability of Obtaining Job Offers with a Pre-Entry Contact

Example Scenario	Log odds ratio	Odds ratio	Probability of getting offer	Percent change w/ PEC
male, foreign, finance, small firm, no PEC	-3.62	0.03	0.03	2.7 percent
male, foreign, finance, small firm, PEC	-2.88	0.06	0.05	
white, male, domestic, consulting firm, large firm, no PEC	0.77	2.15	0.68	13.6 percent
white, male, domestic, consulting firm, large firm, PEC	1.51	4.51	0.82	
black, female, foreign, law firm, large firm, no PEC	0.06	1.06	0.51	17.5 percent
black, female, foreign, law firm, large firm, PEC	0.80	2.22	0.69	

Changes in probabilities are calculated with the average number of alumni in the organization, PEC = Pre-Entry Contact

Table 2.5 IV Estimation of the Effect of Pre-Entry Contacts on Job Offers

	Model 5 (OLS)	Model 6 (GMM IV)
Constant	0.69*	0.56*
	(0.11)	(0.12)
University Alumni (Ln)	-0.01	-0.04
	(0.03)	(0.03)
Government	-0.23*	-0.17*
	(0.09)	(0.09)
Financial Services	-0.06	-0.03
	(0.14)	(0.13)
Consulting	0.04	0.07
	(0.14)	(0.13)
Consumer Products	0.13	0.07
	(0.15)	(0.14)
Pharma/Biotech	0.01	-0.06
	(0.15)	(0.17)
Technology	0.34*	0.21
	(0.17)	(0.19)
Retail/Entertainment	0.06	0.07
	(0.16)	(0.16)
Male	-0.04	0.02
	(0.07)	(0.08)
Black	-0.12	-0.1
	(0.13)	(0.13)
Hispanic American	0.004	0.02
	(0.13)	(0.1)
Asian American	-0.24*	-0.23*
	(0.14)	(0.13)
Foreign	-0.21*	-0.18*
	(0.1)	(0.09)
Pre-Entry Contact		0.44*
		(0.27)
Size Intervals	Yes	Yes
N	161	161

* $p < 0.05$ (one-tailed tests)

Table 2.6 First stage OLS IV Model of Pre-Entry Contacts

Constant	0.64*
	(0.18)
University Alumni (Ln)	0.05*
	(0.03)
Government	-0.21*
	(0.11)
Financial Services	-0.35*
	(0.16)
Consulting	-0.36*
	(0.18)
Consumer Products	-0.17
	(0.19)
Pharma/Biotech	-0.18
	(0.21)
Technology	0.03
	(0.22)
Retail/Entertainment	-0.35*
	(0.18)
Male	-0.14*
	(0.07)
Black	-0.01
	(0.12)
Hispanic American	-0.05
	(0.17)
Asian American	-0.05
	(0.13)
Foreign	-0.08
	(0.11)
Law	-0.34*
	(0.15)
Distance (x1000 miles)	-0.03*
	(0.02)
Law x Distance	-0.03
	(0.05)
Size Intervals	Yes
N	161
R^2	0.19

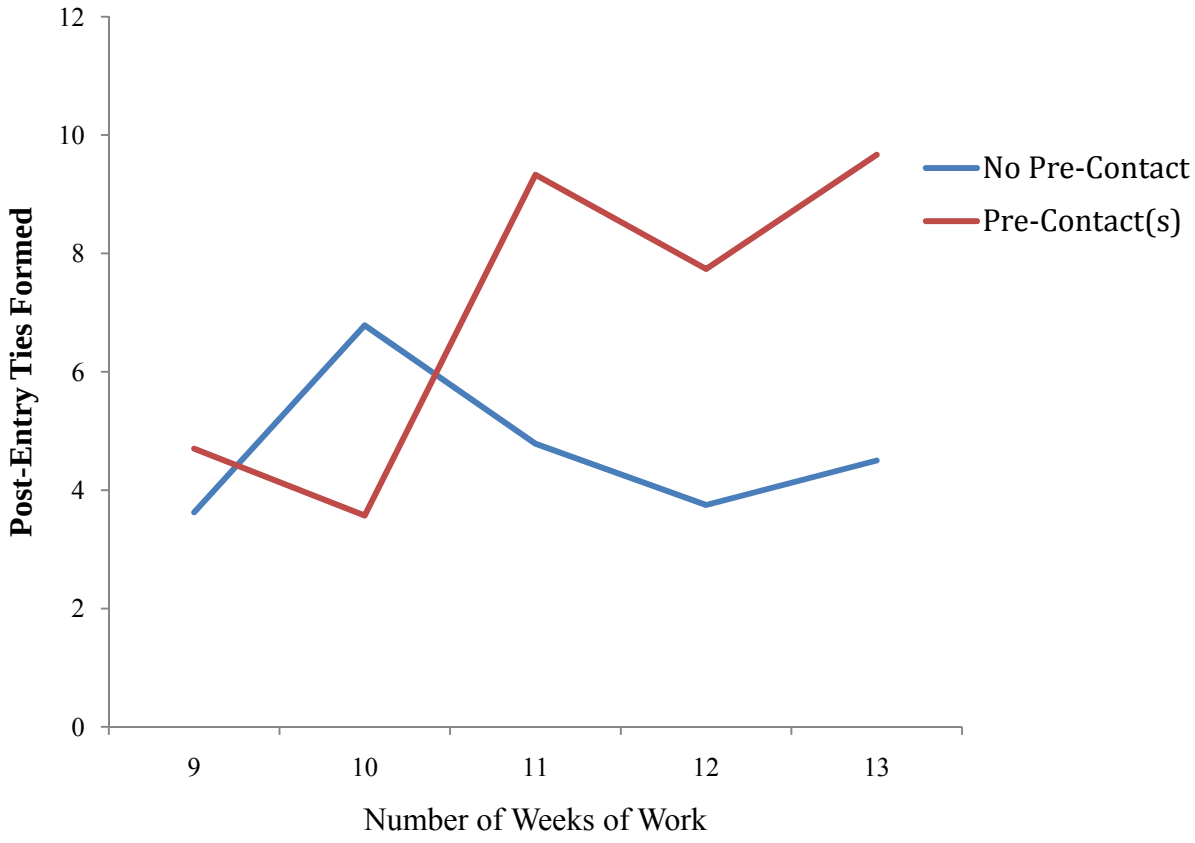
*$p < 0.05$, one-tailed, robust standard errors

Table 2.7. Partial Correlations Between Offer Outcome and Instruments

	Partial Correlation	Significance Value
Law	-0.045	0.5952
Distance	-0.0162	0.8479
Law x Distance	-0.0712	0.3997

Partial correlations when all variables in Model 1 are included
Significance values indicate that the instruments are not correlated with getting offer

Figure 3.1 The Number of New Post-Entry Ties Formed Over Time



Note: Two groups were matched based on size of the organization where they worked, their school peer-networks and citizenship