Who Can Tell?

Network Diversity, Within-Industry Networks and Opportunities to Share Job

Information

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This article examines *opportunities* to share job information. It adds to the growing body of research on information holders and complements existing research that explains what kinds of networks and network positions provide the greatest benefit to job seekers. Data from an exploratory study of entry-level, white-collar workers are used to relate opportunities to share information – defined to consist of both knowledge of a job opening and awareness of a potential applicant among one's network members – with information holders' network composition. The data show that information holders with strong within-industry networks have more opportunities to share information and do share more information. Information holders with diverse networks more often identify potential applicants for jobs and thus have more opportunities to share information. However, despite having more opportunities to do so, they do not share information more often than those with less diverse networks. These findings, combined with the growing literature on information holders, suggest that different aspects of network composition affect the flow of job information at different stages and thus by different mechanisms.

Social networks play a well-established role in diffusing job information (Granovetter, 1973; Marsden and Gorman, 2001). About half of job searchers use networks to search for jobs, over one third of organizations recruit through social networks, and about half of job-changers find their jobs through social networks (Marsden, 1996; Marsden and Gorman, 2001). Because they play such an important role in matching people to jobs, social networks have been implicated as one of the mechanisms that create workplace segregation and inequalities in status attainment (Drentea, 1998; Elliot 2001; Fernandez and Sosa 2005; Hanson and Pratt, 1991; Kmec, McDonald, and Trimble, 2010; Lin 1999; Lin, Ensel, and Vaughn, 1981; Lin, Vaughn, and Ensel, 1981; McDonald 2011b; McDonald, Lin and Ao 2009; Mencken and Winfield, 1998; Rubineau and Fernandez, 2005; Straits 1998). Networks, by this argument, privilege job seekers or job changers who have particular types of ties or networks (e.g. Bian, 1997; Granovetter, 1973; Granovetter, 1974; Lin, 2001; Lin, Ensel, and Vaughn, 1981; Lin, Vaughn and Ensel, 1981).

Sociologists studying the role of social networks in job search have moved towards studying earlier and earlier stages of the information flow process. While early studies focussed on job-changers and job searchers (Granovetter, 1973), researchers have more recently begun studying job applicants and referrers (Fernandez, Castilla and Moore, 2000; Fernandez and Weinberg, 1997). Most recently, researchers have shifted the focus to information holders and studied how they make decisions to share or withhold job information (Marin, 2012; Smith, 2005; 2007; Trimble, 2011). This paper moves the study of networks and job searcher to an even earlier stage in the information flow process to look not only at decisions to share or withhold information, but to focus on who most frequently has the *opportunity* to share job information and thus to make these decisions. This article reports results from a small exploratory study of information holders. Information holders have recently been gaining more attention, but little is known about their own networks and how these networks affect their opportunities to share job information.

Though frequently treated as a single unified event, information flow is a three-stage process, consisting of knowing of a job opening, identifying a potential applicant, and sharing information (See Figure 1). The first two stages together constitute *opportunities* to share information. By collecting data about each stage in the information flow process, this study is the first to address variations in *opportunities* to share job information. This article asks first how information holders' network composition affects their knowledge of job openings and ability to identify potential job applicants and then looks at the effects of network composition on the likelihood and frequency of sharing job information.

The findings from this study suggest that information holders with strong within-industry networks know of more openings, and consequently, share information more often than those with fewer within-industry ties. Information holders with diverse networks have more opportunities to share information because they identify more potential applicants for job openings. However, this study does not show that they share information more frequently than those with less diverse networks. Together, these findings suggest that the composition of information holders' networks is related to their knowledge of job openings as well as their ability to identify potential job applicants from within their networks with whom they might share information. These two outcomes together constitute opportunities to share information. However, network composition does not necessarily affect the frequency of information sharing

or the rate at which information holders share information given their opportunities to do so. These findings call into question theories that treat networks as open pipes through which information flows unproblematically.

Examining the effects of network composition on each stage of the process separately suggests that the factors that create opportunities to share job information are not necessarily the same factors that encourage the sharing of information given such opportunities. Instead, consistent with research examining information holders' decisions to share and withhold information, variation in these choices is influenced by characteristics of the particular opportunity to share job information, such as the type of job or the strength of tie to the potential applicant rather than by the information holder's network characteristics (Marin 2012; Smith 2005, 2007). However, in this setting, within-industry networks appear to foster the kinds of information sharing opportunities that facilitate information sharing, while diverse networks foster information sharing opportunities of the type likely to go unseized.

EXPLAINING OPPORTUNITIES TO SHARE JOB INFORMATION

Information sharing matters. It matters not only for job searchers, but also for information holders themselves. Sharing job information allows information holders to create debts of reciprocity in their networks, inclines network members to share information with them in the future, and insofar as it affects the positions that their network members attain, affects the value of their own social capital (Bian, 1997; Lin, 2001; Smith, 2007). Thus, while information sharing patterns are evidently important for the job seekers, they also impact the social positioning of the people in a position to share information. Understanding who has the opportunity to reap these rewards requires moving beyond seeing information holders in the context of job seekers' networks to studying the networks around information holders themselves.

Classic theories of network-based job search have classified potential information sources as more or less promising based not on their own characteristics or networks, but on their place in the structure of the social networks of those seeking information. (Burt, 1992; 2005; Granovetter, 1973). For example, Granovetter's (1973) theory of weak ties argues that contacts to whom a person is weakly tied are likely to travel in different social circles and therefore likely to hold non-redundant information. Burt's (1992; 2005) theory of structural holes, though not dealing with job search directly, makes a similar argument about information flow more generally: bridging ties, regardless of tie strength, provide access to new and non-redundant sources of information.

In theorizing that some kinds of networks and ties provide information solely because they *hold* more information than other kinds of networks, these theories implicitly assume that when people in a job-seeker's network have the opportunity to share information, they consistently do so. However, recent empirical studies of information holders suggest this is not the case. (Ashwin and Yakubovich, 2005; Smith, 2005; 2007; Trimble, 2011). Among Russians helping network members search for jobs, information sharing is motivated by a desire to care for the needs of family members (Ashwin and Yakubovich, 2005). Among African Americans living in poor neighbourhoods, information flow is hindered by distrust and the threat of poor work performance by network members (Smith, 2005; 2007). Some information holders hoard

information for in-group members (Greico, 1987; Tilly, 1998). Others may choose not to help network members looking for work if they suspect that a poor outcome for an employer or friend might damage their reputations or relationships (Fernandez and Weinberg, 1997; Marin, 2012; Smith, 2005; 2007). Qualitative data from this study show that among entry-level, white-collar workers, information holders are hesitant to share job information with potential applicants in their networks unless the potential applicant is a strong tie or someone whose career aspirations are known or clear (Marin, 2012). Although information holders' reasons for not sharing information vary, this body of research suggests that the networks or network members who ultimately provide the most information may not be the networks or network members with the most abundant opportunities to share information.

Because people who have information do not always share it (Marin, 2012; Smith, 2005; 2007), developing a theory of opportunities to share job information requires studying information holders directly, treating them not as alters in the networks that surround job seekers, but as egos, surrounded by their own networks. This article takes the first exploratory steps in that direction by studying information holders to learn how the networks in which they are embedded relate to their opportunities to share job information. It focuses not on the structure of these networks but instead on their composition, on the premise that while structure may matter for sheer volume, opportunities to share information are not based only on volume but also on the compatibility of the content of the information and the skills of network members. Because individuals' positions in formal organizations affect both the information to which they have access and the networks they build (Lin, 2001) and because job information is frequently shared either by or with people working in the occupations or organizations in which a job is situated, network composition is likely to be an important influence on the likelihood of this compatibility.

HOW NETWORKS CREATE OPPORTUNITIES TO SHARE INFORMATION

Unlike people who provide other kinds of social capital like social support (Fischer, 1982; Wellman, 1979), norms (Coleman, 1988), material resources (Stack, 1974) or identity (Podolny and Baron, 1997), people who provide information to their network members are frequently acting as intermediaries, taking information made available from one part of their social network and passing it along to another. Therefore, the network *surrounding* information holders should matter as much as the more frequently studied tie between an information holder and the specific alter to whom information successfully flows. This is the network that creates opportunities for information sharing by providing both the information and the potential targets of information.

Two types of networks have been shown to be useful to job searchers and job changers – networks with many in-industry ties, and networks with occupational diversity (Lin 2001; Lin and Au, 2008; McDonald, 2011a; Mouw, 2003). Because information is often shared by or with people who are employed in the occupation or for the organization in which a job is situated, the content of information flowing through ties should be related to the occupations of the persons involved in those ties. These two variables represent the depth of the within-industry network and the reach of the network into other industries and occupations, respectively. These types of networks facilitate the flow of job information for ego's own use, suggesting that they may also influence the availability of information possibly useful to ego's network members.

Because the opportunities to share job information have been so little studied and because this is a small exploratory study, I do not offer firm hypotheses about how network composition and network diversity are likely to affect each stage of the information flow process, but instead organize the following section into a series of open questions about each stage and discuss what the literature suggests we might expect at each stage.

How Does Network Composition Affect Knowledge of Job Openings?

A truism of social network analysis holds that people in different positions in the social structure have access to different information and different resources (Erickson, 1996; Borgotti and Lopez-Kidwell, 2011; Burt, 2005; Granovetter, 1973; Lin, 2001). People with contacts located in a variety of positions in the social structure have access to more varied and less redundant information (Burt, 1992; 2004; Erickson, 1996; Lin, 2001). While early researchers in this area focussed on non-redundancy of structural positions within networks (Burt, 1992; 2004), recent social capital research growing from Lin's (2001) Social Resources Theory has argued that formal positions within organizations also affect access to information and other resources. Researchers working in this area have found that individuals who know people in a wide variety of occupations incur benefits ranging from diverse knowledge of culture to higher attained job status (Erickson, 1996; Lin, 1999). For job seekers with more diverse networks, such benefits include routinely hearing of more job openings through their social networks (Lin and Ao, 2008). This literature suggests that people with more diverse networks will know of more job openings than people with less diverse networks. The job information these people receive will frequently be openings with their network members' employers (Granovetter, 1973), therefore the advantages accruing to those with diverse networks should be greatest for jobs with employers other than the respondents' own.

Networks with significant within-industry ties are important because work-related ties or network members in similar occupations are frequent sources of job information (Granovetter, 1973; Mouw, 2003). Men whose specialized work experience has given them ample opportunity to build within-industry networks are better able to leverage their networks to advance their own careers than those whose work experience is more diverse (McDonald, 2011a). Because many information holders pick up job information through the course of their own job searches and because job information is more likely to come up when discussing career plans (Marin, 2012), it may also be the case that information holders with many within-industry ties will be at an advantage in learning of job information. Where network members working in the respondents' own industry act as sources of job information, the jobs of which respondents learn are likely to be jobs similar to their own. Because the network members in diverse occupations and the within-industry network members studied here are not employed with the respondents' own employers, the advantage of both diverse and within-industry networks should be greatest for jobs with other employers and small[1] or non-existent when considering jobs with the respondents' own employers.

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[1] There is a plausible mechanism by which within-industry network members employed by other organizations could lead to greater knowledge of job openings with one's own employer: Respondents may be attentive to internal job openings because they hope to refer other network members or because network members have solicited job information.

How Does Network Composition Affect the Identification of Potential Applicants?

The second necessary stage in creating opportunities to share information is the identification of potential applicants. Information holders' network composition may contribute to this through two mechanisms. First, those who know of more job openings have more opportunities to identify potential applicants because they know of positions to which they can match their network members. Therefore, if people with more within-industry contacts and more diverse networks know of more job openings, they will likely identify more potential job applicants from within their networks, even if they successfully identify job applicants at an identical rate per job.

Second, network composition may also increase the identification of potential job applicants because network members are potential targets for information. Information holders identify potential job applicants based on work or educational histories that suggest interest or experience in the relevant occupation (Marin, 2012). A diverse network provides diverse contacts, increasing the likelihood that the network includes a person qualified for *any particular job*. The diversity of the network matters because some occupations are better socially connected and thus more likely to be known than others (Erickson, 2008; Lin and Dumin, 1986). This suggests that even taking into account the number of job openings of which information holders know, those with diverse networks should be able to identify more potential applicants from within their networks. Frequently, however, the job openings known to information holders are jobs much like their own and in their own organization or industry (Granovetter, 1973; Lin and Au, 2008). In these cases, within-industry ties will be exactly the people who might apply for those jobs. Within-industry ties *are* the potential applicants, and so having more within-industry ties make it easier to identify potential applicants for those openings.

How Does Network Composition Affect Information Sharing?

This article deals primarily with differences in *opportunities* to share job information. Although information holders' reasons for sharing or withholding job information are often made on a case-by-case basis, the opportunity to share information is a necessary precondition for sharing. If information holders with more within-industry ties or more network diversity have more opportunities to share job information, they should share job information more frequently, even assuming they seize their opportunities at the same rate as other information holders.

Networks that create opportunities to share information may also encourage information sharing. If that is the case, those who have such networks not only have more information to share, but also share the information at a higher rate. This could result from people with more diverse networks valuing or being more skilled at networking than those with less diverse networks. These skills then reinforce themselves by creating larger and more diverse networks. (Burt, 2010). These skilled networkers are likely to seize an opportunity to invest in a tie by sharing information and creating a debt of reciprocity. Furthermore, people with diverse networks may be more accustomed to exchanging resources through networks since it would be more common that one person will have resources needed but not easily accessed by another (van der Gaag and Snijders, 2005). People who have many opportunities to share resources become accustomed to doing so and are subsequently more likely to seize any given opportunity to do so (Burt, 1992;

Hurlburt, Haines and Beggs, 2000). Moving information through networks when the opportunity arises becomes a "way of life" (Burt 1992 p.36).

The process by which information holders make decisions to share job information may also result in those with more within-industry ties more frequently taking opportunities to share information. The decision to share information is frequently based on the ease of discussing or raising career-related topics (Marin, 2012). This topic of conversation is most appropriate among network members working in related jobs, particularly when these network members are employed with other organizations. If the information holders are aware of jobs similar to their own, they may encounter frequent conversational openings that make information sharing appropriate. If the practice of information sharing creates a habit and culture of information sharing as conjectured above, this would magnify that effect.

METHODS

Research Setting and Data Collection

The data analysed here are from a study of information sharing in the market for entry-level, white-collar work in Toronto. In May and June 2004, I conducted interviews consisting of both qualitative and quantitative portions with thirty-seven insurance agents employed in a Toronto call centre. Fifty-six percent of respondents were women. The mean age was 30 years old, the median was 28. Most respondents had either a university degree (46%) or a college diploma (32%), though some had degrees (16.2%) or diplomas (2.7%) in progress. One respondent (2.7%) had a graduate or professional degree. Eighty-nine percent were full time employees and 11% part-time.

The call centre is located in a high-rise building on a major Toronto road, not far from a large highway, and within steps of the subway. The building is located at the edge of the city, well outside the financial district. The area immediately surrounding the building is almost exclusively commercial. Another high-rise faces the call centre's building, but apart from that, the neighbourhood consists of street-front businesses, including ethnic restaurants, doughnut shops, a supermarket, and small shops in small plazas. The two high-rises are connected by an underground concourse shopping area which includes a food court, drugstore, some small clothing shops and a direct entrance to the subway system.

Several other companies, and at least one other call centre, share occupancy of the building. The call centre where insurance agents work is located on one floor, along with a large eating area including vending machines, multiple microwaves and computer terminals available to employees for accessing the intranet, which includes access to job postings within both the insurance company and its parent bank. Other floors house the HR department as well as offices for underwriters and claims representatives. Each floor has small meeting and conference rooms

The call centre itself is a predominately open area. The elevator onto the call centre emerges in the centre of the floor. To the left and the right of the elevators are long open areas for walking across the call centre floor. Work areas for each team of employees branch off from these paths. Insurance agents within each team's work area have their own large desks, arranged in two rows

along the low cubicle walls that divide the teams. The L-shaped desks themselves serve to divide the workspaces of teammates. Each insurance agent's desk includes a telephone and a computer.

Though the bank and insurance company maintain separate human resource departments, employees commonly move from jobs in one company to jobs at the other. Employees may voluntarily take three-month transfers to other departments in either company. For example, insurance agents may spend 3 months working at the bank's call centre. Ostensibly, this provides employees the chance to learn about other parts of the company, though some employees suspect that balancing labour supply with seasonal variation in demand for insurance sales and banking services may also motivate this program. Employees in both commercial and residential underwriting and claims are recruited from among the call centre employees.

The insurance company recruits new agents using print and online advertisements and by participating in job fairs. A recruitment bonus of $500 is offered to referrers[2]. Only one of the insurance agents interviewed had been looking to work in insurance, specifically, at the time of hiring. Among those who were searching for work at the time they were hired, most were unsure what they wanted to do and sought only to work in an office or to do "something in business." Several had expanded their job searches to include any office job after unsuccessfully searching for jobs related to their areas of study, such as human resources or information technology. Some were informed of the job openings by network members who were employees, fellow job searchers, or simply helpful friends who had seen an ad. Their network members' involvement ranged from pointing out a job ad, to attending the job fair, to helping to prepare for interviews[3].

Because all insurance agents must be licensed by the province to sell insurance, agents undergo two months of training upon hiring. The cost of training is borne by the employer, and soon-to-be agents are paid during the training period. At the end of the training period, they must pass a licensing test. Once licensed, agents work in a call centre in which they receive only incoming calls from people who want to buy home or auto insurance. Agents provide customer service that includes giving quotes, selling home and auto insurance policies, renewing policies, and answering questions from clients and potential clients. No cold-calling is involved. Agents at this call centre are not charged with taking reports of damages or with assisting clients with claims on existing policies, though they sometimes receive such calls and transfer them to the appropriate department.

This research setting is well suited to the study of network-based information flows. While there is reason to expect ample information flow, it is still the case that the rates of information flow will and do vary across information holders, job types, and relationship characteristics, allowing for the study of the sources of these variations. This is a setting in which it is likely that respondents would know about job openings, that those job openings would be desirable to their

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[2]Qualitative data showed that information holders were aware of the recruitment bonus but that this did not play a role in their information-sharing decisions. No respondent mentioned the recruitment bonus until asked about it directly. None indicated it was a factor in their decision to share information and information holders frequently chose not to share information in spite of the possibility of payment.

[3]Information holders' own methods of recruitment were not correlated with their information sharing behavior.

network members, and that they would know people who would be potential applicants for those jobs.

Unlike many of the jobs in call centres in which network-based hiring is so frequently studied (Castilla, 2005; Fernandez et. al., 2000), these are desirable entry-level white-collar jobs. Insurance agents are educated – the employer requires a college diploma or university degree[4]. They are given the training necessary to be licensed as insurance agents and opportunities to take courses leading to other insurance-related professional certifications. They are well-paid and have opportunities to earn bonuses on top of their regular earnings. Finally, they have opportunities for both vertical and horizontal advancement. Insurance agents commonly move from the call centre to jobs in claims, underwriting, quality control, scheduling, or training, as well as to jobs at the bank that owns the insurance company. In addition, insurance agents may be promoted within the call centre to become team leaders, who supervise the work of insurance agents and speak with customers who request that their calls be escalated. In addition, because they are already licensed to sell insurance, agents are aggressively recruited by other insurance companies hoping to lure away an already licensed and trained agent. Therefore, to the extent that insurance agents know of job openings similar to their own, they know about desirable jobs of which their network members may be interested in learning.

For this study, it was important that the respondents have networks that varied in terms of the network diversity and the number of within-industry ties. While the diversity of the networks depends somewhat on purely individual factors, many of the agents have work and education histories that have provided them with the opportunity to build diverse networks. Respondents come from a variety of educational backgrounds and drew their networks from among their former classmates, who will have moved in different directions after graduation. Several of the agents had trained to work in specific industries other than insurance and some had education not linked to any occupation in particular. The respondents' abilities to have many within-industry ties depends less on their education history than on their work history. Many of respondents worked in closely-related jobs previously, allowing them to build networks that included ties within the same industry but in other companies.

I collected data using semi-structured interviews supplemented with computer-assisted surveying of social network structure and composition. The bulk of the interview time was devoted to open-ended questions in which respondents listed specific job openings of which they had been aware and recounted whether and why they had shared each piece of job information. Following this portion of the interview, respondents completed a computer-assisted survey which included a number of different measures of properties of their social networks.

Dependent Variables

Three sets of dependent variables correspond to the three stages of the information flow process. The first is information holders' knowledge of job openings. This is measured by analyzing the open-ended portion of the interviews in which respondents listed job openings in their own

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[4]Although the employer requires a completed diploma or degree for hiring, a small number of agents are still completing their education because they were originally hired by another insurance company which was subsequently purchased by the organization studied here.

organization, job openings in insurance and finance, and then all other job openings of which they had been aware in the past year. All jobs listed in response to these three questions were combined into the total number of job openings of which each respondent had known.

A series of additional dependent variables measuring the first stage of the information flow process assess *the kinds of jobs* of which information holders were aware. These variables indicate the number of jobs of which respondents were aware that were within the respondents' organization (internal) and in other organizations (external). In addition, because qualitative analyses from these interviews showed that information holders treated jobs for which occupation-specific education was available differently from those where it was not, two more variables were used to indicate the number of "open" and "closed" occupations of which respondents were aware. This distinction is based on the pool of potential applicants from which the occupation draws. Those jobs that hire from a pool of applicants with narrowly-defined qualifications (through schooling in specific college or university programs, formal apprenticeship or trade school programs) that prepare them for careers specifically in closely-related occupations are in "closed labour market" occupations. Closed market occupations listed by the information-holding respondents included jobs such as hairdressers, jobs in human resources or marketing, programmers, engineers, or police officers. Examples of open market positions, those for which occupation-related schooling is not available, included respondents' own jobs as insurance agents, and jobs in telemarketing or sales[5].

Reaching the second and third stages of the information flow process – identifying potential applicants and sharing job information – is contingent on successfully passing through the previous stage(s). Therefore, there are multiple dependent variables at each of these stages. Some indicate raw number of times information successfully passes through the stage and others measure passing through each stage *contingent* on having successfully passed through previous stage(s).

Variables measuring the second stage of the information flow process -- identifying potential applicants -- are based on responses to the question, "Is there anyone you know who you could see in this job?" asked of each job that the respondent listed. The first dependent variable is the number of jobs for which the information holder has identified at least one potential applicant. Because information holders frequently identified more than one potential applicant for a given job, a second variable indicates the total number of potential applicants – that is the total number of opportunities to share information – that each information holder has. The next two variables at this stage seek to isolate this stage from the previous by controlling for the

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[5]Exclusive use of schooling in defining jobs as open or closed labour market jobs is appropriate only because these are overwhelmingly entry-level jobs and entry-level job candidates. I have defined jobs as closed if they draw their incumbents from a pool of people with specific narrowly-defined qualifications. In this case I have used only schooling to operationalize these qualifications; however, in some jobs the required qualification could be previous employment experience in specific occupations or jobs. A job could be a closed labour market job if in spite of drawing individuals from a variety of *educational* backgrounds it required experience in narrowly defined jobs or industries. In the case of the overwhelmingly entry-level positions I deal with here, jobs do not require specific previous experience because their applicant pools are generally young and relatively inexperienced.

number of jobs of which each respondent is aware. These are the proportion of jobs for which at least one potential applicant was identified, and the mean number of potential applicants identified for each job listed by the respondent.

At the final stage of the information flow process, sharing job information, two variables measure total information flow: the number of jobs about which information is shared, and the total number of times that information is shared. To isolate this stage from the number of jobs of which information holders are aware and the number of opportunities they have had to share information I also look at the proportion of all jobs listed about which information is shared and the proportion of opportunities to share information that result in potential applicants being told about job openings. These variables examine information sharing contingent on knowing of job openings and identifying potential applicants, respectively.

Independent Variables

Within-industry networks: Within-industry networks are defined by their similarity to three aspects of the jobs that insurance agents do: jobs in call centres, jobs in customer service, and jobs in finance or insurance. For each type of job, one measure of within-industry networks is the number of jobs respondents have held and the other is the number of people outside their own organization they know in the type of position.[6]. While the first measure cannot provide the number of ties that an information holder has within these industries, the second measure cannot see the likelihood that ties respondents report were met together, know one another, and thus may be redundant (Burt, 1992).

Network diversity: I used a position generator developed for use in Canada (Erickson, 2004) to measure the diversity of respondents' social networks. The position generator is the most commonly used measurement instrument for studying social network diversity and has been used in a variety of populations and across numerous countries (Hsung, Lin and Breiger, 2009; Lin and Dumin, 1986; Lin and Erickson, 2008). The position generator used here presented a list of twenty-six occupations selected to represent a range of socioeconomic statuses, industry sectors, and male- and female-dominated occupations. Respondents indicated for each occupation if they knew a male or knew a female working in that occupation. For example, the position generator asked respondents to indicate whether they knew a male or knew a female tailor or seamstress, lawyer, interior decorator, miner, nurse, or auto-assembler. The measures of network diversity used here are the number of occupations in which respondents knew at least one person, the number in which they know a male, and the number in which they know a female.

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[6].Respondents were also asked to give the number of different organizations other than their own at which they knew a person employed in a call centre, in customer service, or in finance or insurance. Only five respondents for each job category and ten unique individuals reported a number of alters not equal to the number of organizations. Therefore, the correlation between the number of network members and number of organizations by which network members are employed is extremely high: .80 in the case of call centres, .90 for customer service workers and .92 for insurance or financial sector workers. Because these two measures are essentially identical, I analyze only the number of ties in each job category.

ANALYSES AND FINDINGS

Information Availability and Sharing

Looking at information sharing across the sample shows that while knowledge of job openings is plentiful, information frequently goes unshared, even when a potential applicant has been identified. Information holders listed a mean of 6 jobs each, resulting in a total of 222 job openings. Of the 222 jobs listed, 193 were in open labour market occupations, and 29 were in closed labour market occupations, 126 were internal jobs with the respondents' own employer and 96 were with other employers. Respondents identified potential applicants from among their network members for 122 of the 222 jobs they listed, with a mean of 1.5 potential applicants identified for each job for which at least one potential applicant was identified. The result was 181 job-alter pairings consisting of a job opening of which the respondent knew and a network member whom they could see in that job. Each of these job-alter pairs is an opportunity to share job information.

Despite these plentiful opportunities to pass along job information, respondents shared knowledge of 17.6% of the job openings of which they were aware, mentioning a mean of 1.05 jobs each. Looking only at job-alter pairs, instances where information holders were able to name a potential candidate, respondents told those network members about job openings only 27% of the time. In total, respondents shared knowledge of job openings between zero and eight times each, with a mean of 1.5[7].

Bivariate correlations provide the most feasible tool for measuring how variations in each stage of the information flow process were associated with network composition. The small number of respondents in this study makes the use of extensive controls impractical. While several key dependent variables are count variables, underdispersion of these variables precludes the use of bivariate poisson or negative-binomial regressions. Because every insurance agent employed in the call centre was invited to be interviewed[8], two-tailed statistical significance levels for each bivariate correlation indicate the conclusiveness with which we can generalize to the population of insurance agents *in this organization*.

Within Industry Networks

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[7]Information holders shared job information a mean of 1.5 times each, but only shared knowledge about 1.08 job openings because they sometimes shared knowledge of one job opening with more than one person.

[8] This makes the sample essentially equivalent to a random sample with a 100% probability of selection for each person and a response rate of approximately 50%. The exact response rate cannot be calculated because although the list of agents provided by the organization included all insurance agents, not everyone on the list was an insurance agent or currently working as insurance agents (some were on parental leaves or working at temporary job assignments in other departments) and thus eligible to participate. Therefore, the exact number of eligible participants is unknown. Although these data might also be analyzed as a sample from a finite population, I retain the more conservative assumption of an infinite population (Weisberg, 2005).

Respondents commonly reported having the job experience that gave them opportunities to build within-industry networks and the connections to show for it. Call centre experience and insurance experience prior to their employment in this call centre was common. Seventeen respondents had been previously employed in at least one call centre job. Seventeen respondents were also previously employed in insurance or the financial sector. Customer service experience was even more common. The mean number of previous customer service positions was 3.8, and only four respondents had not worked previously in customer service. Five respondents had had six previous customer service jobs. Given these work histories, it is not surprising that all of the 36 respondents who answered this portion of the survey reported having network members working in all three categories of jobs. These information holders knew a mean of 2.8 call centre employees, 4.4 customer service employees, and 3.7 insurance and financial sector employees.

Bivariate correlation coefficients between measures of within-industry networks and information-flow outcomes are shown in Table 1. Each cell shows the correlation coefficient for one bivariate correlation model. The table is divided vertically into three panels, each showing results for one stage in the information flow process. The first two panels combined show results related to knowing about job openings and identifying potential applicants, which together create opportunities to share information. The third panel shows results relating to sharing information.

Information holders with more customer service experience and with more within-industry contacts of all types know of more job openings. The effects are moderately large. Comparing the second and third rows of this first panel of Table 1 shows that within industry networks are not associated with the number of closed-occupation jobs that a person lists, but that past customer service or insurance experience and all types of within-industry ties predict knowing of more open occupation jobs. Finally, comparing the final two rows of this first panel shows that within-industry ties do not predict the number of internal job openings of which a respondent is aware, but do predict the number of job openings of which they know in other organizations. These findings together suggest that networks rich in within-industry ties lead to knowledge of jobs located in other organizations but in occupations similar to those held by the respondents, a finding consistent with these within-industry ties being the sources of this job information. Across all outcomes related to knowing about job openings, actually having within-industry ties has a greater effect than merely having had the opportunity to build such ties.

The second panel of Table 1 shows that within-industry ties are related to opportunities to share information, but this is because they create knowledge of job openings, not because they facilitate identification of potential applicants. Within-industry ties are associated with identifying potential applicants for more jobs. The total number of opportunities to share information is correlated in the expected direction with within-industry ties, but this relationship is not statistically significant. Combined, these two results suggest greater opportunities to share information among those with more within-industry ties. However, information holders with more within-industry ties do not identify more applicants per job opening or identify applicants for a greater proportion of job openings. Within-industry work experience does not affect any outcome related to the identification of potential applicants.

Information holders with rich within-industry networks share job information more often than those with fewer within-industry ties. Having more ties to people working in customer service or insurance and finance is associated with the number of times information is shared and the number of jobs about which information is shared. Ties to call centre employees are related to neither, which is curious given that this is the kind of tie most strongly associated with the number of jobs listed and the number of jobs for which a potential applicant is identified. There are no effects related to within-industry work experience.

Within-industry ties to people working in customer service or insurance are associated with sharing information more times per job. The effect on the proportion of jobs about which information holders shared information is related to within-industry networks in the expected direction, but the relationship is not statistically significant. Taken together, these findings tentatively suggest that within-industry networks affect information sharing independent of the effect on the number of jobs listed. The final row in Table 1 looks at information sharing controlling for the number of opportunities to share information by looking at the proportion of identified potential applicants who are told about job openings. This is moderately correlated with the number of ties to insurance or finance workers, and correlated in the expected direction with ties to customer service workers, suggesting that information holders with rich within-industry ties are more likely to take opportunities to share job information.

Network Diversity

Respondents in my sample knew at least one person in a mean of 10.2 of the 26 occupations listed in the position generator. They knew males in a mean of 6.6 occupations and females in a mean of 6.4 occupations. Women had network members in a mean of 10.4 occupations while men had network members in a mean of 9.9 occupations. Both women and men had network members of their own sex in more occupations than network members of the other sex. However, none of these differences by sex was statistically significant.

Table 2 shows correlations between three measures of network diversity and information flow outcomes. As before, the table is divided into three panels each analyzing one stage of the information flow process: knowing about job openings, identifying potential applicants, and sharing job information.

Diverse social networks are correlated in the expected direction with knowing about job openings. This relationship is not statistically significant, however the correlations are in the expected direction and this combined with the findings reported below makes these findings suggestive enough to indicate that further study of this relationship may be warranted. Correlation sizes and directions are also consistent with the conjecture of greater effect on external than internal job openings. Male and female network diversity also show weak and non-significant effects on the total number of jobs information holders list and appear to have stronger effects on external than internal jobs. Diversity in the male network appears to have larger effects than diversity in the female network.

The second panel of Table 2 shows that network diversity is correlated with opportunities to share information and that information holders with more diverse networks identify potential applicants for more jobs. The mechanism by which these opportunities materialize is unclear. No significant correlations are shown between the network diversity and the proportion of jobs for which potential applicants are identified or with the number of potential applicants identified per job, although correlations are in the directions consistent with either mechanism. The same patterns hold for diversity in the male and female networks.

If information holders identify more potential applicants, it must be either because they have more jobs for which to identify applicants or because they are better at identifying applicants for each job, yet neither mechanism can be supported more than tentatively. This suggests that there may be a *small* correlation with each mechanism, too small to be statistically significant, but combining to produce the statistically significant and moderately-sized effect shown. This effect suggests that further study of the effects on both the number of jobs listed and the identification of potential applicants for a given job is warranted.

The final panel of Table 2 shows that network diversity is not correlated with the amount of information shared or with the likelihood of sharing information given knowledge of a job opening or the identification of a potential applicant. Diversity in the male and female networks shows small non-significant effects on all information sharing outcomes. Therefore, while information holders with more diverse networks have more opportunities to share job information, they do not do so more often than respondents with less diverse networks.

DISCUSSION AND CONCLUSIONS

Findings have shown that in this setting, different aspects of network composition affect information flow at different stages. Information holders with more within-industry ties know of more job openings and consequently have more opportunities to share job information. These information holders not only share information more frequently, but they share information at a greater rate given their opportunities to do so.

Diverse networks do not ultimately affect the rate of information flow. People with more diverse networks do not share job information more frequently than people with less diverse networks. This is striking because people with more diverse networks did have more opportunities to share job information than those with less diverse networks. While diverse networks are commonly associated with access to diverse knowledge or information (Erickson, 1996; Lin, 2001), in this setting people with diverse networks were not shown conclusively to know of more job openings than people with less diverse networks. However, they did more frequently identify network members who were potential applicants for job openings of which they were aware and thus have more opportunities to share job information. That these greater opportunities to share job information did not translate into more frequent information sharing suggests that the flow of job information may be more likely to stall when passing through people with diverse networks. Examining diversity in male and female networks separately shows that these effects are consistent with the effects of diversity in the overall network. Male and female network diversity may affect male and female information holders differently, however given the size of the sample studied here it is not advisable to divide the sample further

by conducting separate analyses by sex.

These findings are significant for a number of reasons. First, they demonstrate that in this setting network composition matters in understanding the flow of job information. Theories of information flow have focussed extensively on the role of structure: Granovetter's (1973) theory of weak ties is named for a property of the tie, but the premise on which the argument rests is a structural one -- positing that networks leading to disconnected others will be more useful to job seekers than those that lead to densely connected clusters. Burt's (1992, 2005) theory of structural holes, while not addressing job search specifically, similarly argues "information benefits" – meaning more information received earlier – accrue to those whose alters are not connected to one another or connected to the same third parties. These theories argue that some network structures lead to greater volumes of information. However, content, not simply volume of information, matters for referrals to job openings. It is not enough to know of many jobs. For a referral to take place the information holder must know of the right jobs for their network members or know the right network member for a job opening. Because different kinds of people – here meaning primarily people with different occupations – have information about different kinds of jobs and are qualified for different kinds of jobs. Knowing the right person for the right job and the right job for the right person depends on having a network with the right kinds of people, not just a network of people connected in the right kinds of ways.

Third, these findings show that in this setting, having greater opportunities to share information does not necessarily lead to a habit or greater inclination toward information sharing. Social capital researchers have argued that because opportunities to help others by providing information and resources should lead to more frequent sharing, this frequent sharing in turn should breed a habit of sharing and lead to a greater propensity to share when an opportunity presents itself (Burt, 1992; 2004; 2010; Hurlburt, Haines and Beggs, 2000). However, these findings have shown that when it comes to sharing job information, although both within-industry ties and diverse networks lead to greater information-sharing opportunities, only within-industry ties lead to a greater rate of information sharing. In fact, not only do people with more diverse networks not share information at a greater rate than those with less diverse networks, they do not even share information more frequently than those with less diverse networks.

Clues to explain why within-industry networks and not diverse networks led to more and higher rates of information sharing exist in the qualitative data in which information holders explained their choices to share or withhold information. After information holders listed job openings of which they were aware, network members who they could see in these job openings and whether they had shared knowledge of job openings with the potential applicants they identified, they explained why they had told or not told each potential applicant about the job openings. Although these information holders did not touch on the diversity of their networks or their within-industry ties in explaining their reasons, the criteria they took into account in making their decisions to share or withhold information still sheds light on these findings.

In findings reported previously (Marin, 2012), I showed that information holders preferred to share job information when career plans were already salient in the conversation and were reluctant to share information with network members' whose career goals were not known, lest the information holder appear to be giving unsolicited and intrusive advice. Because of these preferences, information holders less frequently shared advice with potential applicants who were weak ties than with potential applicants who were strong ties – the career aspirations of strong ties were more likely to be known.

Although these explanations of information holders' reasons for sharing or withholding information do not speak directly to within-industry ties and network diversity, they do suggest an explanation for the patterns found. The advantage in opportunities to share job information among information holders with many within-industry ties is likely to be in knowing of within-industry jobs and knowing within-industry workers who can fill these jobs. Because work and careers are a frequently salient topic of conversation among people who do similar work, there are likely to be conversational openings in which it would be appropriate to share information about these openings. Diverse ties, on the other hand, provide the advantage of greater ability to identify potential applicants for job openings but they are less likely to be ties in which career plans are salient in the conversation. Since the diverse ties that position generators taps into are often weak ties (Erickson, 2004; Lin, Fu and Hsung, 2001;), the additional potential applicants identified by information holders with diverse networks are more likely to be among weak ties. Though research on job searchers suggests that information is often received from weak ties, research on information holders shows that information holders are more likely to share available information with strong ties (Granovetter, 1973; Lai, 2002; Marin, 2012; Smith, 2005; 2007).

The broad implications of these findings show that, consistent with the fundamental premise of social network theory, networks create opportunities and constraints (Borgotti and Lopez-Kidwell, 2011; Marin and Wellman, 2011; Wellman, 1983). However, in their particulars, these findings are suggestive rather than conclusive. This study was of necessity, small, exploratory, and limited to a single setting and population. Because no statistical controls were possible, spuriousness and suppressed relationships cannot be ruled out. Network-based job searches operate differently in different labour markets (Bian, 1997; Marin, 2012; Marsden and Gorman, 2001) suggesting that the sources of variation in opportunities to share information may also vary.

Understanding just how the relationship between network composition and information flow varies across labour markets will require empirical study across diverse labour markets. However, examining the case at hand suggests some possibilities. For example, while within-industry ties are shown to be more broadly important than network diversity in this sample of insurance agents, insurance agents deal primarily with other insurance workers in the course of their jobs. For these workers, work ties – the ties most likely to be told of job openings – are quite homogenous in their job needs. Knowledge of many diverse job openings would not provide more opportunities to share information if there were few potential applicants among members of their work networks. These findings may differ among information holders who deal with a variety of people in the course of their work lives – for example because they work at the boundaries of their organizations (Burt, 1997) or because they serve clients in many

occupations. Such people may be better able to match diverse job openings to their diverse network members, thus creating opportunities to share information. In such contexts, network diversity could matter more than within-industry ties. Developing a more comprehensive picture of how social networks operate at each stage of the information flow and network-based hiring processes will require larger studies in a variety of labour market contexts. Larger samples would allow for the kind of multivariate analyses that could help understand, for example, how the effects of network composition vary across labour markets and populations.

Further, this study highlights the importance of studying information flow as a multi-stage process, and in particular of considering variations in opportunities to share information. A multi-stage view provides examples of information that successfully travel from information holder to potential applicants that can be compared with examples of information that stall mid-process. Just as studies examining job seekers and applicants have uncovered the mechanisms that affect network-based hiring by examining different stages of the referring and hiring process separately (Fernandez and Fernandez-Mateo, 2006; Fernandez and Mors, 2008; Fernandez and Sosa, 2005; Fernandez and Weinberg, 1997; Rubineau and Fernandez, 2005; Yakubovich and Lup, 2006), examining stages of the information flow process separately can uncover the different contingencies operating at each stage. Observing variation in outcomes at each stage, rather than examining only instances that survive the entire process, makes it possible to examine independently how information holders' social networks are related to each stage and therefore to better understand the mechanisms by which different aspects of information holders' network composition facilitate or hinder information flow.

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TABLES

Table 1: Bivariate Correlations Between Measures of Network Specialization and Information Flow Outcomes

	Number of Past Call Centre Jobs	Number of Past Customer Service Jobs	Number of Past Insurance or Finance Jobs	Number of Network Members working in Call Centres	Number of Network Members Working in Customer Service	Number of Network Members in Finance or Insurance
Knowing About Jobs						
Total Number of Jobs	.112	.426***	.248	.504***	.349**	.340**
Number of Closed Jobs	-.072	.135	-.122	-.050	.075	.056
Number of Open Jobs	.135	.356**	.283*	.501***	.306*	.305*
Number of Internal Jobs	-.092	.295*	-.202	.190	.033	-.078
Number of External Jobs	.167	.292*	.368**	.431***	.351**	.400**
Identifying Potential Applicants						
Number of Jobs Linked	-.054	.297	-.045	.380**	.300*	.207*
Number of Opportunities to Share Information	-.072	.258	-.063	.209	.267	.102
Proportion of Jobs with Potential Applicants	-.194	.053	-.261	.024	.060	-.087
Potential Applicants per Job	-.164	.023	-.227	-.131	.021	-.179
Sharing Job Information						
Times Information Shared	.065	.035	-.052	.058	.352**	.321*
Number of Jobs Told about	-.0173	.051	-.144	.093	.333*	.298*
Times Information Shared Per Job	.002	.018	-.100	-.018	.286*	.297*
Proportion of all Jobs Told	-.070	.021	-.185	.007	.263	.272
Proportion of Opportunities Seized	.175	.025	.069	.041	.276	.292*

* p<.1 ** p<.05 *** p<.01

Table 2:   Bivariate Correlations Between Measures of Network Diversity and Information Flow Outcomes

	Network Diversity	Male Network Diversity	Female Network Diversity
Knowing About Jobs			
Total Number of Jobs	.292	.251	.142
Number of Internal Jobs	.065	.118	-.031
Number of External Jobs	.273	.202	.166
Identifying Potential Applicants			
Number of Jobs Linked	.299*	.259	.253
Number of Opportunities to Share Information	.393**	.362**	.304*
Proportion of Jobs with Potential Applicants	.212	.148	.244
Potential Applicants per Job	.268	.225	.267
Sharing Job Information			
Times Information Shared	.241	.037	.165
Number of Jobs Told about	.224	.072	.142
Proportion of all Jobs Told	.210	.070	.138
Times Information Shared Per Job	.226	.040	.159
Proportion of Potential Applicants Informed	.009	-.111	.032

* p<.1 ** p<.05 *** p<.01