Essays on Entrepreneurial Joiners and How to Recruit Them

Seung Hoon Chung, *The University of Western Ontario*

Supervisor: Parker, Simon C., *The University of Western Ontario*

A thesis submitted in partial fulfillment of the requirements for the Doctor of Philosophy degree in Business

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ABSTRACT

Recruiting talent is arguably one of the most significant challenges facing entrepreneurs today. The ability to find and acquire high quality human resources is particularly critical for a start-up’s ability to survive and grow. However, start-ups are often disadvantaged in the labor market because they lack financial capital, reputation, and stability. While practitioners have repeatedly claimed that recruitment is one of the biggest challenges they face, little research has explored the question of how start-ups can better recruit employees. To understand how start-ups can better recruit employees, it is important to approach the question from both the employers’ and employees’ perspectives. This dissertation follows this approach.

One of the factors that make it difficult for entrepreneurship research on recruitment to advance is the fact that the few potentially relevant studies are scattered over multiple disciplines, such as psychology, economics, strategic management, human resources management, and entrepreneurship. Therefore, Essay 1 (Chapter 2) provides a thorough review of the literature related to entrepreneurial recruitment. After discussing the anecdotal evidence around the importance of recruitment, I categorize the studies into those that take the perspective of 1) employers, and 2) employees, then provide a synthesis of the studies and directions for future research.

One of the challenges associated with entrepreneurial recruitment is the presence of information asymmetry where employers and employees have different information. Essay 2 (Chapter 3) takes the perspective of employers and examines how start-ups can signal their quality to jobseekers to overcome information asymmetry. Specifically, a series of randomized laboratory experiments is used to study whether the level of prestige associated with the founder
can increase the attractiveness of a start-up to jobseekers, and if so, whether founder prestige signals founder ability or venture quality.

Essay 3 (Chapter 4) takes the perspective of employees and examines how working for a start-up differs from working for an established firm or pursuing entrepreneurship. Using data from the National Survey of College Graduates, I examine the number of roles undertaken by individuals in different occupational groups, and study how the number of roles relates to earnings and job satisfaction for the three groups.

**Keywords:** Entrepreneurship, recruitment, joiners, self-employment, signaling, occupational choice
SUMMARY FOR LAY AUDIENCE

When asked about the challenges associated with entrepreneurship, many entrepreneurs cite recruitment as the biggest challenge they face. The ability to recruit employees is critical for entrepreneurs’ success because entrepreneurs often lack other resources they can use to compete with other firms. This dissertation aims to help entrepreneurs overcome this challenge by studying how entrepreneurs can better recruit talent.

In Chapter 2, I provide a review of the previously published studies that can inform our understanding of recruitment by entrepreneurial firms. This review is divided into two sections. From the employee’s perspective, I examine the studies that are related to three topics: 1) the types of individuals who work for entrepreneurial firms, 2) the working conditions associated with working for entrepreneurial firms, and 3) the implications of working for an entrepreneurial firm on subsequent career choices. From the employer’s perspective, I engage with studies that examine the following three topics: 1) the type of entrepreneurial firms that hire employees, 2) the strategies used by these firms to attract jobseekers, and 3) the implications of hiring employees on the entrepreneurs and the firms they found.

One of the factors that make it challenging for entrepreneurs is that jobseekers often have limited information about entrepreneurial ventures, which makes it difficult for them to evaluate the attractiveness of these ventures. In Chapter 3, I study how start-ups can convey their quality to jobseekers. I focus specifically on the prestigious educational and employment credentials of founders and study how these credentials enhance the attractiveness of their start-ups in the eyes of jobseekers.

Finally, in Chapter 4, I take the perspective of employees. One of key distinctions between pursuing entrepreneurship and working as a wage employee is that entrepreneurs must
oversee all aspects of managing their ventures. This essay examines whether the same logic can be applied to compare employees of new firms and employees of incumbent firms. Furthermore, I also examine whether performing a higher number of roles is associated with higher earnings and job satisfaction, and how this relationship differs for entrepreneurs, employees of young firms, and employees of incumbent firms.
CO-AUTHORSHIP STATEMENT

Essay 1 (Chapter 2) was co-authored with Dr. Simon C. Parker (Ivey Business School, Western University). I was the principal contributor for this essay and was responsible for the planning of the project, collection and review of studies, and preparation of the first draft. Dr. Parker contributed by editing and refining the draft as well as providing guidance throughout the research process.

Essay 2 (Chapter 3) was also co-authored with Dr. Parker. The idea for the project came from a term paper I had written for the Entrepreneurship doctoral seminar taught by Dr. Parker. As the principal contributor, I was responsible for the initial conceptualization of the project, the design and implementation of the experiments, the cleaning and analysis of data, and the preparation of the first draft. Dr. Parker contributed by editing, refining, and providing guidance throughout the research process. Also, Dr. Parker provided the funding for the pilot and the main studies that contributed the data for this project. Finally, Dr. Parker also helped guide my thinking in developing the theoretical framing and interpreting the results. This paper is currently undergoing a Revise and Resubmit process at the Strategic Entrepreneurship Journal.

Finally, Essay 3 (Chapter 4) was also co-authored with Dr. Parker. Similar to Essay 2, I was the principal contributor of this essay. I developed the theoretical framework, collected, cleaned, and analyzed the data, interpreted the results, and prepared the first draft. Dr. Parker contributed by editing and revising the draft as well as providing advice as I developed the theoretical framework and interpreted the results.

The finished work was copy edited by a professional copy editor. Apart from the exceptions highlighted above, I certify that this dissertation is a product of my own work.
ACKNOWLEDGEMENTS

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experiments, which have been an integral part of my thesis. Moreover, Karen made the interaction with the Behavioural Lab an absolute joy.

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CHAPTER 1: INTRODUCTION

1.1 Motivations for Research

Entrepreneurship, often defined as creation of new ventures to identify and exploit new opportunities (Gartner, 1985; Shane & Venkataraman, 2000), requires significant resources. Of the different resources, people arguably play the most important role in the entrepreneurship process (Cardon and Stevens, 2004; Katz, Aldrich, Welbourne, & Williams, 2000). People are required to identify an opportunity and assemble the necessary resources to exploit the opportunity. Similarly, it is the people who create the long-term strategy and manage the day-to-day operation of a venture to ensure its survival. Therefore, the study of entrepreneurship necessarily involves studying the people involved.

Entrepreneurship scholars recognize the important role people play within entrepreneurship. Accordingly, entrepreneurship research to date has emphasized the role of people, mainly the entrepreneur/founder in the preparation (Arenius & Minniti, 2005; Johnson, Parker, & Wijbenga, 2006), entry (Kihlstrom & Laffont, 1979; Lucas, 1978), process (Fisher, 2012; Pryor, Webb, Ireland, & Ketchen, 2016), and outcomes (Hamilton, 2000; Zhao, Seibert, & Lumpkin, 2010) of entrepreneurship. Such work has examined how different individual-level variables about the founder, including demographic characteristics, personality, human and social capital, and passion play a role in entrepreneurship. Furthermore, even the studies that focus on the role of environmental or contextual factors, such as government policies and regulations (Minniti, 2008; Robson, Wijbenga, & Parker, 2009), industry-level characteristics (Lofstrom, Bates, & Parker, 2014), macroeconomic conditions (Davidsson & Gordon, 2016; Koellinger & Roy Thurik, 2012) and social environment (Kacperczyk, 2013; Nanda & Sørensen,
2010), often assume that these factors influence entrepreneurship by affecting the incentives and the ability of individuals to pursue entrepreneurship.

Previously, the entrepreneurship literature has focused primarily on the entrepreneurs/founders of entrepreneurial ventures. Perhaps this is natural because entrepreneurship requires significant effort and risk taking by entrepreneurs (Kihlstrom & Laffont, 1979). Moreover, the founder is often the most visible person associated with a venture. However, by focusing the spotlight on the founders, the entrepreneurship literature has left other important constituents in the dark. This thesis argues that although founders play a critical role in entrepreneurial ventures, the employees who work for these founders are also important constituents.

Contrary to the perspective that views founders as heroic individuals who singlehandedly create and grow their ventures, entrepreneurial success is rarely achieved by a founder alone. Rather, to successfully manage and grow their ventures, entrepreneurs need to hire employees. Several scholars recognize this and emphasize the importance of human resources, especially for entrepreneurial ventures (Cardon & Stevens, 2004; Katz et al., 2000; Williamson, 2000). For example, Katz et al. (2000) state, “Increasingly, firms profess that people are the source of their competitive advantage…At a time of unparalleled technological development, it is the human resources that paradoxically spell success or failure for all firms, and especially entrepreneurial ones” (Katz et al., 2000:7).

Yet, it is also true that many self-employed individuals do not hire any employees. In fact, only 20-30 percent of entrepreneurs hire external employees (Parker, 2018: 505). However, most ‘growth-oriented’ entrepreneurs are employers and there is considerable interest in the early management team and hiring choices of rapidly growing ventures or ‘gazelles’ (Gjerløv-Juel and
Guenther, 2012; Lee, 2014; Kor, 2003). Also, once hired, employees become important members of the venture who influence various aspects of entrepreneurship. For example, Coad et al. (2017) find that hiring the first employee leads to higher sales growth in subsequent years. Moreover, other studies show that employees significantly impact fundraising (Ouimet & Zarutskie, 2014), growth (Koch, Späth, & Strotmann, 2013; Maliranta & Nurmi, 2019), survival (Rocha, Carneiro, & Varum, 2018; Yang, Bossink, & Peverelli, 2017), and innovative performance (Andries & Czarnitzki, 2014; Braun, Ferreira, Schmidt, & Sydow, 2018) of start-ups. Finally, research finds that those who are interested in joining a start-up as an employee greatly outnumber those interested in founding a firm. Therefore, to focus solely on the founder is to overlook a significant number of individuals involved in entrepreneurship (Roach & Sauermann, 2015).

Despite the importance of employees, for entrepreneurs, recruiting employees is a challenging task, not to mention managing them. Reflecting this, entrepreneurs often cite recruitment as one of the most challenging aspects of pursuing entrepreneurship. According to the annual Startup Outlook Report published in 2019 by the Silicon Valley Bank, approximately 90 percent of start-ups report that they find it challenging or extremely challenging to hire talent, with the finding consistent for start-ups in the US, UK, Canada, and China.¹

There are many reasons why recruitment is challenging for entrepreneurial ventures. First, many entrepreneurs are capital constrained and cannot afford to offer attractive compensation packages, such as high salaries and fringe benefits. Second, young firms and small firms are more likely to fail than old and large firms, phenomena also known as the “liabilities of newness and smallness” (Freeman, Carroll, & Hannan, 1983; Stinchcombe, 1965). Due to the

high risk of failure, the liabilities of newness and smallness result in less secure jobs for employees of entrepreneurial ventures. Third, and related to the liability of newness, entrepreneurial ventures often lack legitimacy, which is defined as a “generalized perception that the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs, and definitions” (Suchman, 1995: 574). Legitimacy often stems from the organizational characteristics and actions that symbolize that an organization can satisfy the goals and objectives of the constituents. For start-ups, legitimacy is particularly important as it creates an image of the start-up as being predictable, meaningful, and trustworthy (Suchman, 1995; Williamson, 2000). Young firms often suffer from the lack of legitimacy because external resource providers have no way to ensure that these firms are desirable, proper, or appropriate. Since jobseekers are likely to prefer employees who possess these traits, legitimacy is known to be critical in attracting employees (Williamson, Cable, & Aldrich, 2002). Fourth, jobseekers have limited sources from which they can obtain information about entrepreneurial ventures, resulting in problems such as lack of information and information asymmetry, which Stiglitz defines as when “different people know different things” (Stiglitz, 2002: 470). Such informational problems make it difficult for one party to evaluate others and hinders the smooth operation of the labor market.

Recently, scholars have begun to recognize the importance of people within entrepreneurship and the challenges that entrepreneurs face in recruiting talent. Accordingly, several entrepreneurship scholars have advocated for more research on recruitment and human resource management for entrepreneurial ventures (Cardon & Stevens, 2004; Shepherd, Wennberg, Suddaby, & Wiklund, 2019). However, these topics remain relatively understudied within the entrepreneurship literature. Furthermore, in addition to the recruitment and human
resource management of entrepreneurial ventures, we know relatively little about the group of individuals who join entrepreneurial ventures as wage employees (a.k.a. ‘joiners’) and their experience and roles in entrepreneurship (Roach & Sauermann, 2015). Accordingly, my motivation is not to create a new theory or fill a major gap in an existing theory. Rather, my motivation for this thesis is to advance our understanding of the two phenomena that are very important to entrepreneurs: 1) recruitment in the context of entrepreneurial firms and 2) joiners – those who work for entrepreneurial firms as wage employees.

Studying entrepreneurial recruitment and joiners is important. From an entrepreneur’s perspective, employees are the most fundamental resource as they often influence an entrepreneur’s ability to acquire other resources, such as financial capital (Ouimet and Zarutskie, 2014). Also, the ability to recruit employees affects entrepreneurial performance (Coad et al., 2017) as they enable an entrepreneur to scale an existing business or pursue new opportunities. Moreover, the emergence of start-ups as an attractive employer over large incumbent employers make the idea of joining a start-up an attractive alternative to a career at a large firm (Kim, 2018).

Despite a sizable literature on recruitment, prior studies mostly study recruitment in the context of large incumbent firms, and recruitment in entrepreneurial context is not well informed by such studies. Compared to large established firms, start-ups face unique challenges including the lack of resources, liability of newness and smallness, lack of legitimacy, and information asymmetry. In addition, studies find that those that seek to work for start-ups may have different goals and preferences from those who seek employment at established firms (Sauermann, 2018; Barber et al., 1999). Moreover, start-ups may be held to a different standard than established firms (Fisher et al., 2017). Therefore, the measures that are found to be effective for large firms
may not be transferrable to start-ups, which raises the need to study recruitment in the context of start-ups separately.

Fortunately, there has been growing research interest in these topics. For example, several scholars have highlighted the importance of recruitment for entrepreneurial firms and have made efforts to study recruitment in the context of entrepreneurial firms. These studies have contributed to our understanding of differences in the recruitment practices between start-ups and established firms. Generally, they find that start-ups tend to hire relatively informally without formal recruitment practices, such as designated recruitment personnel and structured application or interview processes (Behrends, 2007; Kotey & Slade, 2005; Mayson & Barrett, 2006). Moreover, studies also find that start-ups rely heavily on their networks, such as friends, family, colleagues, and business partners (Ko & Liu, 2017; Leung, 2003; Leung, Zhang, Wong, & Der Foo, 2006). Despite recent findings about the recruitment practices used by start-ups, we still know little about how entrepreneurial ventures compete in the labor market and the practices or attributes that allow them to appeal to jobseekers (Backes-Gellner & Werner, 2007).

Similarly, researchers have begun to pay attention to joiners. Traditionally, researchers have examined the wage differentials between employees of large and small firms (Brown & Medoff, 1989) and between employees of old and young firms (Brown & Medoff, 2003). More recently, others have noticed that the individuals who work for small firms are more likely to become entrepreneurs in the future, a phenomenon sometimes called the ‘small firm effect’ (Elfenbein, Hamilton, & Zenger, 2010; Parker, 2009; Sørensen, 2007). However, previous studies have examined how employer characteristics influence the selection of individuals into entrepreneurial firms, thus taking an employer-focused perspective.
Roach and Sauermann (2015) were the first to adopt the employee-focused perspective and coined the term ‘joiners’ to describe those who join entrepreneurial firms as wage employees. They showed that joiners and entrepreneurs value similar job attributes, such as autonomy and risk. They also showed that founder intentions are driven mainly by personal preferences for these job attributes, while joiner intentions are driven by personal preferences and contextual factors. Following this work, several scholars have joined the effort to deepen our understanding of joiners (Nyström, 2019). Scholarly work in this literature has examined the types of individuals who join start-ups as opposed to those who join established firms (Coad, Nielsen, & Timmermans, 2017; Eesley & Wang, 2017; Kim, 2018; Maliranta & Nurmi, 2019) and the implications of joining a start-up on various workplace outcomes, such as wages, fringe benefits, job security, stock options, and subsequent careers (Bengtsson & Hand, 2013; Block, Fisch, & Van Praag, 2018; Burton, Dahl, & Sorenson, 2018; Fackler, Fuchs, Hölscher, & Schnabel, 2019; Rocha & Van Praag, 2020). To date, however, only a few studies have examined the experience of working for start-ups, such as differences in the type of work performed by joiners and employees of established firms (Bublitz & Noseleit, 2014; Elfenbein et al., 2010).

Despite the recent growth in research on entrepreneurial recruitment and joiners, significant gaps in knowledge remain about the factors that allow start-ups to appeal to jobseekers and compete with other firms in the labor market. Moreover, we know relatively little about how working for start-ups differs from working for established firms or pursuing entrepreneurship. These are important gaps to fill because understanding the experience of joiners and how start-ups can better appeal to them are the first steps toward acquiring and managing human resources that are critical to the growth of start-ups (Katz et al., 2000). This
thesis attempts to fill these important research gaps. Specifically, I seek to answer the two related research questions: 1) *How can entrepreneurs better appeal to jobseekers?* and 2) *How does working for a start-up differ from working for an established firm or pursuing entrepreneurship?* By doing so, this thesis seeks to expand the founder-focused perspective of entrepreneurship to bring joiners into the discussion and spur research that can help entrepreneurs overcome the challenges associated with recruiting talent.

1.2 Thesis Structure

To examine how to better recruit employees, one must recognize that recruitment involves a two-sided matching process where an employer and an employee must select each other (Honoré & Ganco, Forthcoming). Therefore, studying how to improve recruitment performance requires that the problem be approached from both the employer’s and the employee’s perspectives. However, before embarking on this task, it is necessary to assess the state of current research on these two topics. Accordingly, this thesis adopts the following structure.

Research on joiners and entrepreneurial recruitment is relatively scarce within the entrepreneurship literature. Moreover, the few studies that address them are scattered across different fields, including economics, psychology, strategy, and human resource management. Thus, it is necessary to first provide a comprehensive review of the previous research on these topics. Chapter 2 satisfies this need by providing a review of the previous research on joiners and entrepreneurial recruitment. In this review, I categorize studies into two broad categories: 1) those that take the perspective of employers, and 2) those that take the perspective of employees. The papers that take the perspective of employers include those that study the types of entrepreneurial firms that hire employees, the strategies they use to hire employees, and the
effects of hiring employees on various aspects of venture performance. The papers that take the perspective of employees include those that examine the types of individuals who work for entrepreneurial firms and the effects of working for entrepreneurial firms on various workplace outcomes, such as wages, benefits, and job security as well as subsequent career choices. Chapter 2 identifies and brings together the fragmented research on joiners and entrepreneurial recruitment and suggests several avenues for future research.

Chapter 3 empirically examines how entrepreneurial ventures can better appeal to jobseekers. Start-ups often lack track record and therefore, have limited ways to signal quality to external resource providers such as jobseekers. Therefore, start-ups often use the characteristics of their founders, such as education and work experience from prestigious institutions to signal their quality. While previous research has focused on the level of education and years of work experience, we know relatively little about the implications of obtaining these credentials from prestigious versus non-prestigious institutions. This is surprising given the large number of start-ups that emphasize such prestigious credentials of their founders. Therefore, Chapter 3 focuses specifically on the role of founder prestige. Based primarily on signaling theory (Spence, 1973), I argue that a founder’s education and work experience from prestigious institutions can help a start-up appeal to jobseekers by signaling the quality of the founder and/or the quality of the firm. By using a series of randomized controlled experiments, this chapter finds that having a founder with prestigious education and employment backgrounds increases the attractiveness of a start-up by acting as a signal of the quality of the founder and not the quality of the venture. In addition to suggesting ways for start-ups to appeal to jobseekers, this chapter highlights that entrepreneurial recruitment is an attractive context for future research to study signaling theory.

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2 Some examples include Ribbon and Clever. Information about their founders can be found at https://www.ribbonhealth.com/about-us/ and at https://clever.com/about.
While Chapter 3 takes the employer’s perspective and examines how start-ups can appeal to jobseekers, Chapter 4 takes the employee’s perspective and studies what it is like to work for a start-up and how it differs from pursuing entrepreneurship or working as an employee for an established firm. One important difference between entrepreneurs and wage employees is that entrepreneurs must handle all aspects of managing a business while employees are expected to focus on the few roles they are hired to perform (Lazear, 2005). This difference has led to a large body of literature on the relationship between a balanced skillset and entry into entrepreneurship (Lazear, 2005; Stuetzer et al., 2013, Wagner, 2003; 2006). This chapter extends the literature by examining the number of functional roles performed by individuals in the three different occupational groups: 1) entrepreneurs, 2) joiners (employees of young firms), and 3) employees of incumbent firms. Using data from the National Survey of College Graduates (NSCG), I find that, like entrepreneurs, joiners perform a higher number of functional roles than employees of incumbent firms. Furthermore, I also find that performing multiple functional roles is associated with higher job satisfaction for both entrepreneurs and joiners than for employees of incumbent firms. Finally, I find that the positive relationship between the number of functional roles and earnings is weaker for entrepreneurs and stronger for joiners compared to employees of incumbent firms. This chapter shows that working for an entrepreneurial venture differs significantly from working for established firms and suggests that future research consider this group separately from employees of established firms.

Finally, Chapter 5 reviews the arguments and findings presented in each chapter. Chapter 5 then synthesizes the three chapters and closes with discussions around the contributions of this thesis to the entrepreneurship literature and potential avenues for future research.
1.3 Contributions to Entrepreneurship Research

By focusing on entrepreneurial recruitment and joiners, this thesis contributes to several aspects of the entrepreneurship literature. First, studying joiners and entrepreneurial recruitment advances a deeper understanding of the process by which entrepreneurs create jobs, which is one of the most commonly discussed benefits of entrepreneurship (Decker, Haltiwanger, Jarmin, & Miranda, 2014; Haltiwanger, Jarmin, & Miranda, 2013; Litwin & Phan, 2013). Most of the research on entrepreneurship and job creation focuses on documenting the number of jobs created by entrepreneurial firms and the relative contribution of entrepreneurial firms versus established firms in creating jobs (Decker et al., 2014; Haltiwanger et al., 2013; Malchow-Møller, Schjerning, & Sørensen, 2011). Furthermore, a review of the literature by Parker (2018: Section 14.5) shows that human capital, wealth, and social capital are positively related to job creation. On the other hand, those who enter self-employment from unemployment are less likely to create jobs. Therefore, like obtaining external investment, creating jobs may also be viewed as a significant milestone for entrepreneurs. Unfortunately, we know little about the types of jobs created by entrepreneurial firms, the experience of joiners as they work for entrepreneurial firms, and the process by which entrepreneurial firms create jobs. Therefore, focusing on joiners and entrepreneurial recruitment as an important element of the entrepreneurship process allows us to develop a more complete understanding of the job creation aspects of entrepreneurship.

Second, like founders, joiners also contribute to entrepreneurial performance. Human resources are important for all types of firms. However, they are especially important for entrepreneurial ventures because these firms lack other types of resources such as financial capital. Studies find that not only founders, but employees also influence several aspects of entrepreneurial performance including innovation (Andries & Czarnitzki, 2014), operating
performance (Coad et al., 2017), survival (Yang et al., 2017), and fundraising (Ouimet & Zarutskie, 2014). By expanding our view and highlighting the role of joiners and entrepreneurial recruitment, this thesis brings research attention to the overlooked aspects of entrepreneurial ventures, such as the quality of the employees and the HRM practices and enables researchers to better predict entrepreneurial performance.

Third, studying joiners and entrepreneurial recruitment can inform the literature on entrepreneurial resource mobilization. To exploit entrepreneurial opportunities, entrepreneurs must mobilize various resources, such as financial and social capital. Therefore, scholars have been interested in how entrepreneurs mobilize their resources to exploit opportunities, focusing mainly on financial resources (Clough, Fang, Vissa, & Wu, 2019). Scholars argue that human resources are a critical component of a firm’s resource bundle that can provide firms with a sustained competitive advantage (Barney & Wright, 1998; Wright, Dunford, & Snell, 2001). Human resources (employees) differ from other types of resources in that they provide firms with not only one but a bundle of resources including manpower, skills, knowledge, and social capital. Furthermore, employees are unique in that they have their own interests and preferences that may or may not be aligned with the firm. Therefore, employees can modify their level of effort or even leave the firm. This makes human resources a unique type of resource that can become a burden if poorly selected and/or managed. Therefore, the unique characteristics of human resources and the challenges that entrepreneurs face in recruiting and managing them make the research on joiners and entrepreneurs particularly relevant to the research on entrepreneurial resource mobilization.
1.4 Contribution to Practice

The empirical results reported in this thesis make several contributions to practice. Chapter 3 examines the implications of having a founder with a prestigious background and documents a causal relationship between founder prestige and the attractiveness of a start-up to jobseekers. This chapter offers several implications for practitioners. First, it shows that there are benefits of obtaining prestigious credentials, even for entrepreneurs. Due to the high costs associated with obtaining prestigious educational and employment credentials, there is an ongoing debate about the usefulness of such signals for those who plan to pursue entrepreneurship. Some argue that prestigious credentials, such as an Ivy League education, are not useful for entrepreneurs because entrepreneurs do not need to use those credentials to appeal to employers. On this issue, my results suggest that such credentials help entrepreneurs by allowing them to appeal to outside parties, such as jobseekers, enabling them to access scarce talent. Second, I show that the usefulness of prestigious credentials disappears when jobseekers have other information from which they can infer the ability of founders. This suggests that those who lack such credentials can overcome the disadvantage by working hard to obtain other forms of personal achievement that can signal their ability.

In Chapter 4, I find that joiners perform more functional roles than employees of incumbent firms and that they obtain higher earnings and job satisfaction from doing so. For the individuals who seek to join entrepreneurial firms as a joiner, the results suggest that obtaining a balanced skillset instead of specializing in one area would be a good way to prepare for a career in entrepreneurial firms. Similarly, for entrepreneurs, the results suggest that there are benefits associated with hiring employees with a balanced skillset who can perform multiple roles.
1.5 Conclusion

As start-ups grow, the work associated with managing them quickly outgrows the capacity of the founder(s). Hence finding and hiring employees are important parts of the entrepreneurial process, making employee recruitment a crucial element of pursuing entrepreneurship. Recognizing this, the present thesis examines two related questions: 1) How can entrepreneurs better appeal to jobseekers? and 2) How does working for a start-up differ from working for an established firm or pursuing entrepreneurship? By exploring these questions, this thesis contributes to the growing literature on entrepreneurial recruitment and joiners.

Much of the prior research on entrepreneurial recruitment examined the practices start-ups use to recruit employees and how the practices differ from the ones used by established firms. Studies in this stream have found that start-ups tend to hire informally using their networks. However, by focusing on practices, previous studies have neglected how the heterogeneity associated with the attributes of start-ups and founders affect the effectiveness of their recruitment efforts. Specifically, it remains unknown how start-ups use various signals to appeal to jobseekers who may not be familiar with them. Chapter 3 of this thesis contributes to this aspect by examining how a founder’s educational and employment backgrounds can allow start-ups to appeal to jobseekers. This is an important extension of the literature because as start-ups grow, they must recruit employees outside of their networks, and appealing to these jobseekers is necessary for the start-ups to hire them. Furthermore, this chapter also contributes to the research on entrepreneurial human capital by highlighting the importance of the institutions associated with the traditional measure of human capital – education and work experience.
Regarding joiners, extant research has examined the demographic and social factors that predict entry into entrepreneurial firms and the outcomes associated with joining a start-up as a wage employee. Despite the recent growth of the scholarly interest in joiners, we know little about what happens at work, such as the type of work joiners perform. Chapter 4 extends our knowledge in this area by examining the number of functional roles joiners perform at work and how performing multiple roles relates to earnings and job satisfaction. Studying the work performed by joiners is important because it can inform the research on the types of individuals who become joiners and how working for a start-up can impact one’s subsequent career. Moreover, this chapter contributes to the growing perspective that joiners are a distinct group of individuals who should be studied separately from entrepreneurs and employees of established firms (Roach & Sauermann, 2015; Sauermann, 2018). Finally, Chapter 4 also contributes to the research on the jack-of-all-trades theory. Despite the well-established relationship between a balanced skillset and entrepreneurship, there is an ongoing debate on whether the relationship reflects the jack-of-all-trades productivity or the tendency for entrepreneurs to switch between jobs due to their preference for variety. By testing the different predictions that the two theories make about the number of roles one performs at work and associated earnings, this paper helps illuminate the theoretical debate between the jack-of-all-trades theory and the taste for variety theory.

I believe that entrepreneurial recruitment and the related topic of entrepreneurial joiners present researchers with many opportunities to conduct interesting and relevant research (Wiklund, Wright, & Zahra, 2019). This thesis is an attempt to promote more research in these domains. Although it covers only a small fraction of the potential research opportunities in these
areas, I hope this thesis highlights the need and the potential for additional research on entrepreneurial recruitment and joiners, and spurs interest from other scholars on these topics.
1.6 References


CHAPTER 2: WHO ARE ENTREPRENEURIAL JOINERS AND HOW DO WE RECRUIT THEM? A REVIEW OF PAST RESEARCH ON ENTREPRENEURIAL RECRUITMENT AND JOINERS

2.1 Introduction

“You can dream, create, design, and build the most wonderful place in the world … but it requires people to make the dream a reality.” - Walt Disney

As the opening quote suggests, people play an integral role within organizations. Similarly, Katz et al. (2000) argue that “At a time of unparalleled technological development, it is the human resources that paradoxically spell success or failure for all firms, and especially entrepreneurial ones” (p.7). For start-ups, the ability to find and recruit talent is critical for success (Coad, Nielsen, & Timmermans, 2017; Dahl & Klepper, 2015; Leung, 2003). No entrepreneur, regardless of how talented, can manage and grow a business alone. Furthermore, entrepreneurial firms lack resources, such as financial capital and reputation. Therefore, for entrepreneurial firms, the ability to attract and recruit talent is of tremendous importance.

However, recruitment is not an easy task for entrepreneurs. Entrepreneurial firms often have limited financial resources, making it difficult to match the level of compensation offered by established firms. Also, they have a high failure rate which makes a job at these firms less secure. Moreover, entrepreneurial ventures are usually not well-known to jobseekers, making it even more difficult to attract potential jobseekers (Williamson, Cable, & Aldrich, 2002). Thus, ironically, although entrepreneurial firms depend heavily on their ability to recruit talent,
recruiting employees is a particularly challenging task for many of them (Sørensen, 2004; Williamson, 2000; Zhao, 2013).

Despite the importance and the apparent difficulties among entrepreneurial firms in recruiting employees, scholarly research in entrepreneurship has largely overlooked this important topic (Cardon & Stevens, 2004; Greer, Carr, & Hipp, 2016; Williamson, 2000). Reflecting this gap, several scholars have been calling for more research on human resource management, especially on recruitment in the context of entrepreneurial firms (Heneman, Tansky, & Camp, 2000; Shepherd, Wennberg, Suddaby, & Wiklund, 2019). However, despite a growing interest, most of the previous research on recruitment has focused on large and established firms (Barber, Wesson, Roberson, & Taylor, 1999; Williamson, 2000). Regrettably, to this day, research on entrepreneurial human resource management remains relatively underdeveloped.

Similar to entrepreneurial recruitment, the individuals who join entrepreneurial firms as wage employees, also known as ‘joiners,’ have not received much attention from entrepreneurship scholars. Prior entrepreneurship research has deepened our understanding of the entry, the process, and the outcomes associated with entrepreneurship. These studies have contributed greatly to understanding the factors that lead to entrepreneurial entry and firm creation, the steps associated with firm creation and the associated decision-making processes, and the exit strategies and outcomes of entrepreneurship on individuals. However, most of this research has taken the perspective of the founder and paid little attention to the employees who join entrepreneurial firms as wage employees (Nyström, 2019; Roach & Sauermann, 2015). Therefore, we lack an understanding about the decision to join ventures as an employee and the implications associated with such decisions.
Expanding our attention to the joiners and how entrepreneurial firms can recruit them can inform several areas of entrepreneurship research. First, studying the employees of entrepreneurial firms can inform the research on how entrepreneurial firms utilize their resources to obtain competitive advantage (Barney, 1991). Several scholars have highlighted the importance of human resources as a valuable resource that can lead to competitive advantage (Barney, Wright, & Ketchen, 2001; Wright, Dunford, & Snell, 2001). However, much of the entrepreneurship research focuses on the human capital of the founders. While there is no doubt that founders play an important role, the employees are also an important element of a venture’s human resources. Therefore, studying joiners and how entrepreneurs can better recruit them can enhance our understanding of how entrepreneurial firms acquire resources and build competitive advantage.

Second, a large body of research has examined the determinants of entrepreneurial entry (see Chapter 5 of Parker, 2018 for a review). The research on entrepreneurial entry has studied how various factors, including demographic characteristics, previous experience, individuals’ preferences for different job attributes, and social influence, affect one’s likelihood of becoming an entrepreneur. This body of research often takes a simplistic view and treats the choice as a dichotomy between entrepreneurship and wage employment. However, working for an entrepreneurial firm may have many similarities to pursuing entrepreneurship. Therefore, separating employees of entrepreneurial firms from employees of established firms can help us develop a more sophisticated understanding that better reflects reality.

Third, governments around the world often promote entrepreneurship through policies that are designed to encourage individuals to pursue entrepreneurship (Acs, Åstebro, Audretsch, & Robinson, 2016; Shane, 2009). Furthermore, policymakers also highlight the role of
entrepreneurship in job creation and introduce policies to promote entrepreneurial firms to create jobs. However, promoting job creation by entrepreneurs may have a limited effect if we do not understand how to attract more individuals to join entrepreneurial firms and how entrepreneurial firms can recruit employees. Therefore, studying the employees of entrepreneurial firms separately and understanding the determinants of the choice to join an entrepreneurial firm as an employee can also be of value to the policymakers who seek to promote job creation through entrepreneurship.

The purpose of this chapter is to review previous studies on joiners and entrepreneurial recruitment. By doing so, I provide an overview of the current state of research on the two topics and suggest avenues for future research. The review is organized into the following structure. First, before reviewing scholarly work, I provide anecdotal evidence of the importance of recruitment, acknowledged by practitioners, such as entrepreneurs and joiners. Then, I move on to review the prior literature. Because hiring requires a matching process between an employee and an employer, I review the literature from the perspective of both individuals (employees) and entrepreneurial firms (employers) (Barber et al., 1999; Nyström, 2019). In the second section, I review the literature that takes on the perspective of employees who pursue employment at entrepreneurial firms.

Much of the second section overlaps with the recent review of the literature on the mobility of employees into and out of entrepreneurial firms by Nyström (2019). In this review, Nyström focuses on the employee’s perspective and reviews the literature on three topics: 1) the type of individuals who work for entrepreneurial firms, 2) the working conditions associated with working for entrepreneurial firms, and 3) the implications of working for an entrepreneurial firm on subsequent career choices.
In the third section, I review the studies that examine entrepreneurial recruitment from the perspective of entrepreneurial firms, thereby complementing the review of the studies that take the perspective of employees. I do so by reviewing the papers that examine the type of entrepreneurial firms that hire employees, the strategies used by entrepreneurial firms to attract jobseekers, and the implications of hiring an employee on the entrepreneurs and the firms they found. By doing so, I seek to provide a comprehensive understanding of the prior research that can inform entrepreneurial recruitment from both the employees’ and employers’ perspectives.

Finally, I discuss the findings and ways for future research to extend this literature. In addition to providing a fertile ground for empirical studies, joiners and entrepreneurial recruitment offer contexts for future research to apply and test different theories. Accordingly, I discuss several theories that scholars may apply to study joiners and entrepreneurial recruitment.

Often, it is difficult to define what constitutes an entrepreneurial firm, and the operationalization of an entrepreneurial firm differs across studies. In general, studies often use organizational size and age to define entrepreneurial firms (Block, Fisch, & Van Praag, 2018; Sauermann, 2018). Although many young firms are indeed small in size, deviations exist where some young firms grow quickly into large firms, while some firms remain small throughout their life. Therefore, some may argue that entrepreneurial firms should only include young firms. However, because many entrepreneurs start as both young and small (Burton, Dahl, & Sorenson, 2018), studies on small firms should have implications for many entrepreneurs. Accordingly, I include in this review the studies that examine employment and recruitment associated with both young firms and small firms. Furthermore, as many of the studies I review use the term ‘start-up,’ I use the terms entrepreneurial firm and start-up interchangeably.
2.2 Evidence of the importance of recruitment for start-ups – Practitioner’s Perspective

The importance of human resources—the people—in building a successful company is widely recognized in the practitioner community. Regardless of the industry, managers place heavy emphasis on human resources and the ability to recruit talented employees. As evident in the opening quote, Walt Disney emphasized people as one of the most fundamental elements of creating a successful business. Walt Disney is not alone in acknowledging the important role of people in the business environment. Lawrence Bossidy, a former CEO of Honeywell, also shares the same view, which is reflected in his quote, “I am convinced that nothing we do is more important than hiring and developing people. At the end of the day, you bet on people, not on strategies.” Similarly, the importance of people is also felt in the technology sector as well.

Marissa Mayer, a former CEO of Yahoo Inc., highlights the importance of people for firms in the technology sector, noting, “In technology, it’s about the people. Getting the best people, retaining them, nurturing them a creative environment, and helping to find a way to innovate.”

The emphasis on people is also shared by Steve Jobs in a quote: “The secret to my success is that we’ve gone to exceptional lengths to hire the best people in the world.”

The ability to attract and hire employees is particularly important for entrepreneurial firms that seek growth (Coad, Daunfeldt, Johansson, & Wennberg, 2014; Lee, 2014). As entrepreneurial firms grow, the nature of the tasks associated with managing them quickly outgrows the capability of the founder or the founding team. According to Jim Collins, an entrepreneur, consultant, and author focused on business and management, “A company should limit its growth based on its ability to attract enough of the right people.” The importance of people in pursuing growth is also reflected in a quote by Marc Benioff, the founder, chairman, and CEO of Salesforce: “Acquiring the right talent is the most important key to growth. Hiring
was – and still is – the most important thing we do.” In summary, managers and entrepreneurs recognize and often emphasize the importance of people and the ability to recruit them.

However, despite the significant roles that people play in organizations, especially in entrepreneurial firms, entrepreneurs often find it difficult to recruit employees. According to a report from the Business Development Bank of Canada, close to 40 percent of Canadian small and medium-sized businesses are facing difficulties associated with recruiting talent.\(^3\) Given that many small and medium-sized businesses do not actively pursue growth, the difficulties associated with recruiting talent become more pronounced if we focus on growth-oriented ventures (Heneman et al., 2000; Lee, 2014). According to a 2018 survey by Silicon Valley Bank of more than 1,000 start-ups, about 83 percent of the firms stated that they seek to hire a new employee in the upcoming year.\(^4\) However, notwithstanding the intentions to hire new employees, a striking 91 percent of start-ups stated they find it challenging to find talent. This figure consistently remained at over 90 percent in the five years following the 2014 report. Further echoing the challenge facing entrepreneurs, David Skok, a 5-time serial entrepreneur turned venture capital (VC) investor, states, “When I talk with the founders of my portfolio companies, much of the discussion is about hiring, and how hard it is. It’s no longer surprising to hear that as much as 70% of their time is spent on hiring.”

Fortunately, there seems to be a growing interest among jobseekers in the idea of working for a start-up. In 2015, Vladimir Bulović, the Associate Dean for Innovation at the MIT School of Engineering, noted that 15 to 20 percent of MIT graduates now join start-ups compared to about 1.5 percent a decade ago. Similarly, according to a report by Poets & Quants, a well-known forum for business schools, about 9 percent of the Class of 2018 Harvard MBAs

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\(^3\) [https://www.bdc.ca/en/documents/analysis_research/labour-shortage.pdf](https://www.bdc.ca/en/documents/analysis_research/labour-shortage.pdf) [Date Retrieved: 2020.05.12]

\(^4\) [https://www.svb.com/startup-outlook-report/us#hiring](https://www.svb.com/startup-outlook-report/us#hiring) [Date Retrieved: 2020.05.10]
have joined start-ups, which is higher than manufacturing (5 percent) and retail (3 percent) combined.\(^5\) Furthermore, a survey by the MBA Career Services & Employer Alliance in 2016, found that out of different organizational types (such as firms of different sizes and family businesses), start-ups, defined as those in business up to 12 months, saw the largest increase in MBA hiring.\(^6\) Similarly, according to a report from the 2019 Graduate Management Admission Council, start-ups had the largest increase between their 2018 actual MBA hiring rate (45 percent) and 2019 projected hiring rate (62 percent).

The growing number of individuals pursuing employment with entrepreneurial firms has led to many individuals sharing their experiences working at an entrepreneurial firm and how it contrasts with working at a large and established firm. Although the testimonials focus on different elements, there is one recurring theme: that working at a start-up is not for everybody. Stories of start-up employees becoming millionaires through stock options are not difficult to find. Despite the famous stories of early employees of start-ups making huge fortunes, in reality, many employees note that the probability of becoming rich from one’s experience at a start-up is quite low. In fact, practitioners caution that working at an entrepreneurial firm is not a financially attractive option. According to an article from Monster.com, a global employment website, start-ups often pay lower salaries and provide fewer benefits and job security than established firms.\(^7\) Furthermore, others note that working for a start-up involves a heavier workload leading to longer work hours and difficulties in achieving work-life balance.\(^8\)

\(^6\) https://www.mbacsea.org/Files/Fall%202019%20Recruiting%20Trends%20Survey%20Results%20Final.pdf [Date Retrieved: 2020.05.11]
\(^7\) https://www.monster.com/career-advice/article/pros-and-cons-of-working-for-a-startup-company [Date Retrieved: 2020.05.11]
\(^8\) https://www.thebalancecareers.com/the-pros-and-cons-of-working-at-a-startup-company-3859588 [Date Retrieved: 2020.05.10]
Despite the evident drawbacks, entrepreneurial firms appear to be an attractive employment option for many individuals. Perhaps this is due to the non-pecuniary benefits associated with working at an entrepreneurial firm. Practitioners note that compared to working at a large established firm, working at an entrepreneurial firm allows them to take on more responsibilities, provides more learning opportunities, offers higher flexibility, and provides opportunities to work with passionate colleagues.\textsuperscript{9} Such attributes associated with entrepreneurial firms may provide different types of payoffs. For example, the greater responsibility and learning opportunities available at entrepreneurial firms may allow employees to quickly acquire skills and knowledge, which they can use to their advantage in making subsequent career transitions. Moreover, the opportunity to be involved in active decision making, the greater flexibility, and passionate colleagues may make the work itself more enjoyable, leading to procedural utility regardless of earnings (Benz & Frey, 2008b).

In summary, there seem to be several drawbacks associated with working for an entrepreneurial firm as opposed to working for a large established firm. Such drawbacks include low pay, lack of job security, longer work hours, and heavier workloads. On the other hand, entrepreneurial firms seem to compensate for the shortcomings with non-pecuniary attributes, such as learning opportunities, higher levels of responsibility, and passionate colleagues. Together, anecdotal evidence suggests that there are significant differences between working at an entrepreneurial firm and working at a large established firm. Therefore, although some may be happy to pursue a career with an entrepreneurial firm, it may not be suitable for others. This highlights the importance of examining the matching process between employers and employees.

\textsuperscript{9} https://online.hbs.edu/blog/post/benefits-of-joining-a-startup [Date Retrieved: 2020.05.11]
2.3 Organizing Framework for a Review of Past Research

A quick review of the anecdotal evidence from entrepreneurs suggests that entrepreneurial firms find it challenging to recruit employees despite the critical role of people in determining success. Fortunately, start-ups are becoming increasingly popular among jobseekers (Roach & Sauermann, 2015). Reflecting this trend, there seems to be a growing research interest among academics in recruitment and the group of individuals who join entrepreneurial firms as wage employees.

Before I go on, it is important to note that not all entrepreneurial firms seek to hire employees (Coad et al., 2017; Millán, Congregado, & Román, 2014). Similarly, some individuals may prefer to work for an established firm than to work for an entrepreneurial firm where employees are expected to work longer hours at lower pay (Barber et al., 1999). Therefore, for hiring to occur, there must be a match between an employer and a jobseeker, where both parties choose each other and enter into an employment contract. Accordingly, both employers and employees play important roles in the hiring process. Therefore, in reviewing the past research that may inform how start-ups can better recruit employees, I organize the articles into two broad categories: 1) studies that focus on joiners, and 2) studies that focus on entrepreneurial firms.

To find relevant papers, I utilized the Web of Science Core Collection database to conduct keyword searches for articles. Web of Science is a database that provides comprehensive citation data for numerous academic disciplines. Its Core Collection focuses on higher-quality publications and contains over 21,000 peer-reviewed, high-quality journal articles in science, social science, and arts & humanities disciplines. The collection offers various search features

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such as cited reference searching and the Keyword Plus feature that analyzes the titles of cited references to identify words that appear frequently.\textsuperscript{11} Known for its high quality and comprehensiveness, the Web of Science database has been used by numerous scholars to identify papers for literature reviews (Bergh, Sharp, Aguinis, & Li, 2017; Van der Sluis, Van Praag, & Vijverberg, 2008).

In searching for articles, I excluded conference proceedings and only included published journal articles, focusing mainly on empirical studies. The search terms used were made up of two parts. The first part included 6 terms: “entrepreneur*”, “start-up”, “startup”, “young-firm*”, “new-firm*”, and “small-firm*”. The second part of the search term was combined with the first term using “AND” and included the following terms: “work*-for”, “work*-at”, “join* NOT joint*”, “employee*”, “recruit*”, and “hir*”. A complete list of the search terms used to identify relevant papers is provided in Appendix 1. The asterisk (*) was used for the right-hand truncation of certain words. For example, the results of a search using the term “entrepreneur*” would include articles on entrepreneur, entrepreneurs, entrepreneurial, and entrepreneurship.

Out of thousands of papers that meet the above keyword search criteria, I identified the papers that are relevant to the topic. For example, I excluded papers that focused on succession planning of family firms, the recruiting process for founding teams, employee spin-offs or intrapreneurship, and papers that simply use the number of employees to measure firm size or performance. The exclusions were made to focus on the studies relevant to the main topics: the individuals who pursue wage employment at entrepreneurial firms and how entrepreneurial firms recruit them.

\textsuperscript{11} https://clarivate.libguides.com/webofscienceplatform/coverage [Date Retrieved: 2020.05.13]
In addition, as I reviewed the articles found via the Web of Science database, I also included any papers that were cited in the papers that I deemed relevant to the topic. The preliminary list included 216 articles. From this list, I reviewed each paper’s abstract and shortened the list to a total of 128 papers that were relevant to the topic. I then reviewed each paper in the list to conduct the literature review, which is presented below. In presenting the findings, I do not discuss every paper on the list. Instead, I focus on the key topics and discuss the findings that are particularly relevant to each topic.

2.4 The Individual’s Perspective

To successfully recruit employees, we must first understand the type of individuals who pursue employment with entrepreneurial firms, also known as ‘joiners’ (Roach & Sauermann, 2015) and the implications of working for entrepreneurial firms from the perspective of individuals. Therefore, in this section, I review the literature that takes on the perspective of individuals who join entrepreneurial firms as wage employees. This section is divided into two sub-sections: 1) the implications of working for entrepreneurial firms and 2) the characteristics of those who work for entrepreneurial firms.

2.4.1 What are the Implications of Working for Entrepreneurial Firms? – Current Job

In my review of the testimonials from those with experience working for an entrepreneurial firm, one of the most discussed aspects of working for a start-up was the level of salary. Theoretically, there are arguments for both wage premium and wage penalty associated with working for an entrepreneurial firm. Because entrepreneurial firms are more likely to fail compared to established firms, a job at an entrepreneurial firm is less secure than a job at an established firm (Nyström, 2019; Zhao, 2013). Furthermore, entrepreneurial firms tend to provide fewer fringe benefits compared to established firms. The theory of compensating differentials (Smith, 1979)
argues that when making career decisions, individuals consider multiple job attributes and often trade one attribute for another. Examples of compensating differentials include a trade-off between salary and job security (Campbell, 2013), salary and non-pecuniary benefits such as autonomy (Benz & Frey, 2008a), and salary and social status (Parker & van Praag, 2010). Therefore, employees who work for entrepreneurial firms may demand higher wages in the form of compensating differentials to make up for the lack of job security and other fringe benefits.

In contrast, it is also possible for entrepreneurial firms to pay lower wages. When entrepreneurial firms compete in the product market, they cannot rely on their reputation or brand to charge a premium for their service (Bresciani & Eppler, 2010). Therefore, entrepreneurial firms are under pressure to provide their products at a lower price. Furthermore, entrepreneurial firms often cannot achieve economies of scale and therefore, are at a cost disadvantage compared to large firms (Wagner, 1997). As a result, entrepreneurial firms may be unable to pay their employees high wages because they are under greater pressure to reduce wage expenses (Bixy, Kohaut, & Schnabel, 2007). Furthermore, entrepreneurial firms often face tighter financial constraints and may simply lack the resources to pay high wages.

Consistent with the anecdotal evidence highlighted in Section 2.1, most of the research also finds that, in general, entrepreneurial firms (which I view as including both young firms and small firms) pay lower wages compared to large and established firms (Brown & Medoff, 1989; Brown & Medoff, 2003; Wagner, 1997). In terms of firm size, numerous studies find that small firms pay less than large firms (see Oi and Idson, 1999 for a review). Examining the employer size-wage relationship using the US data, Brown and Medoff (1989) find that even with individual fixed effects, an increase in the firm size of two standard deviations around the mean leads to about an 8 to 12 percent increase in wages. They consider six potential explanations: 1)
differences in the quality of workers, 2) differences in working conditions, 3) higher wages to prevent unionization, 4) ability to pay higher wages, 5) higher demand for employees relative to supply, and 6) differences in the ability to monitor employees. Out of the explanations, they find that the differences in labor quality among large and small firms can explain about half of the size-wage effect, while the other factors explain little.

Similar to the results found by Brown and Medoff (1989), several studies highlight the importance of controlling for individual characteristics and the possibility that the positive relationship between employer size and wages is driven by the sorting of high-quality employees into large firms. Bayard and Troske (1999), using employer-employee matched data from the US, find that the wage premiums associated with the increase in the employer size of two standard deviations around the mean are about 10 to 14 percent across different industries, including manufacturing, retail, and services. They also find that the greater productivity of workers in large firms accounts for over half of the size effect. By controlling for labor-productivity, they show that “a significant portion of the firm-size wage premium is the result of employees working in more productive establishments” (Bayard & Troske, 1999: 102).

Similarly, Chuang and Hsu (2004) account for the possibility that different types of workers sort into firms of different sizes by using Heckman’s two-stage selection model. They find that the differences in worker endowments, such as education and skills, between large and small firms are responsible for a significant portion of the large firm wage premium. Furthermore, using the weighted wage decomposition method, they also find that large firms pay more for a given level of worker endowment than small firms.

Hettler (2007) uses data from the Current Population Survey (CPS) in the US to examine whether the firm-size wage premium is due to 1) different employee endowments or 2)
differences in how the firms value employee endowments. Using the Oaxaca/Blinder wage decomposition technique, he finds, somewhat surprisingly, that small firms pay higher wages based on how they value workers’ endowments, such as education and experience. However, he also finds that this effect is dominated in part by the better endowments of workers in large firms and mostly by residual differences unexplained by the two potential explanations. Based on the results, Hettler concludes that factors unobserved in his model, such as “the capital/labor ratio, productivity, managerial skill, market power, or the strength of the internal labor market” comprise the largest portion of the wage differential between employees of large firms and small firms (Hettler, 2007: 484).

Other studies also find that controlling for worker characteristics and productivity reduces but does not fully eliminate the firm-size wage premium. Focusing on new hires, Dahl and Klepper (2015) use data from the Integrated Database for Labor Market Research (IDA) and the Entrepreneurship Database from Denmark to study the firm-size wage premium. They find that among new firms, the large and fast-growing firms with better survival prospects pay higher wages. The authors also find that while controlling for employee characteristics reduces the large firm premium to some degree, a significant portion of the large firm premium remains.

In addition to the research that examines the relationship between firm size and wages, others note that firm age is also related to wages (see Brown and Medoff, 2003 for a review). Like the studies that focus on size, scholars generally find evidence of the ‘age effect’ where young firms pay lower wages (Brixey et al., 2007; Brown & Medoff, 2003; Nyström & Elvung, 2014). Focusing on the people who switch between jobs, Nyström and Zhetibaeva Elvung (2015) use Swedish data to find that switching into lower wage jobs is more common among those who switch to new firms, compared to those who switch to incumbent firms. They also find that
switching jobs involuntarily has an equally negative effect on wages for those who switch into new and incumbent firms. Furthermore, Fackler et al. (2019) use administrative data from Germany to find that the wage penalties for disadvantaged workers (those who are older, foreign, outside of labor force or unemployed, have unstable employment histories, or are affected by plant closures) are larger in young firms compared to incumbent firms. For example, while older workers (age > 50) faced a 6.99 percent wage discount in incumbent firms, they faced 8.7 percent wage penalty in start-ups. Together with their earlier finding that young firms tend to hire more from the disadvantaged pool of workers, their results seem to suggest that the sorting of disadvantaged workers into young firms is what drives the age effect.

Unlike the relationship between firm size and wages which was robust to controlling for individual-level characteristics, scholars find that the relationship between firm age and wages is often significantly reduced or eliminated when individual-level characteristics are controlled for. For example, Brown and Medoff (2003) use the US data from the Survey of Consumers to find that while older firms tend to pay higher wages, this effect disappears or even becomes negative when they control for worker characteristics such as experience, tenure, education, type of occupation, and demographic characteristics. Similarly, Ouimet and Zarutskie (2014) combine the US Census Bureau’s Longitudinal Employer-Household Dynamics (LEHD) data and the Longitudinal Business Database (LBD) to find that while young firms, in general, pay lower wages, young employees in young firms earn higher wages than young employees who work in older firms.

So far, studies generally agree that both small firms and young firms pay lower wages on average. However, given that entrepreneurial firms are often both young and small, several scholars have gone on to examine the relative strength of the size and age effects on wages.
Using the Danish IDA data, Burton et al. (2018) examine whether start-ups pay their employees better or worse than established firms. By examining both firm size and firm age separately, they find that without controlling for worker characteristics, wages are lower in small firms while firm age has no effect. Going further, they control for employee characteristics by matching employees who work for young/small firms to those who work for large established firms using coarsened exact matching. From this exercise, they find that small firms pay less (wages paid by the smallest firms were lower than the wages paid by the largest firms by 10 to 15 percent) while young firms pay more (the difference was less than 5 percent). Furthermore, they also find that the size effect dominates the age effect as firms that are both young and small pay less than the average incumbent firms.

Similarly, Heyman (2007) also examines how firm size and age affect wages using the Swedish Level of Living Surveys (LNU) and matching the individuals with the firms in the Swedish Establishment Survey (APU). He estimates wages with both firm size and age along with other variables, such as individual characteristics and firm profitability. He finds that controlling for firm age does not reduce the firm size effect. Finally, using the SESTAT dataset from the US, Sauermann (2018) also finds that large firms pay higher wages and that this dominates the age effect, which turns out to be negative in his sample.

In summary, studies generally find evidence of both size and age effects, where small firms and young firms both pay lower wages than large established firms. Researchers have identified several potential explanations for the size and age effects including selection based on individual characteristics and employers’ ability to pay. Of the potential explanations, selection based on individual differences seems to play a large role; several studies find that controlling for individual-level human capital characteristics either reduce or eliminate the wage premium.
associated with firm size and age. This finding suggests that the selection of less-productive employees into young and small firms plays a large role in driving down the wages paid by both young firms and small firms. Furthermore, several studies find that the size effect dominates the age effect. Given that firm size is often correlated with firm resources (Audia & Greve, 2006), the dominating role of employer size may suggest that it is the lack of resources, which results in low ability to pay, that leads to lower wages among employees in entrepreneurial firms.

Because some studies find that wage discounts associated with small firms are robust to controlling for individual characteristics, more research is needed to pinpoint the factors that lead to wage penalties in small/young firms. For example, most of the studies use education and work experience to control for individual-level human capital. While these characteristics are commonly used proxies to measure one’s human capital, they are not perfect. Therefore, controlling for these variables may not be enough to fully capture the effects associated with selection based on productivity. Another possibility is that jobseekers in small/young firms obtain non-pecuniary utility that makes them accept lower wages in the form of compensating differentials. Examining this explanation would require a study to control for the non-pecuniary job attributes such as autonomy and intellectual challenge.

In addition to wages, entrepreneurial firms and established firms also differ in terms of the other payments and benefits they offer to their employees. Wagner (1997), finds that in Germany, like wages, the use of non-wage compensations, such as Christmas allowances, profit-sharing bonuses, and firm-specific pension plans, was significantly lower in small firms compared to large firms. Likewise, Litwin and Phan (2013), based on data from the Kauffman Firm Survey, find that start-ups are less likely to provide their employees with benefits, such as healthcare coverage and retirement benefit plans. In addition, they find that employer size is the
dominant driver of this difference; larger start-ups offer similar benefits to established firms that are similar in size. Similar to wages, the dominance of the size effect on benefits suggests that the use of non-wage benefits depends on the availability of resources.

Another important job attribute is job security. Due to the liability of smallness (Aldrich & Auster, 1986) and the liability of newness (Stinchcombe, 1965), entrepreneurial firms face a higher failure rate than established firms. Accordingly, it is commonly thought that jobs at entrepreneurial firms are less secure. The empirical evidence on this issue supports this popular belief. Wagner (1997), based on his review of evidence in Germany, concludes that employment in small firms involves higher quit and dismissal rates, and therefore, is less secure compared to employment in large firms. In addition, de Matos and Parent (2016), based on employer-employee matched data from Portugal, find that many start-ups utilize fixed-term contracts which provide less security than open-ended contracts. Similarly, Schnabel et al. (2011) also find that those who join new firms have significantly shorter employment spells. They also find that these employees face a greater risk of becoming unemployed following employment at young firms.

The lower security associated with jobs at entrepreneurial firms also influences the type of compensation used by these firms. Consistent with the high failure rate among entrepreneurial firms, Brown and Medoff (2003) find that established firms tend to make greater use of back-loaded forms of compensation which involves a steeper slope for the wage-tenure relationship for the employees of established firms.

Focusing on the financial conditions instead of survivability, Machelacci and Quadrini (2005) offer a model where they view employment contracts as a way for financially constrained firms to ‘borrow’ from their employees. They argue that financially constrained firms offer
employees long-term wage contracts with an increasing wage profile. In other words, these firms pay their employees little today in exchange for higher pay in the future, thus effectively borrowing from their employees. Extending the model further, Garmaise (2008) argues that employees offer more efficient financing than capital suppliers because employees can learn about the underlying quality of the start-up during the course of their employment while capital providers must wait until the firms’ performance is realized/unrealized. Furthermore, he argues that under this model, the constrained firms have incentives to retain employees because an employee leaving such a firm would send a negative signal that the firm is of low quality, making it difficult to raise funds. Based on this idea, he argues that the inability to replace low-quality workers of the constrained firms would eventually lead to a decrease in the relative labor productivity compared to the firms that are not financially constrained. Using the Survey of Small Business Finance (SSBF) and the National Organizations Survey (NOS), Garmaise finds that financially constrained firms rely more heavily on labor as opposed to capital, which he takes as evidence for his model. Because entrepreneurial firms are often capital constrained, the implications of this model may be applied to study the hiring patterns of entrepreneurial firms and the type of employment contracts that entrepreneurial firms offer their employees. However, whether the wage discount among entrepreneurial firms reflects the inability to pay or borrowing behavior is an empirical question that remains to be answered.

Despite the common view that entrepreneurial firms commonly use stock options to compensate employees, there seems to be little research on the use of stock options by entrepreneurial firms. According to Hand (2008), most of the research on stock options has been focused on its use by large, public firms to compensate executives. Focusing on start-ups that receive VC funding, he finds that about 27 percent of US VC-backed firms do not grant stock
options to all employees, and within this group, about 40 percent of employees do not receive stock options. Moreover, Bengtsson and Hand (2013) show that employee compensation depends on whether VCs versus founders dominates the start-up. They find that firms that are dominated by founders (those that have founder CEO(s) and a minority VC ownership) are less likely to use cash and equity incentives. They also find that founder dominated firms are less likely to have formal compensation policies. In addition, they find that founders receive lower cash salary and cash incentives but receive stronger equity incentives compared to the employees they hire. Similarly, using hand-collected data on over 170 young high-tech ventures in Silicon Valley, Hellmann and Puri (2002) find that obtaining VC funding is related to several professionalization measures, such as the use of stock options.

Regarding the use of stock options by entrepreneurial firms, Basu (2010) offers an interesting view. He argues that the act of paying employees low salaries in exchange for a share of future profits (in a form of stock options) can resemble a Ponzi scheme. By paying off the early hires with the savings made from subsequent hires, a founder of an otherwise unprofitable venture can grow the company and make personal financial gains. Furthermore, Basu illustrates that the uncertainty around the timing of the collapse can make participating in the Ponzi scheme a rational choice for employees despite its eventual crash. Also, he points out that the entrepreneur can divert the crash by improving their productivity to ‘catch up’ with the scheme.

In summary, despite the large body of literature on stock options, there seems to be a lack of empirical research on the use of employee stock options by entrepreneurial firms to recruit/compensate their employees. One finding seems to suggest that stock options are more commonly used by VC-backed start-ups (Bengtsson & Hand, 2013; Hellmann & Puri, 2002). Given that the vast majority of entrepreneurial firms do not obtain VC funding, it may be the
case that only a small proportion of entrepreneurial firms actively use stock options to compensate their employees. Therefore, studying when and how entrepreneurial firms use stock options to attract, motivate, and retain employees may be an interesting avenue for future research.

Other than compensation and job security, working for start-ups and established firms also differ in terms of work environments and non-pecuniary attributes. For example, Wagner (1997) argues that working in small firms involves less rigidity, greater flexibility, and room for independent decision making. Similarly, based on the Danish IDA data, Sørensen (2007) argues that working conditions for small firms are less bureaucratic and that the lack of bureaucracy at small firms makes employees of small firms more likely to become entrepreneurs. Furthermore, studies find that employees of small firms engage in a higher number of work activities than employees of large firms (Bublitz and Noseleit, 2014; Elfenbein et al., 2010). Moreover, working for start-ups may provide employees more contact with the founder(s), who may serve as a role-model (Sørensen & Phillips, 2011) or whose passion may be transferred to employees (Cardon, 2008). In addition, Rowden (2002) highlights the importance of learning opportunities for the employees of small firms and finds, using survey data, that employees of small firms exhibit high job satisfaction. Likewise, Benz & Frey (2008a) also show that employees of small firms show higher job satisfaction than employees of large firms. However, they find that entrepreneurs exhibit even higher job satisfaction than employees of small firms.

Despite the anecdotal evidence on the non-pecuniary rewards of working for entrepreneurial firms highlighted in Section 2.1, research on this topic remains scarce. Therefore, research that examines the non-pecuniary attributes and the resulting differences in job satisfaction between employees of entrepreneurial firms and established firms seems warranted.
Furthermore, determining the relative importance of pecuniary and non-pecuniary job attributes, and how they affect the occupational choice of those who choose to join entrepreneurial firms over large established firms may also be an interesting way to extend this line of research.

2.4.2 What are the Implications of Working for Entrepreneurial Firms? – Subsequent Careers

In addition to the differences in the level of compensation and the working environment, joiners and employees of established firms also show significant differences in future career trajectories. The most well-known literature on this line of research is the literature on the ‘small firm effect’ which finds that employees who work for small firms are more likely to become entrepreneurs in the future (Elfenbein et al., 2010; Hyytinen & Maliranta, 2008; Parker, 2009; Sørensen, 2007).

Several explanations are possible for the small firm effect. For example, Parker (2009) highlights three potential explanations for the small firm effect: 1) small firms being more effective at increasing their employees’ propensity to enter entrepreneurship, 2) individuals self-selecting into both small firms and entrepreneurship based on risk preferences, and 3) individuals who work for small firms being disadvantaged in the labor market and trying entrepreneurship as a last resort. Using data from the British Household Panel Survey (BHPS), Parker finds strong evidence for the self-selection mechanism.

On the other hand, Sørensen (2007), uses Danish data to examine the small firm effect. He acknowledges that the small firm effect can be comprised of both contextual effects and dispositional effects and rules out the dispositional effects by using individual-fixed effects. Instead, he argues that the level of bureaucracy at large firms decreases the propensity of its employees to enter entrepreneurship. Also, on the small firm effect, Elfenbein et al. (2010) consider four potential explanations: 1) preference sorting, 2) ability sorting, 3) opportunity cost,
and 4) development of entrepreneurial human capital. Using SESTAT data from the US, they find evidence of preference sorting, ability sorting, and human capital explanations. However, they conclude that opportunity cost plays, at best, a modest role in explaining the small firm effect. Also supporting the human capital explanation, Sørensen and Phillips (2011) argue that employees of small firms make more competent entrepreneurs because working for small firms exposes them to a variety of different tasks. Consistent with this argument, they find that prior employer size is negatively associated with entrepreneurial income while positively associated with entrepreneurial exit.

Departing from the previous explanations, Kacperczyk and Marx (2016) argue that the small firm effect may be driven by greater internal job opportunities available at large firms that help them retain entrepreneurial talent. They find evidence of this argument using a hand-collected dataset on the automated speech recognition industry. Consistent with their argument, they find that when examining their full sample, employees who work for small firms are more likely to become entrepreneurs. However, when the authors rule out the internal job opportunities mechanism by focusing solely on the ‘defunct’ firms, they find that the relationship between firm size and the likelihood of entrepreneurship becomes positive.

Interestingly, the small firm effect seems only applicable to employees and not founders; Dobrev and Barnett (2005) find that organizational characteristics affect the likelihood of entering entrepreneurship differently for joiners and founders. They argue that employees of young and small firms are more likely to interact with people outside of their organization, perform multifunctional roles, and have fewer opportunities to pursue entrepreneurship internally compared to employees of large established firms. Therefore, they argue that employees of young and small firms are more likely than employees of large and established firms to transition
into entrepreneurship. On the other hand, as the organization grows, its founders are more likely to interact with external parties and come across more opportunities to pursue entrepreneurship. Moreover, they also argue that as firms grow and mature, the internal decision-making process becomes disciplined which makes it difficult for founders to stay ‘entrepreneurial’ and exercise their charisma. Therefore, the authors argue that founders become more likely to leave their ventures to build a new venture as their existing venture becomes older and larger. Using career history data based on a survey of MBA alumni of a US business school, Dobrev and Barnett find that the negative relationship between organizational size (and age) and the likelihood of becoming an entrepreneur among employees becomes positive for founders.

Working for an entrepreneurial firm may expose employees to social influence from other employees and/or the founder of the firm. Scholars find significant effects of social influence in determining entry into entrepreneurship. Such social influence includes those from parents (Lindquist, Sol, & Van Praag, 2015), school peers (Qin & Estrin, 2015), and workplace peers (Nanda & Sørensen, 2010). Because studies find that employees of entrepreneurial firms tend to have similar preferences as entrepreneurs, working for an entrepreneurial firm may expose individuals to social influences that increase the likelihood of becoming an entrepreneur. Consistent with this argument, Rocha and van Praag (2020) use Danish IDA data to find empirical evidence for role modeling by female founders on their female employees. They find that female employees are more likely to become entrepreneurs if they work for a female founder and that this effect is greater if employees and founders share similar attributes. For male employees, they find a greater influence of male co-workers with entrepreneurship experience and a father with entrepreneurship experience.
Furthermore, scholars argue that entrepreneurial passion is contagious to employees (Cardon, 2008; Hubner, Baum, & Frese, 2019). For example, in a model of contagious entrepreneurial passion, Cardon (2008) argues that displays of passion by entrepreneurs will transfer to the employees through transformational leadership that is more likely to be demonstrated by passionate entrepreneurs. Empirical results support the argument that entrepreneurial passion can be transferred to start-up employees. Using a survey of 124 start-up employees in Germany, Breugst et al. (2012) find that employees’ perception of entrepreneurs’ passion for inventing and developing enhances their commitment to the ventures. Further documenting the transferability of entrepreneurial passion to employees, Hubner et al. (2019) conduct an experiment using Amazon Mturk to find that employees’ perceptions of entrepreneurs’ passion are positively associated with workplace outcomes, including commitment, effort, and creativity. Because passion is positively associated with entrepreneurial intention (De Clercq, Honig, & Martin, 2013), the contagion effect of entrepreneurial passion from entrepreneurs to employees may represent another mechanism for the small firm effect.

Interestingly, most of the arguments about small firm effects can be applied to hypothesize that those who work for an entrepreneurial firm will be more likely to move to another entrepreneurial firm as a joiner. Therefore, while the small firm effect examines future entry to entrepreneurship, it would be interesting to study whether employees of small/young firms are more likely to transition to other small/young firms. Furthermore, it would also be interesting to study if the small firm effect works in the opposite direction as well, where entrepreneurs are more likely to join small (or young) firms than established firms.

In addition to future entry into entrepreneurship, another interesting topic is the effect of an employment spell at an entrepreneurial firm on subsequent wages. Evidence on this topic is
mixed. Using an employee-firm matched dataset that covers the entire private sector in Sweden, Nyström & Elvung (2014) focus on a sample of young employees who become employed for the first time in their careers. By using propensity score matching to match those who start their careers at a young firm to those who start at an incumbent firm, they address the problem of non-random selection into different types of firms and focus on the implications of joining a young firm. They find that for observably identical individuals, joining a young firm is associated with a 0.6 to 4.3 percent wage penalty, which stays consistent throughout the period from 1998 to 2008.

Similarly, Gerlach and Hübler (1998) use the German Socio-Economic Panel (SOEP) to find that employees who move from small to larger firms often accept lower wages compared to those who stay within large firms. On the other hand, movers from large to small firms retain a portion of their wage premium. The authors consistently find this result for the 8 out of 9 years they study. Also using data from Germany, Brixy et al. (2007) combine the German Employment Statistics and the IAB Establishment Register to create an employer-employee matched dataset to study the wage differentials between newly found firms and incumbent firms. In their sample, they find an 8 percent wage discount for new firms which declines over time as these firms mature.

In contrast to the studies that seem to suggest long-term wage penalties associated with working for start-ups, Campbell (2013) offers more positive findings. Based on data on California’s semiconductor industry, Campbell finds that employees who join start-ups experience an initial earnings dip of approximately 13 percent, which they quickly recover. Furthermore, he also finds that the pattern is reversed after four quarters, with joiners earning more than their matched counterparts who work at established firms. Finally, Campbell also
finds that employees with experience at start-ups earn more when they move to another start-up than when they move to an established firm.

Perhaps the reason for the different findings is due to Campbell’s focus on the high-tech semiconductor industry. Many of the companies in Campbell’s study were backed by VCs, which is rare for other entrepreneurial firms. This argument is also consistent with the earlier finding that employees of successful, VC-backed start-ups tend to be of higher quality. Combined with the findings that entrepreneurial firms usually pay lower wages, the wage premium associated with the few successful entrepreneurial firms may attract individuals who have a preference for skewness. With a preference for skewness, even risk-averse individuals may be willing to join entrepreneurial firms that yield low expected, but highly positively skewed wages (a detailed mathematical explanation of this process is provided in Parker, 2018: 420). Given the lack of a clear explanation for the contrasting findings, future scholars may contribute to this literature by further unpacking the implications of work experience at a start-up on individuals’ future career prospects and wages.

### 2.4.3 Who Works for Entrepreneurial Firms?

The previous sections discussed how working for an entrepreneurial firm differs from working for an established firm in terms of earnings, job security, type of compensations, work environment, and future career prospects. These differences affect the type of individuals who self-select into entrepreneurial firms over established firms. This is important because, to understand how entrepreneurial firms can better recruit employees, we must first understand the types of individuals who pursue employment with entrepreneurial firms.

Compared to large and established firms, entrepreneurial firms often face difficulties in attracting talent. Therefore, entrepreneurial firms often do not have the luxury of selectivity.
picking employees from a large pool of applicants (Backes-Gellner & Werner, 2007).

Accordingly, some suggest that entrepreneurial firms disproportionately hire those who have unfavorable positions in the labor market. For example, based on employer-employee matched data from Sweden, Coad et al. (2014) find that those who work for high growth ventures are poorly educated and likely to have longer unemployment periods before joining. This finding is supported by Coad et al. (2017) using Danish employer-employee matched data. Here, they show once again that those who are hired into new ventures are likely to be poorly educated and come from unemployment.

Data from Germany also support this finding. Using data from the German Employment Statistics, Schnabel et al. (2011) focus on those who took up a new job in the 1995-1996 period. Based on a matching approach between the individuals who joined new firms and the individuals who joined incumbent firms, they find that the individuals who join young firms had more jobs in the past and had a higher average number of unemployment spells. These findings are replicated by Fackler et al. (2019), who combine data from the Integrated Employment Biographies (IEB) and the Establishment History Panel (BHP) databases from Germany to create an employer-employee linked dataset. Using this data, they find that young firms are disproportionally more likely to hire those who are unemployed, have unstable employment histories, come from outside of the labor force, and those who experience involuntary turnover from plant closures.

In addition to education and prior employment experience, studies also find that immigrants are more likely to join young firms over incumbent firms (Coad et al., 2014; Fackler et al., 2019). Immigrants face difficulties in the labor market because their education and professional credentials are unfamiliar to the employers in the host country (Bates, 1999; Fairlie
Moreover, immigrants often face language barriers that further exacerbate their precarious position in the labor market. Therefore, the findings related to immigrants is consistent with the argument that young firms tend to hire those with a weak position in the labor market.

Similar results are found when looking at small versus large firms. Using data from Taiwan, Chuang and Hsu (2004) find that people with higher levels of education and more work experience, as well as those with degrees in Science, Engineering, and Medicine tend to prefer working in large firms. Based on their data, they conclude that less-skilled workers are more likely to join small firms. Hettler’s (2007) results based on the US Current Population Survey also support this finding; he shows that while small firms pay higher wages for a given level of a worker’s endowments, they are more likely to hire lower-quality employees.

Although it appears that young and small firms, in general, hire those who face disadvantages in the labor market, some studies report opposite findings. In studying the relationship between early employment growth and long-term survival among entrepreneurial firms, Gjerløv-Juel and Guenther (2019) use the IDA dataset from Denmark to find that employees in the top 10 percent in terms of salary are more likely than other employees to leave their employer to become entrepreneurs or join young firms. Likewise, based on a survey of students at MIT, Kim (2018) finds evidence of a positive selection in the type of students who join VC-backed start-ups instead of established employers upon graduation. However, one important caveat of this result is that only the high-quality start-ups obtain VC funding, and these firms represent a small minority of start-ups.

To summarize, individuals who join young and small firms tend to be those who face difficulties competing in the labor market. However, those who are at the very top may be
inclined to pursue employment at entrepreneurial ventures in pursuit of a tighter link between productivity and compensation. This is because there is information asymmetry between employees and employers around the productive capabilities of employees. With information asymmetry, the inability of employers to separate the high from low ability employees results in a pooling equilibrium where employers end up offering all employees the same wages that reflect the average productivity of all employees. Under this scenario, the low ability employees gain at the expense of the high ability ones. Therefore, the high ability types prefer to work for employers who can separate them from the low ability types and offer a stronger link between productivity and compensation (a detailed explanation of how information asymmetry influences the occupational choice between entrepreneurship and wage employment is provided in Parker, 2003). Therefore, the high ability types may prefer to work for entrepreneurial firms, where their performance is more likely to be visible to the entrepreneur.

It is also important to highlight that there exists significant heterogeneity among entrepreneurial firms. For example, high-quality start-ups that have achieved significant milestones, such as those that raise VC funding, can overcome many of the disadvantages, such as the lack of financial capital and the high likelihood of failure, while maintaining the advantages, such as greater responsibility and flexible work environment. These high-quality start-ups may attract strong rather than weak candidates. Therefore, a deeper examination of the factors that lead to the sorting of high or low ability individuals into entrepreneurial firms would be necessary to understand how employees with different levels of human capital select into different types of entrepreneurial firms.

In addition to human capital, individuals who join entrepreneurial firms may differ in other aspects such as their social background. For example, from a large-scale survey of science
and engineering PhD students at 39 US research universities, Roach and Sauermann (2015) find that the intention to become an entrepreneur is driven mainly by preferences, such as preferences for autonomy, commercialization and managerial activities, and risk tolerance, which, according to the authors, remain relatively fixed over time. However, the authors find that the intention to join a start-up as an employee is determined jointly by preferences and contextual factors, such as the degree to which their department encourages or discourages their PhD students to pursue a career in start-ups and the availability of opportunities to pursue entrepreneurship. One thing to note is that because intentions do not necessarily translate into occupational choices, future research should examine the role of social influence and its impact on actual transitions into entrepreneurship and wage employment at entrepreneurial firms.

Also highlighting the importance of social influence, Eesley and Wang (2017) examine the effects of having an entrepreneurial mentor through a randomized field experiment using a student sample. By randomly allocating students into groups receiving mentorship from an entrepreneur versus those who receive mentorship from a non-entrepreneur, they find that being mentored by an entrepreneur increases the likelihood of joining an early-stage venture. This result is consistent with the results found by Roach and Sauermann (2015); both studies find joiner intentions to be more susceptible to social influence than founder intentions.

In Section 2.1, I noted that many joiners highlight that working for entrepreneurial firms is associated with low salary and less job security but offers non-pecuniary benefits, such as learning opportunities and higher responsibility. The unique combination of the job attributes that entrepreneurial firms offer their employees may attract individuals who prefer different job attributes from those who pursue employment with more established firms. Consistent with this idea, Barber et al. (1999) use survey data of graduating seniors in two US-based universities to
find that jobseekers often have preferences for either small firms or large firms. They go on to find that more than 60 percent of study participants partition themselves into one segment of the labor market, which suggests that “large and small firms effectively operate as separate labor markets” (Barber et al., 1999: 864). Similarly, Kim (2018) also finds that those who join start-ups show greater preferences for risk and challenging work. Attitude towards risk seems to be particularly important; Parker (2007; 2009) suggests that the higher tolerance of risk among employees of small firms may predispose them to become entrepreneurs in the future.

Preferences for other job attributes are also relevant. Based on a review of the type of jobs created by entrepreneurial firms, Block et al., (2018) note that compared to those who work for established firms, people who work for entrepreneurial firms place lower weight on pecuniary attributes, such as salary and job security, while placing greater weight on non-pecuniary attributes, such as responsibility, innovation, and challenging work. In addition, studies also find that those who work for small firms exhibit broader skill levels (Bublitz & Noseleit, 2014) and perform more diverse work activities (Elfenbein et al., 2010), suggesting that they may have a strong taste for variety (Åstebro & Thompson, 2011).

On a related note, age can be correlated with skills, preferences, and risk attitudes that can influence the choice between entrepreneurial firms and established firms. Ouimet and Zarutskie (2014) use data from the US Census Bureau’s Longitudinal Employer-Household Dynamics (LEHD) program to find that young firms disproportionally hire young employees. Furthermore, they also find that the supply of young workers is positively related to new firm creation in high-tech industries. They attribute this finding to the high technical skills and risk tolerance among young workers. However, Fackler et al. (2019) present contrasting results as they find that individuals over the age of 50 are more likely, while those under the age of 30 are
less likely, to work for young firms compared to the middle-aged group. Unfortunately, we do not know why these findings differ. Perhaps there exists a curvilinear relationship, or perhaps the entrepreneurial firms studied by these authors represent different industries or qualities. Therefore, more empirical research is needed on whether entrepreneurial firms hire young or older workers, or whether this pattern differs for different types of entrepreneurial firms.

In summary, my review of the studies that examine the type of individuals who work for entrepreneurial firms seems to suggest that joiners differ from employees of large established firms in several aspects including labor market competitiveness, social environment, and preferences for job attributes. Studies generally find that workers who face labor market disadvantages are more likely to select into entrepreneurial firms than established firms (Coad et al., 2014; Coad et al., 2017; Fackler et al., 2019; Schnabel et al., 2011). However, other studies find that those who are at the very top of the productivity distribution may also prefer to work for entrepreneurial firms (Gjerløv-Juel & Guenther, 2019; Kim, 2018), thus suggesting a U-shaped relationship between individual productivity and the likelihood of joining an entrepreneurial firm. Furthermore, studies find that joiners, compared to those who work for established firms, have stronger preferences for job attributes that are commonly associated with entrepreneurship including autonomy, intellectual challenge, responsibility, and risk (Block et al., 2018; Kim, 2018; Roach & Sauermann, 2015). Finally, studies also find that joiners may come from environments that are conducive to entrepreneurship, such as an academic program that encourages entrepreneurship or being mentored by an entrepreneur (Eesley & Wang, 2017; Roach & Sauermann, 2015).
2.5 The Firm’s Perspective

Understanding entrepreneurial recruitment from the perspective of employees is useful because it allows entrepreneurial firms to adjust their recruitment strategies to attract potential jobseekers. However, given that the hiring represents a matching process between employers and employees, a similar review of the literature that takes the firm’s perspective is also warranted. In the following section, I review the literature that studies entrepreneurial recruitment from the start-up’s perspective. I organize the review into three sub-sections: 1) studies that examine the type of entrepreneurial firms that hire employees, 2) studies that examine how entrepreneurial firms recruit employees, and 3) studies that examine the implications of hiring employees for entrepreneurial firms.

2.5.1 What Type of Entrepreneurial Firms Hire Employees?

Entrepreneurs are often praised for their contribution to economic growth, in particular, their role in generating jobs (Decker, Haltiwanger, Jarmin, & Miranda, 2014; Haltiwanger, Jarmin, & Miranda, 2013). However, not all entrepreneurs create ventures to hire others. Many entrepreneurs simply remain own-account workers without the intention of growing their business (Coad et al., 2017). If many entrepreneurs do not hire employees, then who are the entrepreneurs that create jobs? Section 14.5 of Parker (2018) provides a detailed review of the empirical research on this question. Unfortunately, there are only a handful of studies that focus on this question. Below, I highlight some notable findings.

Most of the studies examine the relationship between founder-level characteristics and the likelihood of hiring employees. These studies generally find that entrepreneurs with high human capital, measured using education, age, and experience, are more likely to hire others. Using the British Household Panel Survey, Cowling et al. (2004) find that entrepreneur’s formal
education, experience, and age are all positively related to the likelihood of hiring an employee, which is also supported by Henley (2005) using the same dataset. Furthermore, van Praag and Cramer (2001) use Dutch data to find positive effects of IQ and education, especially for vocational training. Moreover, Millán et al. (2015), using panel data from the European Community Household Panel, find that formal education and former work experience are positively related to the probability that own-account workers create new jobs. Finally, using Danish data, Coad et al. (2017) also find that the founder’s age and higher education are positively related to the likelihood of hiring an employee. They also find that entrepreneurs who were unemployed or who were outside of the labor force prior to their entry into entrepreneurship are less likely to hire employees.

One possible explanation for the positive relationship between entrepreneur’s human capital and the likelihood of hiring an employee is that highly able entrepreneurs have a wider span of control and are better able to coordinate the factors of production, such as human resources. Therefore, to utilize their ability and reap more benefits, highly able entrepreneurs may prefer to run larger firms (Lucas, 1978). Similarly, Dencker et al. (2009) argue that hiring employees adds complexity to the management of the venture because entrepreneurs must take on the additional responsibility of managing their employees. Therefore, they argue that only those who are confident in their ability to handle the increased complexity will hire employees. Using survey data from Germany, they find evidence to support their argument where the results show a positive relationship between an entrepreneur’s leadership experience and job creation.

Further highlighting the importance of entrepreneurs’ human capital, Baptista et al. (2013) test a matching model where skilled entrepreneurs are matched with skilled employees. Using a longitudinal employer-employee matched dataset from Portugal, they find that highly
educated entrepreneurs tend to hire highly educated employees. Moreover, they also find that high-quality entrepreneurs (those with higher education and longer work experience) pay a premium to their employees and that this premium increases as the level of education and prior experience of the entrepreneur increase.

Apart from human capital, several other factors seem to be associated with the likelihood of hiring an employee (see section 14.5 of Parker, 2018 for a detailed review). First, studies find that entrepreneurs with a parent who was self-employed or who managed others (Henley, 2005; Van Praag & Cramer, 2001) are more likely to hire others. Second, studies also find that entrepreneurs’ wealth, often measured in terms of inheritance and housing equity, is positively associated with the propensity to become an employer (Burke, Fitzroy, & Nolan, 2002; Cowling et al., 2004; Henley, 2005; Millán et al., 2015). Finally, studies uniformly find significant effects associated with gender, where male entrepreneurs are much more likely to hire employees than female entrepreneurs. In addition to the direct effect associated with gender, studies also find that the relationships between other characteristics, such as human capital, and the likelihood of hiring employees differ between males and females. For example, studies find a stronger relationship between formal education and the likelihood of hiring an employee for males compared to female entrepreneurs (Burke et al., 2002; Cowling et al., 2004).

Studies that examine firm characteristics agree that high-quality firms, such as those that exhibit superior performance and growth rate, are more likely to hire employees. Based on a review of the research on job creation by entrepreneurial firms, Block et al. (2018) conclude that while entrepreneurial firms have a positive effect on job creation, this effect seems to be driven by a very small fraction of high-growth ventures. Coad et al. (2017) use Danish data to find similar results. In their study, the authors match new businesses that hire their first employee in
time $t = 3$ to those that do not hire any employees, on several observable firm-level and founder-level characteristics. Based on the matched sample, they find that start-ups that hire their first employee in $t = 3$ have about 20 percent higher sales in the previous year ($t = 2$) than the start-ups that do not hire an employee.

In addition to the internal factors, the external environment is also relevant. One particularly relevant factor is the strictness of employment protection laws (Millán, Millán, Román, & van Stel, 2013). Using data from the European Community Household Panel for the EU-15 countries, Millan and colleagues find the strictness of employment protection laws to be negatively associated with both hiring and firing decisions of own-account workers and very small firms. This finding highlights that employment protection laws that are intended to help workers can have unintended consequences that make it difficult for workers to find jobs, which can result in some individuals being worse off.

Another public policy that may influence job creation by entrepreneurial firms is the policy on tax rates. Based on US data, Carroll et al. (2000) examine the income tax returns of sole proprietors before and after the Tax Reforms Act of 1986 to study how a significant reduction in tax rates influences entrepreneurs’ decisions to hire labor. In this study, the authors estimate that raising the entrepreneur’s ‘tax price’ (one minus the marginal tax rate) by 10 percent is associated with about a 12 percent increase in the mean probability of hiring. Furthermore, they also find that the same increase in the entrepreneur’s tax price is associated with a 3 to 4 percent increase in the median wage bills of entrepreneurs. The negative relationship between the marginal tax rate and the likelihood of hiring employees is confirmed by Mathur (2010) based on the Survey of Income and Program Participation (SIPP). Interestingly, she also finds that the size of the state-mandated health benefits to be negatively
associated with the probability that a self-employed person will generate a significant number of jobs.

In addition to public policy, business cycle conditions also seem to affect entrepreneurial firms differently from large firms. Cravo (2011) finds that small firms are more sensitive than large firms to the macroeconomic conditions because they tend to shed more jobs in recessions and gain more during boom times. Moreover, he finds that small firms are more likely to take advantage of recessions to hire cheaply from unemployment. This finding is consistent with the research that suggests individuals who face difficulties in the labor market are more likely to join start-ups.

2.5.2 How do Entrepreneurial Firms Recruit Employees?

Given that many entrepreneurs find it challenging to recruit employees, a naturally occurring question is how entrepreneurial firms find and recruit talent. While there has been a growing scholarly interest in joiners and the implications of working for entrepreneurial firms, research regarding the recruitment practice of entrepreneurial firms remains understudied (Cardon & Stevens, 2004; Greer et al., 2016; Williamson, 2000). The dearth of research on this topic is surprising given the frequent emphasis by practitioners and scholars on the importance of people within organizations, especially for entrepreneurial firms (Cardon & Stevens, 2004; Katz et al., 2000; Sørensen, 2004; Wright, McMahan, & McWilliams, 1994). Given the practice-oriented nature of entrepreneurship research, this gap between practice and research around recruitment has led to several calls for more research on this topic (Cardon & Stevens, 2004; Greer et al., 2016; Shepherd et al., 2019). In this section, I review the few papers that study the practices that entrepreneurial firms use to attract employees.
One large difference between entrepreneurial firms and established firms is the availability of resources including financial and human resources. Such difference influences how the recruitment strategies that entrepreneurial firms use to find and hire employees differ from the strategies that established firms use. Generally, studies on recruitment practices of entrepreneurial firms focus on firm size instead of focusing on firm age. Consistent with this pattern, Tanova (2003), based on a survey of firms in north Cyprus, finds that small firms are more likely than large firms to rely on word of mouth to recruit talent. They also find that firm age is less relevant than size in determining the type of recruitment practices.

Studies generally agree that start-ups predominantly rely on informal methods to recruit employees (Barber et al., 1999; Barrett & Mayson, 2007; Bartram, Lindley, Marshall, & Foster, 1995; Behrends, 2007; Cardon & Stevens, 2004; Kotev & Slade, 2005). For example, Behrends’ (2007) survey of small to medium firms in Germany finds that small firms use the least planning and least formal HR recruitment practices. A review of the HRM literature regarding small and emerging firms by Cardon and Stevens (2004) also confirms that small firms tend to use informal recruiting practices where general managers are expected to perform recruitment-related functions instead of having a separate position dedicated to this role.

Further highlighting the relationship between firm size and the use of formal versus informal recruitment practices, Kotev and Slade (2005) study firms in Australia and find that while small firms tend to use informal HRM practices, the use of formal practices such as the division of labor, hierarchical structures, documentation, and administrative processes, become more common as firms increase in size. Similarly, Barber et al. (1999) also find that small firms use recruitment practices that are less formal and bureaucratic than those of large firms. They go on to argue that “the processes involved in matching employers and applicants differ so much as
a function of firm size that one might argue that large and small firms comprise separate labor markets” (Barber et al., 1999: 862). Moreover, Bartram et al. (1995), based on face-to-face interviews with firms in the UK, find that small firms emphasize personal characteristics, such as honesty, integrity, and interest in the job, more so than competence-related characteristics, such as ability, aptitude, and attainment. However, even among small firms, there is heterogeneity in the type of recruitment practices they use. Highlighting this heterogeneity, Barrett and Mayson (2007) examine the differences between growth-oriented and non-growth-oriented small firms in Australia and find that growth-oriented small firms are more likely to use formal practices.

Apart from the choice of formal versus informal practices, entrepreneurial firms also differ from established firms in the sources from which they recruit their employees. On this issue, Leung (2003) conducts a case study involving four entrepreneurial firms and finds that the lack of resources available for start-ups makes entrepreneurs rely predominantly on social capital to find and recruit employees. Furthermore, Leung et al. (2006) find that as start-ups grow and transition from the start-up/survival phase to the growth phase, they use different network pools. They find that as start-ups grow, they shift from relying predominantly on personal networks to using more of their business networks to recruit employees. Interestingly, they find that start-ups primarily rely on direct, personal ties to find and recruit employees with common values and goals. This seems to contrast Granovetter’s weak tie hypothesis, which argues that weak ties, such as indirect ties that involve low levels of invested time, emotional intensity, intimacy, and reciprocal services, are particularly important for performance in the labor market because they allow the collection of a greater amount of information (Granovetter, 1977). Similarly, Ko and Liu (2017) find that entrepreneurial firms in China use guanxi (social connections) to overcome the liability of smallness as the use of guanxi “makes the hiring process more convenient,
improves firms’ attractiveness to jobseekers and enhances the person-organizational fit between
new hires and firms” (Ko & Liu, 2017: 1499). Interestingly, they also find that jobseekers can
use guanxi to improve their bargaining position by increasing their employment options and
undermine firms’ efforts to hire the most appropriate candidate.

From the perspective of jobseekers applying to entrepreneurial firms, evaluating the
attractiveness of entrepreneurial firms is a difficult task because there is often limited
information about them. Therefore, jobseekers often need to rely on external characteristics to
evaluate whether an entrepreneurial firm would be an attractive employer or not. One such
characteristic is the level of legitimacy, which is commonly defined as “a generalized perception
or assumption that the actions of an entity are desirable, proper, or appropriate within some
socially constructed system of norms, values, beliefs, and definitions” (Suchman, 1995: 574).
Based on institutional theory (DiMaggio & Powell, 1983), Williamson (2000) argues that
obtaining legitimacy by following the practices that are well accepted by their peers will improve
a firm’s recruitment efforts. Furthermore, he goes on to argue that small firms are at a
disadvantage because they lack legitimacy compared to large firms. Based on this argument,
Williamson argues that imitating the recruitment practices of large firms will improve small
firms’ legitimacy, which in turn will improve their recruitment performance. Consistent with this
argument, Greer et al. (2016) find that start-ups that imitate the recruitment practice of
established firms have superior perceived performance at the firm level.

Also highlighting the role of legitimacy, Moser et al. (2017) use conjoint experiments to
find that legitimacy regarding founders (training from institutions with an above average
reputation and a track record of being successful innovators) and start-ups (above average
external recognition, awards in business competitions, recognition as an innovative company,
and significant external funding) both contribute positively to make organizations more attractive to jobseekers. Moreover, they also find that transactional attributes (salaries, training, and benefits), relational attributes (supportive and creative culture), and ideological attributes (clear vision for innovation) also make a start-up more attractive to jobseekers. In addition, the authors find that an emphasis on innovation (such as a vision that clearly states that the firm should innovate and founders with a track record of being a successful innovator) has a stronger effect on those who regard themselves as being innovative at work.

The lack of information also gives rise to a high degree of information asymmetry between jobseekers and entrepreneurial firms. In this case, jobseekers often rely on visible signals to gauge the attractiveness of start-ups as potential employers. Consistent with this idea, Backes-Gellner and Werner (2007) argue that the education level of founders works as a signal of start-up quality, allowing them to better recruit employees. Supporting their argument, they find that for innovative start-ups, having a founder who has a university degree significantly lessens the percentage of employees who state they are overworked. Although the authors argue that the percentage of employees who are overworked should be correlated with the difficulty associated with recruiting employees, this may be a result of HR practices relating to the already-employed workers. Therefore, interpreting this result requires caution. Interestingly, for the non-innovative start-ups, the authors find no effect, suggesting that jobseekers who evaluate non-innovative start-ups may not be too concerned with the founder’s education level.

In addition to external characteristics, the internal work environment also seems to be important. Focusing on interns, Zhao (2013) finds that small business interns are more flexible in terms of adjusting their original goals compared to corporate interns. In addition, he also finds that perceived justice (measured using perceptions of the degree of fairness in work procedures
and distribution of work) and the degree of involvement in work and social activities raise the interns’ intention to join the organization following their internship. Therefore, in addition to the external attributes of start-ups, employees’ experiences inside the organizations also seem to be important.

2.5.3 What are the Implications of Hiring Employees for Start-ups?

There are several implications of hiring employees on entrepreneurial firms. Generally, research on this topic agrees that firms that hire employees tend to perform better than those that do not hire (Chowdhury, Schulz, Milner, & Van De Voort, 2014; Coad et al., 2017; Greer et al., 2016; Millán et al., 2014; Rocha, Carneiro, & Varum, 2018). However, it is also important to remember that hiring is endogenous. For example, only the growth-oriented firms that exhibit superior performance may have the need and the resources to hire employees. Therefore, simply comparing the performance of hiring versus non-hiring firms may lead to an overestimation of the effect of hiring.

Investigating the effect of hiring the first employee on the future performance of start-ups, Coad et al. (2017) find that start-ups that experience superior sales growth in the previous year have a higher probability of hiring their first employee, suggesting that superior performance precedes hiring. Using propensity score matching to overcome this threat of endogeneity, the authors find that firms that hire their first employee enjoy superior performance outcomes (sales and profits) in subsequent years than the observably similar non-hiring firms. Based on their findings, the authors conclude that while those who experience superior performance hire their first employee, hiring the first employee then further ‘boosts’ their performance in subsequent years (Coad et al., 2017: 33). However, it is important to note that the significant effects of hiring are only present for the group of surviving firms, and the effects
disappear once non-surviving firms are added to the sample. Therefore, the authors also note that hiring an employee may have an amplifying effect where it only contributes positively to the well-performing ventures, resulting in a higher dispersion in performance (Coad et al., 2017: 33). The last point is also supported by Ouimet and Zarutskie (2014) who find that young firms that hire more young workers experience higher growth rates conditional on survival.

Hiring employees also seem to have positive implications for entrepreneurial firms in areas other than operational performance, such as fundraising. For example, Ouimet and Zarutskie (2014) find that start-ups with a larger share of young employees are more likely to raise VC funding. Moreover, based on a survey of a group of start-ups that had applied to participate in an educational program at MIT, Hsu (2007) also finds the ability to recruit executives without relying on the VC’s network to be positively associated with venture valuation.

In addition to fundraising, Andries and Czarnitzki (2014) find that employees play a critical role in the innovative performance of small firms. Based on a survey of 305 manufacturing and services firms in Germany, they find that although small firms largely rely on their CEOs and managers for ideas and rarely involve non-managerial employees in their innovation process, those that incorporate non-managerial employees’ ideas have superior innovative performance. Similarly, Braun et al. (2018) examine high-tech start-ups in Germany and Portugal to find that networking practices of employees contribute positively to start-ups’ innovativeness. Interestingly, they find that networking by employees has a stronger effect than networking by entrepreneurs.

Despite many studies that find positive effects of hiring on performance, some find no relationship between hiring efforts and performance of entrepreneurial firms. Focusing on the
IPO performance of firms in the US, Welbourne and Cyr (1999) find that, in general, the existence of a senior HRM executive who reports directly to the CEO does not have much impact on IPO performance. However, they find that small and fast-growing firms benefit from having a senior HR executive. Also, Yamakawa and Cardon (2017) find that the amount of investment in hiring, measured as the number of employees of a firm at the time, does not influence the amount of time it takes for an entrepreneur to exit a distressed venture.

The existence of studies that find no benefit to hiring suggests that there may be boundary conditions. For example, Gjerlov-Juel and Guenther (2019) find that higher employment growth during the early years is associated with a higher number of key employee departures in the long-run. They find that key employees with a salary above the 90th percentile enjoy the entrepreneurial work environment. Therefore, as start-ups become larger, key employees often leave to pursue entrepreneurship or to join other start-ups. From the findings, the authors note that the ability to recognize the benefits of employment growth depends on the ability to retain key employees.

The benefits of hiring may also be dependent on the type of employees hired. Using the Finnish Longitudinal Employer-Employee Data (FLEED), Maliranta and Nurmi (2019) find significant positive effects of hiring employees who had previously worked for highly productive firms. They find that compared to a start-up whose employees all come from highly productive firms, a similar start-up whose employees all come from low productivity firms is 46.7 percent less productive and has about 13.3 percent lower survival probability. Similarly, Koch et al. (2013) use the BHP data from Germany to find that high-skilled (defined based on the level of education) and young workers contribute to start-up growth. In addition to the direct effects, some find that hiring high-skilled employees can allow entrepreneurial firms to utilize other
resources more effectively. Consistent with this notion, Yang et al. (2017) find that scientifically skilled employees complement internal financial and R&D resources to enhance the probability of survival for high-tech start-ups in China.

2.5.4 What are the Implications of Hiring Employees for Entrepreneurs?

On top of the effects on entrepreneurial firms at the firm-level, hiring an employee can also have implications for the founder. Unfortunately, only a few studies study the effect of hiring at the founder-level. Consistent with firm-level studies that find benefits to hiring employees, Kaiser and Malchow-Møller (2011) also find benefits to hiring employees for the founder. Using the Danish IDA data, they find that while a self-employment spell is associated with lower wages in subsequent jobs, formerly self-employed individuals who had hired at least one employee receive wages that are just as high as those who had been consecutively wage-employed. Therefore, in addition to the positive effect on firm performance, hiring an employee also seems to benefit the entrepreneur at the personal level by eliminating the wage discount associated with a self-employment spell.

Despite the positive impact on wages, hiring employees may introduce additional tasks and complexity to entrepreneurs’ work because they now must deal with a host of issues including legal issues and payroll accounting. Hessels et al. (2017) argue that the number and complexity of the tasks associated with managing a business with employees are much greater than the tasks associated with managing a business without an employee. Therefore, they argue that entrepreneurs who hire employees experience a higher level of stress compared to those who do not hire employees. Based on data from Australia, they find that entrepreneurs with employees experience significantly higher work-related stress, which is partially explained by higher job demand.
In summary, hiring an employee is generally associated with superior performance at the firm level. Entrepreneurial firms that hire employees tend to enjoy better sales and profitability (Coad et al., 2017), fundraising (Ouimet & Zarutskie, 2014), and innovative performance (Andries & Czarnitzki, 2014). However, growth in the number of employees can have unintended consequences, such as increased bureaucratization and turnover of key employees (Gjerløv-Juel & Guenther, 2019). Therefore, the entrepreneurship literature will benefit from more research on the boundary conditions for the positive relationship between hiring and performance. Furthermore, while some scholars have recently begun to examine the impact of hiring on firm-level performance outcomes, the impact on founder-level outcomes remains relatively understudied. Therefore, studying how hiring an employee can alter the entrepreneurship experience for the founder will be a fruitful way to expand this literature.

Moreover, future research will also benefit from the employment of different methods to eliminate the inherent endogeneity associated with the hiring decision. For example, entrepreneurial firms that hire employees may differ significantly from those that do not hire anyone in terms of growth aspirations and the resources available. Therefore, a simple regression that predicts entrepreneurial performance with an indicator for hiring as an independent variable is subject to endogeneity concerns, such as omitted variable and reverse-causality problems. One potential way to overcome such concerns is to match the hiring and non-hiring start-ups in terms of observable attributes, such as profitability, size, and characteristics of the founder (Coad et al., 2017; Kaiser & Malchow-Møller, 2011). Unfortunately, the matching approach does not allow researchers to rule out selection based on unobservable attributes. To eliminate the omitted variable bias, researchers may conduct field experiments by utilizing an external shock such as a
change in employment-related laws or government programs that affect firms’ hiring decisions without affecting other aspects.

2.6 Discussion

2.6.1 Summary of the Review and Future Directions

The field of entrepreneurship research is a discipline rooted in practice (Wiklund, Wright, & Zahra, 2019). Therefore, entrepreneurship research has emphasized the need to stay relevant to practice. With this goal, it has strived to find ways to help entrepreneurs and their ventures overcome the challenges they face in areas including fundraising and innovation. Of the challenges associated with entrepreneurship, the focus of this chapter is the challenge associated with recruiting talent. Despite the anecdotal evidence from practitioners and the calls for more research on this topic (Cardon & Stevens, 2004; Shepherd et al., 2019), how entrepreneurial firms recruit employees remains understudied by entrepreneurship scholars. Furthermore, the few studies that have the potential to inform researchers and practitioners regarding entrepreneurial recruitment remain scattered over several disciplines. Recognizing the importance of the topic, this paper provides a review of the extant literature relevant to entrepreneurial recruitment and highlights ways for future research to contribute to this topic.

Because recruitment/hiring involves a two-sided matching process between an employee and an employer, I categorized the studies into two broad categories (Nyström, 2019). First, I reviewed the studies that take an individual’s perspective. They include those that study the implications of working for an entrepreneurial firm and the types of individuals who work for entrepreneurial firms. Second, I reviewed the studies that approach the problem from the perspective of entrepreneurial firms. These studies include those that study the types of
entrepreneurial firms that hire employees, the recruitment practices utilized by entrepreneurial firms, and the implications of hiring an employee at the firm level or the entrepreneur level.

Regarding the implications of working for entrepreneurial firms, the topic that has attracted the most research attention is the difference in wages between those who work for entrepreneurial firms and those who work for established firms (Brown & Medoff, 1989; Brown & Medoff, 2003). In general, studies find evidence of size and age effects where firm size and age are both positively related to wages. Moreover, they also find that the size effect often dominates the age effect. However, recent studies find that the wage penalty associated with working for entrepreneurial firms is often eliminated or even reversed for the high-quality start-ups that exhibit high growth rates. Another recent development in this area is the finding that the wage penalties associated with young and small firms tend to weaken or disappear when individual characteristics are controlled for. Therefore, it seems that while entrepreneurial firms pay similarly for a given level of competence, they tend to hire lower-quality employees compared to the established firms.

While entrepreneurial firms provide lower wages and fewer benefits, working for an entrepreneurial firm is associated with less bureaucracy and offers more opportunity to engage in a variety of activities. This suggests that while entrepreneurial firms cannot offer high wages, they may attract employees by offering non-pecuniary benefits, such as autonomy and flexibility. Such differences in the work environment associated with entrepreneurial firms versus established firms may result in differences in the type of individuals who select into entrepreneurial firms instead of established firms.

Unfortunately, only a few studies examine the long-term implications of working for an entrepreneurial firm. Generally, studies find that those who work for small firms are more likely
to become entrepreneurs in the future, a phenomenon often called the ‘small firm effect.’

Focusing on the joiners may provide a way to expand the research on the small firm effect. For example, like the small firm effect, employees of young firms may be more likely than employees of incumbent firms to transition into entrepreneurship. On the other hand, joiners may use the experience at start-ups as a stepping-stone to break into jobs at more established firms. In addition, the small firm effect may be extended to study whether joiners are more likely than employees of established firms to move to another entrepreneurial firm. Future research may examine this question by studying the future career transitions of joiners and employees of established firms. Furthermore, scholars may distinguish employees of small firms from employees of young firms and examine the two groups separately.

Moreover, researchers may examine how different employers view the experience of working for an entrepreneurial firm. For example, firms that operate in a highly dynamic environment may prefer employees who have experience working at a start-up. This line of research may prove to be particularly important in convincing more individuals to join start-ups if they can demonstrate that work experience at an entrepreneurial firm is viewed positively by larger firms and has positive effects in the long-term.

The studies that examine the type of individuals who pursue wage employment with entrepreneurial firms generally find that it is those who are disadvantaged and face difficulties in the labor market (e.g., those who are unemployed, have unstable employment experience, have lower education, and immigrants) that tend to join entrepreneurial firms as wage employees. However, in some cases, especially for the high-growth ventures, some researchers have also identified positive selection where high-quality employees self-select into entrepreneurial firms. Therefore, there may exist a U-shaped relationship between individual human capital and the
likelihood of joining an entrepreneurial firm. In addition to human capital, there also seem to be differences in terms of preferences, social environment, and demographic characteristics in the individuals who choose to join entrepreneurial firms over large established firms. Unfortunately, despite several studies that document such differences, we still know little about the factors that lead to such differences. Furthermore, we do not know whether individuals who join entrepreneurial firms take on a similar role within the entrepreneurial firms they join. Therefore, future research will benefit from going beyond simply documenting the differences between the individuals who join entrepreneurial firms and those who join established firms. For example, examining the factors that lead to such differences, and how the heterogeneity among entrepreneurial firms and the type of positions within the firms can influence the type of individuals that join entrepreneurial firms would be interesting ways to extend this research.

What about the perspective of entrepreneurial firms? While researchers from different disciplines such as economics, psychology, and management have examined joiners from the perspective of individuals, there has been much less research interest in recruitment from the perspective of entrepreneurial firms. Perhaps the area of greatest interest is in examining the type of firms that hire employees versus the firms that do not. Studies generally show that high-quality and growth-oriented firms are more likely to hire employees. These firms tend to be established by entrepreneurs who have high human capital. However, the field of study stands to benefit from more research. For example, whether hiring by high-performing ventures is driven by the need for additional employees or the availability of resources is a question which future research may investigate.

Despite the central role recruitment plays in the HR literature (Cardon & Stevens, 2004), there are only a handful of studies that examine how entrepreneurial firms recruit employees.
Studies in this line of research find that entrepreneurial firms often lack formal recruitment processes available at large firms. Instead, entrepreneurial firms tend to recruit their employees informally from their personal and business networks. However, apart from the fact that entrepreneurial firms hire informally from their networks, we still know little about why and how they use these different strategies. Unfortunately, due to the informal nature of the recruitment practices at entrepreneurial firms, it may be difficult to gather quantitative data on this topic. Therefore, qualitative methods, such as case studies and participant observation, may be helpful in studying the choice of different recruitment strategies by entrepreneurial firms.

Given the high degree of information asymmetry surrounding entrepreneurial firms, some studies examine how entrepreneurial firms can build legitimacy and use signals to attract jobseekers. One thing to consider is that compared to established firms, entrepreneurial firms depend more heavily on their founders. Therefore, it may be difficult to separate founder-level attributes (e.g., education and work experience) from firm-level attributes (e.g., sales growth). To overcome this challenge, researchers may utilize randomized controlled experiments to hold all other factors constant and concentrate on the attribute of interest. Moreover, researchers may use student participants because students are likely to be either going through the recruitment process or will do so in the near future.

Finally, other researchers examine the implications of hiring employees for entrepreneurial firms. Studies in this area generally find that hiring an employee has a positive effect on performance. However, they also note that hiring employees can be a double-edged sword as the growth in the number of employees may necessitate the introduction of formal rules and policies, which can lead to bureaucratization and a less entrepreneurial work environment, resulting in turnover of key employees. Furthermore, hiring an employee introduces a host of
new tasks, such as payroll accounting, compliance with labor-related regulations, and human resource management. This increases the complexity associated with managing a business and can lead to increased stress for entrepreneurs. Therefore, in addition to more empirical evidence regarding the implications associated with hiring, we would benefit greatly from the studies that examine how entrepreneurial firms can realize the benefits associated with hiring employees while minimizing the risks.

2.6.2 Potential for Theoretical Contributions

So far, I have reviewed mostly empirical work on entrepreneurial recruitment and joiners and suggested several empirical research questions for future research. In addition to providing grounds for scholars to make empirical contributions, entrepreneurial recruitment and joiners present scholars with opportunities to make theoretical contributions by applying and extending pre-existing theories to study these new topics. In this section, I highlight several theories that I believe may be applicable in studying joiners and entrepreneurial recruitment. By connecting entrepreneurial recruitment and joiners to several well-established theories, I seek to demonstrate how the two topics relate to the broad entrepreneurship and management research and how the topics can be used to extend them. In doing so, I hope to spur future research that will use entrepreneurial recruitment and joiners to contribute to advancing knowledge in the entrepreneurship and management literature.

Entrepreneurial recruitment and joiners provide opportunities to apply and contribute to several different theories. First, researchers may use signaling theory (Spence, 1973) to study entrepreneurial recruitment. Entrepreneurial firms must convey their quality to convince jobseekers that they can provide job security and promotion opportunities. Unfortunately, jobseekers face a high degree of information asymmetry regarding the quality and the likely
performance of entrepreneurial firms. Under information asymmetry, jobseekers must use observable attributes as signals to infer underlying attributes. This setting makes entrepreneurial recruitment a good setting to study signaling theory.

Second, I discuss how researchers can use institutional theory to study entrepreneurial recruitment. Institutional theory (DiMaggio and Powell, 1983) argues that firms often need to adhere to the norms and practices of external constituents to gain their acceptance, which is often the first step to forming affiliations and obtaining resources. Like investors and customers, jobseekers are external entities with their own norms and practices. Because jobseekers would only apply to the firms they consider legitimate, it is critical for entrepreneurial firms to understand such institutional pressures when recruiting employees. Hence, institutional theory would be a valuable theory to inform entrepreneurial recruitment.

Third, I discuss the potential to use the jack-of-all-trades theory (Lazear, 2005) to examine joiners. The jack-of-all-theory highlights that entrepreneurs must oversee all aspects of management, while wage employees can specialize in one area. Therefore, the theory argues that individuals with a balanced skillset will perform better as entrepreneurs than individuals with a specialized skillset, making those with a balanced skillset more likely to pursue entrepreneurship. Because entrepreneurial firms are often small, flat in structure, and lack specialized departments, joiners are likely to perform multiple tasks across several functional groups. This makes the jack-of-all-trades theory a useful angle to compare joiners and employees of established firms.

Fourth, scholars may apply the resource-based view (Barney, 1991) to study how entrepreneurial firms manage their human resources. The resource-based view argues that valuable, rare, inimitable, and non-substitutable resources provide firms with sustainable competitive advantage that allows them to outcompete their competitors. Unlike established
firms that use various resources, such as propriety technology and intellectual property, to generate competitive advantage, entrepreneurial firms lack such resources. For these firms, human resources may serve as a critical resource that can provide the basis of their competitive advantage. Since recruitment is the first step toward building human resources, entrepreneurial recruitment should be particularly relevant for studying how the resource-based view is applied to entrepreneurial firms.

Fifth, matching models (Becker, 1973) may also be useful to study entrepreneurial recruitment and joiners. For entrepreneurial firms to hire an employee, there must be a successful match between an employer and an employee. Thus, each hire represents a matching of an employer and an employee, where each bring different sets of resources. Entrepreneurs and employees may match on various types of resources, such as human capital and social capital, presenting researchers ample opportunities to apply matching models.

Finally, I also discuss how entrepreneurial recruitment and joiners present opportunities for researchers to study networks (Burt, 2000) and learning (Cope, 2005). Entrepreneurial firms often recruit their employees informally using various networks, such as personal and business networks, thus making entrepreneurial recruitment a good context to study networks. Also, working for an entrepreneurial firm may have many similarities to pursuing entrepreneurship and offer joiners opportunities to enhance or discover their entrepreneurial ability.

2.6.2.1 Signaling Theory

Signaling theory (Spence, 1973) argues that in the presence of information asymmetry, high-quality agents can use observable attributes to signal their quality and differentiate themselves from low-quality agents. Information asymmetry occurs when “different people know different things” (Stiglitz, 2002: 469), and is particularly severe for entrepreneurial firms for several
reasons. First, entrepreneurial firms often have no track record from which outsiders can use to infer quality. Second, because most entrepreneurial firms are private firms, they are not obligated to report audited company information, further reducing the number of sources from which the outsiders can obtain information. Third, unlike other public firms, there is no institution for entrepreneurial firms that performs the role of a credit-rating agency.

Given the high level of information asymmetry surrounding entrepreneurial firms, signaling theory has been commonly invoked by entrepreneurship scholars (Plummer, Allison, & Connelly, 2016; Pollock, Chen, Jackson, & Hambrick, 2010; Stuart, Hoang, & Hybels, 1999) to examine how these firms signal quality to outside constituents. However, most of the entrepreneurship research on signaling has been conducted to examine how entrepreneurial firms interact with various types of investors, with many studies taking place in the context of initial public offerings and VC funding (Connelly, Certo, Ireland, & Reutzel, 2011).

The interaction between entrepreneurial firms and jobseekers is an interesting context in which to apply signaling theory. Like the relationship between entrepreneurial firms and investors, the relationship between entrepreneurial firms and jobseekers also involves a high degree of information asymmetry. In this setting, entrepreneurial firms have better information about their own quality and expected future performance than jobseekers who know much less about how well a start-up is likely to perform. Interestingly, this is a direct reversal from the setting Spence used to illustrate the signaling theory in his seminal paper (Spence, 1973), which used the labor market to illustrate how jobseekers can signal their quality to employers.

The interaction between entrepreneurial firms and jobseekers presents opportunities to expand signaling theory in several ways. First, it can extend signaling theory’s traditional one-signal-one-attribute model into a one-signal-multiple-attributes model. While investors are
mainly concerned with the likely future performance of start-ups, jobseekers consider multiple aspects when choosing between employers. These attributes can include future performance, founder characteristics, and company culture. This is important because jobseekers must rely on a limited set of information, such as a company website, to infer multiple unobservable attributes. In this case, the different attributes that can be inferred by a single signal can complicate the model because they can either reinforce each other or work against each other. While previous research in signaling theory has examined how firms use multiple signals to convey one attribute and how signals complement or substitute each other (Ozmel, Reuer, & Gulati, 2013; Sadeh & Kacker, 2018), the idea that one signal can convey multiple attributes has not been developed as much and is a promising direction to advance signaling theory.

The one-signal-multiple-attributes model would be valuable in cases where the attributes being signaled work in opposite directions. For example, a highly successful entrepreneurship experience might signal high entrepreneurial ability (positive) and a highly demanding leadership style, which can be negative to some employees. In this case, the two attributes being signaled may cancel each other and may make it appear that a highly successful entrepreneurship experience does not help entrepreneurs appeal to jobseekers. Under the one-signal-one-attribute model and the multiple-signal-one-attribute model, such a result would lead to the conclusion that a highly successful entrepreneurship experience does not signal high entrepreneurial ability. However, the one-signal-multiple-attributes model allows for the possibility of offsetting effects and may prompt researchers to go deeper and study the different attributes being signaled by a successful entrepreneurship experience and how the attributes affect the attractiveness of a start-up differently.
Second, entrepreneurial recruitment is a good context to examine the role of receivers in a signaling model. According to Connelly et al. (2011), a signaling problem involves both a sender (the party communicating the signal) and a receiver (the party interpreting the signal). Most previous research focuses on the senders and the signals they use to convey their quality, as well as how a signal can effectively convey an underlying attribute by breaking a pooling equilibrium and creating a separating equilibrium. However, recent scholars have advocated for more theorizing that looks at the receivers and how the characteristics associated with the receivers can influence the way receivers interpret different signals (Connelly et al., 2011).

Unlike the institutional investors who are mostly experts in their field, jobseekers vary between novice (e.g., graduating students) to experts (e.g., those with a long tenure in the industry or those who have lots of experience switching jobs). Accordingly, jobseekers may vary in their ability to interpret a signal or use different signals to evaluate the attractiveness of a venture. The variety in the type of jobseekers provides opportunities for examining the role of receivers in signaling theory. For example, novice jobseekers may prefer to use the signals that they are familiar with, such as a long tenure in a related industry. However, jobseekers with experience working at start-ups may learn from their experience that work experience in a related industry does not effectively signal venture performance and instead use other signals, such as the number of patents possessed by a start-up. Studying the differences in how receivers perceive and interpret signals should allow entrepreneurial firms to adjust and customize their signaling strategies depending on the type of receivers.

2.6.2.2 Institutional Theory

Institutional theory (DiMaggio & Powell, 1983; Meyer & Rowan, 1977) argues that firms exist as members of a larger society. Therefore, firms are constantly under pressure to conform to pre-
existing norms and expectations. Based on this idea, scholars argue that the concept of legitimacy plays a central role in how firms are perceived by others. Defining legitimacy as “a generalized perception or assumption that the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs, and definitions” (Suchman, 1995: 574), scholars argue that firms gain legitimacy by adhering to the prevailing norms and practices. They also argue that firms must be perceived as legitimate for them to form affiliations and obtain resources from external parties. For example, scholars find that legitimacy helps firms obtain external funding (Certo, 2003; Cohen & Dean, 2005; Higgins & Gulati, 2006).

Entrepreneurial recruitment may be a good context in which to study the different effects of organizational legitimacy. Scholars suggest that legitimacy is particularly important for entrepreneurial firms because it is considered critical for the firms’ ability to obtain resources (Zimmerman & Zeitz, 2002) and overcome the liability of newness (Stinchcombe, 1965). Like investors, jobseekers are likely to have a set of norms and practices they expect to see when evaluating employers. Furthermore, legitimacy is particularly important in an uncertain environment where audiences do not have other information to make evaluations. When evaluating entrepreneurial firms, jobseekers have limited information, making legitimacy more important.

Researchers have traditionally assumed the assessment of new venture legitimacy to be homogeneous across different audiences. However, recent scholarship highlights that legitimacy assessments are audience-dependent because legitimacy, “like beauty, … resides in the eye of the beholder” (Ashforth and Gibbs, 1990: 177). Therefore, recent scholars highlight that different audiences follow different processes and use different criteria when making legitimacy decisions (Fisher, Kuratko, Bloodgood, & Hornsby, 2017). For example, Fisher et al. (2017) argue that
different investors, such as government agencies, angel investors, VC investors, corporate VCs, and crowdfunding backers, operate under different institutional logics and have different mechanisms through which they evaluate the legitimacy of firms.

Entrepreneurial recruitment is a particularly attractive context to expand this argument. Studies that have been reviewed in this chapter find that individuals who work for entrepreneurial firms differ significantly from those who work for large established firms; they behave differently and have different preferences for job attributes (Sauermann, 2018; Zhao, 2013). As the two groups differ in skills, knowledge, background, and preferences, they can also differ in terms of how they evaluate the legitimacy of employers.

For example, two decades ago, Williamson (2000) applied institutional theory to theorize how small firms can improve their recruitment performance. In this seminal article, he argued that legitimacy plays a central role in the ability of entrepreneurial firms to recruit talent and that small firms can obtain legitimacy by imitating the human resource practices of large firms.

Applying the above developments in the research on institutional theory and entrepreneurial recruitment to Williamson’s arguments leads to a different conclusion. Employees of small firms and large firms have different backgrounds and preferences. In this case, the norms and practices that are considered legitimate can differ between the two groups. Therefore, simply mimicking the recruitment practices of established firms may have little or even a negative effect on an entrepreneurial firm’s recruitment practice if the two groups differ significantly in the type of recruitment process they expect from employers.

One can illustrate this argument using the choice of formal versus informal recruitment strategies. Several studies note that small firms tend to use informal recruitment practices while large firms tend to use formal recruitment practices. Applying Williamson’s argument in this
context would induce one to conclude that adopting formal recruitment practices would improve the recruitment performance of small firms. However, employees who work for small firms may find formal recruitment processes unusual and out of place. For example, for a small local shop that had previously hired employees based on personal or business networks after a quick face-to-face interview, implementing formal recruitment practices, such as an electronic application package that requires a cover letter, a resume, two letters of recommendations and a multi-round interview process coupled with an aptitude test, may not be beneficial. Thus, in addition to the lack of resources to set up formal practices, the differences in the norms in the labor market may also explain why small firms tend to recruit their employees informally. Accordingly, applying institutional theory to study entrepreneurial recruitment may help scholars examine not only the performance implications of using formal versus informal recruiting practices, but also the reason for choosing one over the other.

2.6.2.3 Jack-of-all-trades Theory

According to Lazear (2005), one important way entrepreneurship differs from wage employment is in the number of roles a worker undertakes. While wage employees are expected to specialize in a few roles, entrepreneurs undertake multiple roles because they must manage all aspects of a business including production, marketing, sales, and finance. If an entrepreneur fails in any one of the roles, the venture is unlikely to perform well. Therefore, Lazear argues that generalists, those who have a balanced skillset, have a comparative advantage in entrepreneurship as opposed to wage employment, where specialists have an advantage. Based on this logic, the jack-of-all-trades theory suggests that individuals with a balanced skillset (obtained through a diverse educational and employment background) will be more likely to become entrepreneurs than wage employees. This theory has led to a large body of literature that examines the
relationship between diversity in one’s education and work experience and the likelihood of pursuing entrepreneurship (Backes-Gellner & Moog, 2013; Chen & Thompson, 2016; Stuetzer, Obschonka, & Schmitt-Rodermund, 2013; Wagner, 2003).

The main assumption behind the jack-of-all-trades theory is that entrepreneurs perform multiple roles while wage employees specialize in a few. There are several reasons to believe that joiners also undertake multiple roles within their organizations, thus making the jack-of-all-trades theory relevant to this group. First, entrepreneurial firms are often resource-constrained, have a flat structure, and lack well-established systems. Therefore, a job at an entrepreneurial firm and the associated responsibilities are not as cleanly defined as a job at an established firm. The lack of clearly established responsibilities may result in a joiner being asked to perform multiple roles instead of specializing in one clearly defined role. Second, entrepreneurial firms often operate in a dynamic and uncertain environment. Due to these environmental characteristics, entrepreneurial firms commonly experience changes in their product and organizational structure, which requires employees to be flexible and switch between roles. Third, many entrepreneurial firms are small and have few employees to cope with these challenges. Accordingly, joiners may be required to perform multiple roles. In summary, the above arguments suggest that joiners undertake a higher number of roles than the employees of incumbent firms. This makes it necessary for joiners to tap into a broader set of skills to be able to successfully perform the roles assigned to them. Therefore, joiners may provide a good context in which to apply the jack-of-all-trades theory because employees who develop a balanced skillset through diverse education and work experience may have a comparative advantage working for a start-up and decide to join start-ups instead of established firms.
One way for scholars to contribute to the jack-of-all-trades theory would be to examine if hiring the right employees allows an entrepreneur who lacks a balanced skillset to overcome the comparative disadvantage he/she faces, thus providing some agency to the entrepreneur. While the jack-of-all-trades theory is useful in predicting entrepreneurial entry and the performance implications of having a balanced skillset, we do not know how the entrepreneurs who lack a balanced skillset can exercise their agency to overcome the comparative disadvantage they face compared to the entrepreneurs with a balanced skillset. Perhaps it is possible for a specialist entrepreneur to ‘make up’ for the lack of a balanced skillset by hiring an employee with a well-balanced skillset.

2.6.2.4 Resource-Based View

According to the resource-based view (Barney, 1991) resources that are valuable, rare, inimitable, and non-substitutable (VRIN) provide firms with a sustainable competitive advantage that enables them to outperform their competitors. Defining firm resources as “all assets, capabilities, organizational process, firm attributes, information, knowledge, etc. controlled by a firm that enable the firm to conceive of and implement strategies that improve its efficiency and effectiveness,” (Barney, 1991: 101) scholars argue that human resources can also be a type of resource that leads to a competitive advantage (Hatch & Dyer, 2004; Hitt, Bierman, Shimizu, & Kochhar, 2001). For entrepreneurial firms that lack other types of resources, human resources may play a particularly important role in determining outcomes, making the resource-based view a particularly useful lens for scholars to study joiners.

Human resources in entrepreneurial firms provide several ways for scholars to expand the resource-based view. First, unlike propriety technology that takes a long time and lots of resources to develop, individual employees that comprise a firm’s human resource are not rare.
Therefore, to obtain competitive advantage from human resources, firms must convert the non-rare input into a rare resource. While established firms can use formal training programs to provide their employees with the necessary skills and knowhow, entrepreneurial firms often do not offer formal training to their employees (Cardon and Stevens, 2004). Hence, the process through which entrepreneurial firms convert the non-rare input (workers) into a valuable and rare human resource remains an area to be studied.

Second, unlike propriety technology or knowhow that are difficult to imitate and substitute, employees can often be easily poached by competing firms. Because start-ups often lack financial capital to pay their employees high salaries, how start-ups obtain sustained competitive advantage from their human resource would be another way to apply the resource-based view to study joiners. Perhaps entrepreneurial firms provide attractive non-pecuniary job attributes such as interesting work, passionate co-workers, and autonomy. Another way for entrepreneurial firms to sustain their competitive advantage may be through the development of unique internal routines and practices. Because start-ups cannot afford to hire high-quality employees, they may develop internal routines and practices, such as informal training, greater involvement of employees in corporate decision making, and opportunities to work across functional groups, to increase the productivity of their employees. Unlike individual employees, internal routines and practices are difficult to imitate and may allow entrepreneurial firms to develop a sustained competitive advantage.

In addition to a resource being valuable, rare, inimitable, and non-substitutable, the resource-based view also highlights that for a firm to obtain a competitive advantage, it must be organized in a way that allows it to utilize its resources in the right way (Barney & Wright, 1998). Consistent with this argument, several scholars argue that hiring many employees can be
a double-edged sword that can lead to both benefits and costs. Therefore, scholars may study when and how entrepreneurs can use their human resources to obtain a competitive advantage over other firms. For example, how do the characteristics of the founder or the top management team affect the ability of entrepreneurial firms to convert their human resource into competitive advantage? How do entrepreneurial firms manage their human resources to create a competitive advantage as they move through different stages of growth? These are some of the questions scholars may ask to advance the resource-based view in the context of entrepreneurial recruitment and joiners.

2.6.2.5 Matching

The assortative matching model is another theory that can be applied to study entrepreneurial recruitment. Becker (1973) illustrates this model using the marriage market. Men and women are thought to bring different resources to the market (e.g., financial wealth, education, and physical attractiveness) where they can be ranked in terms of the quality of the resources they bring. In this setting, he argues that if the resources that men and women bring to the market are complements, the optimal sorting outcome would be a positive sorting where the man and woman with the best resources get matched with each other, followed by those with the second-best resources selecting each other and so forth until those with the lowest quality of resources are matched together. On the other hand, if the resources are substitutes, the model predicts a negative sorting where the man (or the woman) who ranks the highest in one resource would get matched with the woman (or man) who ranks the lowest in the same resource but ranks high in terms of other resources. For example, if financial wealth of two individuals is complementary, then the richest man (or woman) will get matched with the richest woman (or man). However, if they are substitutes, the richest man (or woman) will get matched with the woman (or man) who
lacks financial wealth but ranks high in other resources, such as physical attractiveness, education, or social status.

Becker suggests that the model can be applied to study the match between an entrepreneur and an employee by considering each match as a two-person firm where either member can serve as an entrepreneur who hires the other (Becker, 1973: 825). In a labor market, entrepreneurs and employees can be thought of as bringing different resources. If the resources they bring are complementary, the highest quality entrepreneur can reap the most benefit from hiring the most productive employee and therefore can outbid all other entrepreneurs for that employee. Similarly, there is an incentive for the most productive employee to join the highest quality entrepreneur because the complementarity between the resources would mean that the employee will be able to achieve more by working with the best entrepreneur.

The matching model has been further developed and applied in economics (Atakan, 2006; Durlauf & Seshadri, 2003; Shimer & Smith, 2000) and sociology (Kalmijn, 1994; Schwartz, 2013), with individuals being matched on characteristics, such as education, occupation, income, and social class. Furthermore, the model has also been studied by management scholars in the context of university-firm research collaborations (Mindruta, 2013), firm-CFO relationships (Datta & Iskandar-Datta, 2014), and inter-firm alliances (Mindruta, Moeen, & Agarwal, 2016).

It would be interesting to examine whether the resources that founders and joiners bring are complements or substitutes. For example, there are several reasons to believe that the human capital of an entrepreneur and a joiner are complements. First, while an entrepreneur with low human capital may perceive an outperforming joiner as a potential threat, an entrepreneur with high human capital may be better able to manage joiners with high human capital and create an
environment for them to excel. Second, a joiner with high human capital may learn more from an entrepreneur with a high human capital than a joiner with low human capital. On the other hand, one can also argue that the human capital of founders and joiners are substitutes because a founder who has high human capital may prefer to hire an employee with low human capital to take care of the mundane tasks. Perhaps the complementarity and substitutability of founders’ and joiners’ human capital depends on the type of jobs that joiners are hired to perform.

In addition to human capital, entrepreneurs and joiners may match on other resources, such as expertise in different areas (e.g., technical versus management), prestige, and social capital. For example, an entrepreneur who ranks high in human capital but lacks social capital may choose to hire an employee who ranks low in human capital, but high in social capital. There are numerous resources that entrepreneurs and joiners may match on, with the matching process being influenced by many factors, such as the type of the job and the growth-stage of the venture. Therefore, the matching process between founders and joiners and its implication on venture performance would provide ample opportunities to expand research on entrepreneurial recruitment and joiners.

Nyström (2019) discusses the characteristics associated with the matching process between entrepreneurial firms and employees, such as information asymmetry and different incentives of employers and employees. In addition to the attributes that entrepreneurs and employees match on, examining how such characteristics affect the matching process may also be interesting. For example, because information asymmetry can decrease the quality of the match between two parties, studying how entrepreneurs and employees overcome information asymmetry and enhance the quality of the match, perhaps through the use of informal recruitment based on personal networks, would be beneficial. Furthermore, while a match
between a high-quality entrepreneur and a high-quality employee might help a start-up achieve superior performance, the employee may not be interested in such an outcome if start-up performance does not translate into his or her own payoff. Hence, how entrepreneurs can share the benefit of a good match with their employees through incentives, such as stock options or providing opportunities to engage in interesting work, would also be an interesting way to apply matching in the context of entrepreneurial recruitment and joiners.

2.6.2.6 Other Theories

In addition to the theories discussed above, several other theories may also be applied to study entrepreneurial recruitment. First, because much of entrepreneurial recruitment takes place informally through personal networks (Leung, 2003), entrepreneurial recruitment may provide a good context in which to apply network theory (Burt, 2000). For example, how the centrality of the founder’s position within the network of other entrepreneurs and related constituents, such as venture capital investors, influence the founder’s ability to recruit employees may be an interesting question to examine. One empirical context where scholars may apply this idea is the study of ethnic entrepreneurship and the hiring of co-ethnic employees by immigrant entrepreneurs. Facing additional constraints in the labor market, such as a language barrier, immigrant entrepreneurs may rely on their networks to recruit employees. Similarly, recent immigrants who lack the capital or the willingness to start their own venture may also rely on their networks to find employment opportunities at ventures founded by immigrant entrepreneurs (Kloosterman, Van der Leun, & Rath, 1998; Sanders & Nee, 1996).

Second, joiners may provide a context in which to examine entrepreneurial learning. Some scholars argue that entrepreneurial learning helps individuals develop their entrepreneurial ability to become a better entrepreneur (Cope, 2005). Working for an entrepreneurial firm is
similar to pursuing entrepreneurship in many ways. Joiners, like entrepreneurs, must operate in a
dynamic and uncertain environment, and they often undertake multiple roles within their
organizations (Elfenbein et al., 2010). Moreover, many entrepreneurial firms are small in size,
allowing joiners to interact more closely with the founder(s). These characteristics of working for
an entrepreneurial firm make it possible for joiners to learn from their experience and develop
their entrepreneurial ability while working for an entrepreneurial firm. Furthermore, Jovanovic
(1982) argues that some may discover their entrepreneurial ability by trying entrepreneurship and
receiving market feedback in the process. Similarly, individuals may try working as a joiner to
find out whether they possess the skills and knowledge necessary to succeed as an entrepreneur.
Accordingly, scholars may examine whether entrepreneurs who had previously worked as a
joiner outperform entrepreneurs who transitioned from an established firm, or whether
entrepreneurs who had worked as a joiner are less prone to over-optimism.

A few studies have started to examine this question. These studies mainly examine the
size of the prior employer and its relationship with entrepreneurial income. For example,
Elfenbein et al. (2010) find that controlling for prior wages, those who transition to self-
employment from small firms perform better than those who transition from large firms.
Similarly, Sørensen and Phillips (2011) also find a negative relationship between entrepreneurial
income and the size of the previous employer. Interestingly, they also include in their models an
indicator for the prior place of employment being younger than 3 years old and find that those
who come from young firms perform worse than those who come from older firms. However,
the authors only theorize about the size of the previous employer and do not theorize about the
age. Therefore, future studies may theorize explicitly about how prior employer’s size and age
both affect entrepreneurial earnings. Furthermore, in addition to studying entrepreneurial entry
and earnings, future research may also study transitions to wage employment and how prior joiner or entrepreneurship experience affects the type of employers that people choose as well as their implications on future performance for joiners versus employees of established firms.

2.7 Conclusion

For start-ups, the ability to recruit employees is critical for success. Marc Benioff, the founder and CEO of Salesforce, agrees with this view, noting, “Acquiring the right talent is the most important key to growth … Hiring was—and still is—the most important thing we do.” However, entrepreneurial firms face several unique challenges in recruiting employees. Therefore, entrepreneurial recruitment is a research topic that enables entrepreneurship researchers to conduct research that is not only intellectually stimulating but also practically relevant. Unfortunately, recruitment remains relatively understudied by entrepreneurship researchers, and the few studies that can inform entrepreneurial recruitment remain scattered. In this chapter, I reviewed the empirical literature on the selected topics that are related to entrepreneurial recruitment and discussed several ways for entrepreneurship scholars to engage with this topic both empirically and theoretically. By doing so, I hope that this review spurs further scholarly interest in entrepreneurial recruitment and joiners.
2.8 References


2.9 Appendices

Appendix 2.1: List of Search Terms

Entrepreneur* AND Work*-for
Entrepreneur* AND Work*-at
Entrepreneur* AND Join* NOT joint*
Entrepreneur* AND Employee*
Entrepreneur* AND Recruit*
Entrepreneur* AND Hir*

Start-up AND Work*-for
Start-up AND Work*-at
Start-up AND Join* NOT joint*
Start-up AND Employee*
Start-up AND Recruit*
Start-up AND Hir*

Startup AND Work*-for
Startup AND Work*-at
Startup AND Join* NOT joint*
Startup AND Employee*
Startup AND Recruit*
Startup AND Hir*

Young-firm* AND Work*-for
Young-firm* AND Work*-at
Young-firm* AND Join* NOT joint*
Young-firm* AND Employee*
Young-firm* AND Recruit*
Young-firm* AND Hir*

New-firm* AND Work*-for
New-firm* AND Work*-at
New-firm* AND Join* NOT joint*
New-firm* AND Employee*
New-firm* AND Recruit*
New-firm* AND Hir*

Small-firm* AND Work*-for
Small-firm* AND Work*-at
Small-firm* AND Join* NOT joint*
Small-firm* AND Employee*
Small-firm* AND Recruit*
Small-firm* AND Hir*
CHAPTER 3: THE EFFECTS OF FOUNDER PRESTIGE ON JOBSEEKER EVALUATIONS OF START-UPS

3.1 Introduction

Entrepreneurship is becoming an increasingly popular employment destination for high-skilled workers (Hsu, 2007; Kim, 2018). While some workers aspire to be entrepreneurs, others seek to join start-ups as employees. According to Vladimir Bulovic, the associate dean for innovation at MIT, about 15 to 20 percent of MIT graduates pursue employment at start-ups compared to about 1.5 percent a decade ago. The rise of start-ups as an attractive source of employment for employees can benefit those entrepreneurs who are able to attract and recruit talent (Katz, Aldrich, Welbourne, & Williams, 2000; Moser, Tumasjan, & Welpe, 2017). Talented employees provide valuable resources such as knowledge (Yang, Bossink, & Peverelli, 2017), social capital (Braun, Ferreira, Schmidt, & Sydow, 2018), and creativity (Andries & Czarnitzki, 2014), which can generate competitive advantage relative to other start-ups (Barney, 1991). Yet, many entrepreneurs have a hard time recruiting employees given the fierce competition for talent (Moser et al., 2017; Zhao, 2013). For example, according to a survey by Silicon Valley Bank of 1,045 executives at US-based start-ups, 91 percent of respondents reported that acquiring talent was a major challenge (SVB, 2018). Hence, it is essential to better understand the factors that help start-ups attract jobseekers.

Despite the importance of this topic, the entrepreneurship literature has paid only limited attention to it (Cardon & Stevens, 2004; Greer, Carr, & Hipp, 2016; Williamson, 2000). Of the studies that have done so, one line of inquiry has focused on start-ups’ recruitment practices, with evidence suggesting that these practices tend to be informal (Kotey & Slade, 2005) and
reliant on personal networks (Leung, 2003; Leung, Zhang, Wong, & Der Foo, 2006). Other work has explored how internships can influence interns’ intentions to join start-ups (Zhao, 2013) and how recruitment-related entrepreneurial identity claims lead to greater organizational attractiveness, moderated by employee entrepreneurial behavior (Moser et al., 2017).

In short, recent scholarship has only begun to scratch the surface of how the labor market for start-ups works. Specifically, we still know relatively little about how entrepreneurs attract workers, and what factors influence jobseekers’ decisions to select one start-up over another. This is an important question because successfully recruiting employees is critical for start-ups to succeed (Coad, Nielsen, & Timmermans, 2017; Gjerlov-Juel & Guenther, 2019). In practice, jobseekers have limited ways to obtain information about start-ups because most start-ups lack a readily observable ‘track record’. Therefore, when assessing a start-up, jobseekers invariably face a high degree of information asymmetry (Bergh, Ketchen, Orlandi, Heugens, & Boyd, 2019). As a result, jobseekers must rely on observable attributes as signals (Connelly, Certo, Ireland, & Reutzel, 2011; Spence, 1973). In this paper, I argue that founder prestige can serve as such a signal, being both observable and a known attractor for people looking to match with others (Chahine, Filatotchev, & Zahra, 2011; Pollock, Chen, Jackson, & Hambrick, 2010).

Defining prestige as membership of an elite social circle (D’Aveni, 1990; D’Aveni & Kesner, 1993), I attempt to answer the following question: Does having a prestigious founder make a start-up more attractive to jobseekers? If so, what is the underlying attribute that founder prestige signals?

Using signaling theory (Spence, 1973) I conceptualize founder prestige as a piece of information that can simultaneously signal both the ability of the founder and the quality of the business. My setting is a little more complicated than that in simple signaling models because in
my case, a single signal can refer to multiple underlying attributes (Quinzii & Rochet, 1985; Smart, 2000). Therefore, my model extends the traditional one signal–one attribute model into a one signal–multiple attributes domain. This calls for a dedicated empirical approach to identify which attribute plays the dominant role in the signaling process. Specifically, I propose a sequential experimental design comprising three randomized controlled laboratory experiments. The first experiment establishes the existence of founder prestige as a signal, with two subsequent experiments uncovering the underlying attributes conveyed by the signal. While prior research has extended signaling theory by considering the implications of multiple signals, a setting where a single signal is consistent with multiple underlying attributes has been little discussed in the management literature to date (Connelly et al., 2011).

Moreover, while prior research has predominantly relied on correlational methods (Hsu, Simmons, & Wieland, 2017), the present paper uses randomized controlled experiments to test its hypotheses. By eliminating biases caused by self-selection (Heckman, 1990) and endogeneity, randomized controlled experiments allow researchers to identify causal relationships. Moreover, controlled laboratory experiments give the researcher control over what the participants are exposed to, facilitating the exploration of boundary conditions. Another advantage of an experimental design is that it avoids asking participants explicitly about their decision process. It is known that questions of this kind can prime respondents’ cognitive processes and bias the results (Schwarz, 1999; Zaller & Feldman, 1992). I take advantage of these elements and conduct multiple experiments, altering only specific aspects of the experiment. My approach allows for an examination of how jobseekers use founder prestige to evaluate start-ups without the need to ask the participants explicitly.
Finally, my work also complements research on recruitment in organizations. While recruitment has been a relatively understudied area within the entrepreneurship literature (Moser et al., 2017; Williamson, 2000), researchers in the human resource management and psychology literatures have examined various factors that influence jobseekers’ behaviors and their attraction to different jobs and employers (Chapman, Uggerslev, Carroll, Piasentin, & Jones, 2005). Among these factors are various job attributes such as pay, security, and advancement opportunities (Jurgensen, 1978; Rynes, Gerhart, & Minette, 2004). Furthermore, researchers have found that jobseekers use organization-level characteristics to assess potential employers (Gatewood, Gowan, & Lautenschlager, 1993). Such organizational-level characteristics include CSR activities (Jones, Willness, & Madey, 2014), legitimacy and reputation (Turban & Cable, 2003; Williamson, 2000), and familiarity (Chapman et al., 2005; Williamson, Cable, & Aldrich, 2002). However, most of the research on recruitment has focused on large firms, with only a handful of studies out of hundreds focusing on young and small firms (Greer et al., 2016). Only recently have researchers begun to examine in earnest hiring in the context of start-ups (Backes-Gellner & Werner, 2007; Moser et al., 2017; Williamson, 2000). Thus, I believe the present paper will also be of interest to entrepreneurship scholars (and entrepreneurs) interested in organizational recruiting.

This section is organized as follows. First, I outline the unique challenges faced by start-ups looking to hire workers and discuss how recruitment by start-ups differs from recruitment by large and well-established firms. Next, I use signaling theory to analyze how founder prestige can make a start-up more attractive to jobseekers. I then describe the randomized controlled experiments used to test the hypotheses, before presenting the results. The paper closes with a brief discussion.
3.2 Theoretical Development

3.2.1 Jobseekers and Entrepreneurship

Hiring talent is necessary for start-ups to prosper and grow. Evidence shows that employee recruitment is associated with superior venture sales growth and long-term survival prospects (Coad et al., 2017; Gjerløv-Juel & Guenther, 2019). Yet entrepreneurs often declare that recruiting talent is a major challenge (Williamson, 2000). Start-ups are vulnerable to high failure rates; this implies lower job security for employees, which reduces their attractiveness to jobseekers, and few start-ups are as well-known as large firms, implying greater uncertainty about future prospects (Williamson et al., 2002). Therefore, compared to large and established firms, start-ups face several disadvantages when it comes to attracting jobseekers. As a result, while established firms are usually offered many job applicants from which to select workers, few start-ups enjoy this luxury, often having to convince jobseekers to apply (Backes-Gellner & Werner, 2007). Thus, whereas large and established firms typically have more power than jobseekers in the recruiting market (Spence, 1973), for new start-ups, the situation is reversed.

While recruitment is a relatively understudied area within the entrepreneurship literature, extensive research in economics, psychology, and human resource management has identified job characteristics that attract jobseekers (Chapman et al., 2005; Jurgensen, 1978). According to economists, jobseekers look for jobs providing the highest expected utility, with utility principally determined by income (Kihlstrom & Laffont, 1979; Lucas, 1978; Parker, 2018). Research in the psychology and human resource management literatures has also found pecuniary factors such as pay and job security to be important drivers of job and occupational choice (Rynes et al., 2004; Rynes, Schwab, & Heneman, 1983). While some researchers argue that non-pecuniary benefits, such as autonomy and independence, can also be important (Benz &
Frey, 2004), others argue that they only play a secondary role (Chapman et al., 2005; Rynes et al., 1983).

To the extent that jobseekers are forward-looking, they should value future expected business performance and future income when choosing a venture in which to work. Firms with favorable long-term performance prospects are more likely to offer competitive future salaries and attractive promotion prospects and are less likely to fail. Of course, hard information about future performance is rarely available, so jobseekers must rely on indirect information, such as organizational attributes relating to current performance, size, location, reward structure, and reputation (Cable & Turban, 2003; Turban & Keon, 1993).

The lack of hard information about future performance reflects information asymmetry, which makes it difficult for jobseekers to accurately estimate a start-up’s future performance (Bergh et al., 2019). Start-ups often have no ‘track record’ for outsiders to use to infer quality, and because start-ups tend to be private firms, they have no obligation to report audited company information. Moreover, much of a start-up’s performance depends on the founder (Unger, Rauch, Frese, & Rosenbusch, 2011), about whom little is known beyond the usual self-promotion. Therefore, jobseekers often have limited sources from which they can obtain credible information about a start-up. Information sources such as company websites or other marketing materials may be unreliable because companies have incentives to provide selective information that makes them appear more attractive than they really are.

In environments characterized by a high degree of information asymmetry, investors are known to use various observable attributes about a start-up as signals of its future potential (Pollock et al., 2010). Like investors, jobseekers also use observable attributes of entrepreneurs
and their ventures as signals of future performance when assessing a start-up and deciding whether to pursue a job opportunity with it (Backes-Gellner & Werner, 2007).

### 3.2.2 Signaling Theory

Firms today interact with external entities in various ways. Meeting with venture capital investors to obtain funding (Plummer, Allison, & Connelly, 2016), dealing with banks to obtain loans (Backes-Gellner & Werner, 2007), appealing to other firms to form partnerships (Ozmel, Reuer, & Gulati, 2013), and interacting with jobseekers to hire employees (Spence, 1973) are only a few examples of the type of interactions firms engage in. In such interactions, it is often the case that the involved parties differ in terms of the information they possess about each other. For example, managers often know more about the quality and the level of risk regarding their own firm than the banks and the investors from whom they seek financial capital (Stiglitz & Weiss, 1981).

The differences in the information possessed by different parties lead to the state of **information asymmetry**, which Stiglitz defines as when “different people know different things” (Stiglitz, 2002: 469). As a deviation from the state of perfect information that is often assumed or seen as necessary for an efficient market (Stigler, 1961), information asymmetry creates various costs or inefficiencies. One such example is the possibility of a market failure, as demonstrated by Akerlof (1970). According to Akerlof, the existence of information asymmetry between the buyers and the sellers regarding the quality of used cars can make the buyers turn away from buying used cars and drive the market out of existence. Other commonly discussed costs of information asymmetry include higher transaction costs (Williamson, 1979), monitoring costs (Jensen & Meckling, 1976), IPO underpricing (Chahine et al., 2011; Cohen & Dean, 2005), and credit rationing or higher interest rates charged for loans (Stiglitz & Weiss, 1981).
Recognizing the importance of information in markets for different goods and services and the potential costs associated with information asymmetry among market participants, scholars have long tried to develop ways to overcome the problems associated with information asymmetry. One well-known result of such efforts is signaling theory (Spence, 1973). Signaling theory studies how market participants can use observable attributes as signals to reduce information asymmetry (Connelly et al., 2011; Spence, 2002). Originally, signaling theory was developed to examine how employers overcome the information asymmetry in dealing with jobseekers, and to make decisions regarding hiring and wage schedules. In this seminal work, Spence noticed that there exists a high degree of information asymmetry between employers and jobseekers regarding the productivity (or ability) of the jobseekers. He then went on to illustrate how employers can use observable attributes of jobseekers, such as the level of education, as signals of productivity to overcome the problems associated with information asymmetry.

Spence’s formulation of signaling theory takes place in the labor market. In this setting, an employer must decide on the level of wage to be offered to jobseekers. However, the employer is thought to be subject to a high degree of information asymmetry because they cannot directly observe the productive capabilities of applicants ex-ante, while applicants are assumed to be aware of their own capabilities. Moreover, the employer is thought to offer wages according to applicants’ productivity, so it is in the interest of jobseekers to claim that they are highly productive even when they are not. After establishing the setting, Spence argues that employers rely on observable characteristics, such as the level of education, to form judgements about the productive capabilities of job applicants.

In demonstrating the usefulness of observable attributes as signals, Spence argues that for an observable attribute to function as a valid signal, the cost of obtaining the signal must be
negatively correlated with the unobserved productivity. Defining signaling cost broadly to include psychic, monetary, time, and other costs (Spence, 1973: 359), Spence argues that compared to a highly capable applicant, an applicant with low productive capabilities faces a higher cost of obtaining education because they have a harder time obtaining the grades and meeting the requirements for graduation. Obtaining a diploma provides similar benefits in the labor market for the high- and low-productivity individuals; this results in the people with low productivity having a lower benefit/cost ratio of obtaining higher education, thus reducing their incentive to obtain higher education. As a result, individuals with low productivity tend not to choose to obtain higher education compared to the highly productive individuals. This leads to a separating equilibrium and raises the conditional probability of an applicant being a highly-able-type, given that the applicant is highly educated. Accordingly, employers can use the level of education (observable) to infer the productive capability (unobservable) of applicants, and it becomes rational for the employer to offer higher wages to those who are highly educated.

3.2.2.1 Application of Signaling Theory within the Entrepreneurship Literature

As interacting with outsiders is inevitable for virtually all kinds of businesses, signaling theory has been widely applied by management scholars to study how information asymmetry is managed in different contexts (Bergh, Connelly, Ketchen Jr, & Shannon, 2014; Connelly et al., 2011). Within management research, signaling theory has been applied to study how firms deal with investors and capital markets (Higgins & Gulati, 2006; Khoury, Junkunc, & Deeds, 2013), choose alliance partners (Mindruta, 2013; Ozmel et al., 2013), and conduct M&A activities (Reuer, Tong, & Wu, 2012), among other topics.

Entrepreneurship involves a particularly high level of information asymmetry (Parker, 2018) for several reasons. First, start-ups often have no track record which outsiders can use to
infer quality (Stuart, Hoang, & Hybels, 1999). Second, because most start-ups are private firms, they are not obligated to report audited company information, thus further reducing the number of sources from which outsiders can obtain information. Third, unlike other public firms, there is no institution for start-ups that performs the role of a credit-rating agency.

Reflecting the higher severity of information asymmetry surrounding start-ups, signaling theory has been commonly invoked by entrepreneurship scholars. Entrepreneurship researchers have applied signaling theory to examine how entrepreneurs interact with banks (Backes-Gellner & Werner, 2007; Eddleston, Ladge, Mitteness, & Balachandra, 2016), angel investors (Conti, Thursby, & Rothaermel, 2013), venture capital investors (Busenitz, Fiet, & Moesel, 2005; Plummer et al., 2016), crowdfunding providers (Ahlers, Cumming, Günther, & Schweizer, 2015), and investors in initial public offerings (Certo, 2003; Higgins & Gulati, 2003, 2006; Pollock et al., 2010). Most of the entrepreneurship research on signaling has been conducted to examine how start-ups interact with various forms of investors, with many studies taking place in the context of initial public offerings. Other than the interactions with investors, a few notable contexts under which scholars study signaling of new firms include alliance formation (Ozmel et al., 2013) and recruitment (Backes-Gellner & Werner, 2007).

Reflecting the popularity of signaling theory among entrepreneurship scholars, the research in signaling theory has examined various venture attributes and their ability to function as a signal. At the founder level, some of the commonly studied signals include prior work or management experience (Plummer et al., 2016), education (Backes-Gellner & Werner, 2007) and the level of personal investment in the venture (Conti et al., 2013; Eddleston et al., 2016). At a higher level, some researchers study the attributes associated with the top management team (TMT) or the board of directors. Signals at this level often include the TMT’s past experiences in
entrepreneurship and other relevant industries (Ahlers et al., 2015; Busenitz et al., 2005; Higgins & Gulati, 2006), TMT and/or board prestige (Certo, 2003; Chahine et al., 2011; Cohen & Dean, 2005; Lester, Certo, Dalton, Dalton, & Cannella, 2006; Pollock et al., 2010), TMT industry affiliations (Higgins & Gulati, 2006), and board structure (Certo, Daily, & Dalton, 2001).

At the venture level, a popular type of signal seems to be the type of affiliations made by ventures. Such affiliations include affiliations with alliance partners (Khoury et al., 2013; Ozmel et al., 2013; Reuer et al., 2012; Stuart et al., 1999), venture capital investors (Arthurs, Busenitz, Hoskisson, & Johnson, 2009; Colombo, Meoli, & Vismara, 2019; Ozmel et al., 2013; Pollock et al., 2010; Ragozzino & Reuer, 2011; Reuer et al., 2012), and prestigious underwriters (Arthurs et al., 2009; Colombo et al., 2019; Higgins & Gulati, 2006; Pollock et al., 2010; Reuer et al., 2012; Stuart et al., 1999). Apart from affiliations, other venture-level signals include patents (Hoenen, Kolympiris, Schoenmakers, & Kalaitzandonakes, 2014; Scheaf, Davis, Webb, Coombs, Borns, & Holloway, 2018), government grants (Islam, Fremeth, & Marcus, 2018), and usage of commercial real estates (Plummer et al., 2016).

3.2.2.2 Separating and Pooling Equilibrium in Signaling Theory

The central arguments that lie at the heart of signaling theory are the negative correlation between signaling costs and the unobservable attribute being signaled, and the notion of separating equilibrium (Bergh et al., 2014; Spence, 2002). However, while many scholars use the word signaling and cite Spence’s seminal paper (Spence, 1973), many fail to address this important concept. In fact, a review by Bergh et al. (2014) of signaling papers published in management journals from 1973 to 2013 shows that about 48 percent of the papers do not discuss signaling cost or separating equilibrium, while 38 percent discuss signaling cost but not the process that leads to a separating equilibrium. For a given problem to be a genuine signaling
problem discussed by Spence (1973), it is necessary to clearly demonstrate that there is a
separating equilibrium based on the proposed signal. Because it is the existence of a separating
equilibrium that allows signaling to work, it is important to highlight the differences between
pooling and separating equilibrium and the implications for each. Therefore, I offer a more in-
depth illustration using entrepreneurial finance as the context.

Similar to recruitment, entrepreneurial finance is a context that entails a high level of
information asymmetry. While entrepreneurs know relatively more about the viability of their
ventures, banks often lack sources from which to gather information about the entrepreneurs and
their ventures (Backes-Gellner & Werner, 2007). Therefore, in this context, entrepreneurs know
more about their ability to repay their loans than the loan officers who are less informed. In
addition, because the ability to obtain a bank loan and the associated interest rates are determined
by the entrepreneur’s ability to repay (as perceived by the loan officer), entrepreneurs of all types
have the incentive to appear as capable as possible.

Given the high level of information asymmetry between entrepreneurs and banks, without
the ability to separate the high-quality entrepreneurs from the low-quality ones, the banks are
forced to set interest rates based on the average quality of all entrepreneurs, resulting in a pooling
equilibrium (Stiglitz & Weiss, 1981). In a pooling equilibrium, it is the low-quality entrepreneurs
who gain because they are able to obtain loans at a lower interest rate than what they would
otherwise be required to pay in the absence of information asymmetry given their true quality.
This gain comes at the expense of the high-quality entrepreneurs who are forced to accept a
higher interest rate on their loans than the rate they deserve (Evans & Jovanovic, 1989; Stiglitz &
Weiss, 1981). Furthermore, it also creates opportunity costs for the banks that are not able to
optimally allocate their funds.
Similar to the employers in Spence’s example, the banks in this case can also use observable characteristics about the entrepreneurs and the venture as a signal of the viability of the business and to separate those who have the ability to repay the loan from those who do not. Such observable characteristics can include the level of collateral offered by the entrepreneur (Han, Fraser, & Storey, 2009) and the level of personal investment in the venture (De Meza & Webb, 1987). However, it is important to note that not all observable characteristics can serve as a signal. To be consistent with signaling theory, one needs to demonstrate that there is a separating equilibrium due to the costs associated with obtaining the signals being negatively correlated with the unobserved attribute being signaled.

Collaterals and personal investments in the ventures make good signals because it is easy to demonstrate the presence of separating equilibria. For example, because entrepreneurs who fail to repay their loan lose their collateral, entrepreneurs who operate low-quality ventures have a higher probability of losing their collateral than entrepreneurs who operate high-quality ventures. Therefore, low-quality entrepreneurs face a higher expected cost associated with offering collateral. Similarly, because low-quality ventures are more likely to fail, entrepreneurs who operate low-quality ventures should be reluctant to invest in their own ventures. As a result, only the entrepreneurs with viable ventures should be willing to post large collaterals and invest their personal wealth in their ventures, thus leading to a separating equilibrium. Based on this separating equilibrium, it becomes possible for the banks to differentiate the high-quality ventures from the low-quality ones and offer interest rates accordingly.

On the other hand, characteristics that do not exhibit this property cannot be used as a credible signal. For example, while preparing a business plan can be indeed costly, creating a business plan (Honig & Karlsson, 2004) is equally costly for the high- and low-quality ventures.
In this case, nothing prevents the low-quality firms from also creating business plans to make themselves appear attractive. The result is a pooling equilibrium where banks cannot differentiate between high- and low-quality entrepreneurs, and the signal ceases to be useful.

Many scholars invoke signaling theory without discussing signaling costs and separating equilibrium. However, without demonstrating a separating equilibrium, “researchers may identify various behaviors or characteristics as signals in the generic sense that are not consistent with signalling theory’s signals” (Bergh et al., 2014: 1335). Therefore, to correctly use signaling theory (Bergh et al., 2014; Connelly et al., 2011; Spence, 1973), it is critical for anyone applying signaling theory to clearly discuss why there should be a separating equilibrium around the observable characteristic that they theorize as a signal.

3.2.2.3 Signaling in Entrepreneurial Recruitment

Entrepreneurial recruitment provides an interesting context to apply signaling theory. In the labor market, start-ups face disadvantages compared to large established firms, such as the lack of financial capital, legitimacy, and familiarity. Therefore, start-ups must appeal to jobseekers who have incentives to evaluate start-ups based on their likely future performance. In the presence of information asymmetry, it is impossible for jobseekers to accurately assess the quality of employers. For example, consider two founders, one running a venture with high future potential and the other running a venture with low future potential. The founders are better (though still imperfectly) informed about their own venture’s potential than are jobseekers. Both founders want to attract joiners, so the low-potential venture founder has an incentive to misrepresent their hidden type and claim they have a high-potential venture. In the absence of a signal, jobseekers are unable to distinguish between the two types of ventures, so a pooling equilibrium emerges in which both start-ups look equally attractive (Akerlof, 1970). In the pooling equilibrium, the more
promising start-ups lose out because jobseekers do not view them as attractive as they really are, and as a result, they receive fewer job applications than they deserve. On the other hand, the less promising start-ups gain because jobseekers view them as more attractive than they really are, and as a result, they receive more job applications than they deserve. Therefore, in such settings, high-potential ventures have the incentive to use signals to break the pooling equilibrium and separate themselves from low-potential ventures. As I now go on to explain, founder prestige may be an especially useful signal in this regard.

### 3.2.3 The Importance of Founder Prestige

Although private information such as financial performance may not be available to the public, start-ups often provide information about the founder and his or her educational and employment background. These characteristics affect the founder’s prestige in the eyes of others. Prestige, which I define as membership of an elite social circle (D'Aveni, 1990; D'Aveni & Kesner, 1993), derives from one’s affiliations, such as the institutions associated with one’s education and work experience (Chen, Hambrick, & Pollock, 2008; Rivera, 2011). Prestige associated with elite affiliations may be increasing in general importance as rising average education and employment levels make the institutions associated with these outcomes ever more salient differentiators.

Evidence shows that having prestigious members of top management teams (TMTs) and boards of directors (BODs), typically defined as those with prestigious educational and employment-related affiliations, provides various benefits to entrepreneurs (Acharya & Pollock, 2013; Certo, 2003; Pollock et al., 2010).

Prestige appears to work as a signal of quality (Certo, 2003; Chahine et al., 2011). Scholars have found that having a prestigious TMT and/or BOD allows firms to be evaluated...

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12 Some examples include Ribbon and Clever. Information about their founders can be found at https://www.ribbonhealth.com/about-us/ and at https://clever.com/about
favorably by various external stakeholders such as creditors (D'Aveni, 1990), investors (Certo, 2003; Chen et al., 2008; Pollock et al., 2010) and potential executives and directors (Acharya & Pollock, 2013; Chen et al., 2008). For example, Certo (2003) argues that having a prestigious board member signals a start-up’s legitimacy and leads to superior initial public offering (IPO) performance. Other work shows that prestigious TMT members, executives, directors, venture capital firms, and underwriters are also associated with superior IPO performance (Chahine et al., 2011; Pollock et al., 2010). However, while most of the research on prestige has examined firms that perform IPOs and have TMTs and/or BODs, few start-ups achieve IPOs or use these organizational structures. For most start-ups, the founder takes on the lion’s share of the management of the venture and is the most (or only) visible face of the venture (Lazear, 2005). Therefore, for a new start-up, the founder is the salient conduit through which prestige can be conveyed to third parties (Chahine et al., 2011).

In the setting of uninformed jobseekers looking to join start-ups, I propose founder prestige as a signal. Furthermore, I conceptualize founder prestige as a piece of information that can signal two different unobservable attributes simultaneously: 1) founder ability, and 2) venture quality. Prior research has identified both these attributes as key drivers of new venture performance (Holmes & Schmitz, 1990); they are generally imperfectly observed by third parties. I now investigate whether founder prestige can signal them.

3.2.3.1 Founder Prestige as a Signal of Founder Ability

To obtain prestige, individuals can affiliate with entities that convey membership of an elite social circle, such as prestigious universities and employers (Chen et al., 2008; D'Aveni, 1990; Pollock et al., 2010). Prestigious entities need to protect their own status, so are selective in choosing who affiliates with them. For example, to be accepted at prestigious universities,
students are required to demonstrate their exceptional abilities through high test scores, demanding extra-curricular activities, and interviews (Rivera, 2011). Likewise, prestigious employers tend to make job offers selectively, with applicants demonstrating their abilities through multiple rounds of tests and interviews.

Following the usual logic of Spence’s (1973) educational signaling model, it is more costly for less able individuals to gain admission into prestigious universities or employment contracts. It takes less able people more time than their abler counterparts to obtain the knowledge and enhance their capabilities to gain admission into exclusive organizations. And even if they gain admission, the less able will have a harder time fulfilling work requirements and standards than the more able (Landsbergis, 1988). Being less likely to graduate from their university or management training programs, there is less incentive for the less able to imitate the more able and seek out these affiliations. Therefore, a separating equilibrium can arise whereby founder prestige derived from affiliations to prestigious universities and employers can signal to jobseekers their higher founder ability and hence superior expected future venture performance.

3.2.4.2 Founder Prestige as a Signal of Venture Quality

Under what conditions will an able founder remain with his/her start-up, rather than closing it down and taking an attractive job in paid employment? Prior research (Cooper, Gimeno-Gascon, & Woo, 1994; Gimeno, Folta, Cooper, & Woo, 1997) predicts that founders will continue with their start-up for as long as they expect the value of its future performance to exceed the opportunity cost of continuation. To the extent that prestige is valued by incumbent firms as well (Rivera, 2011), prestigious founders are likely to possess a valuable outside option in wage employment if they quit their venture. This increases the opportunity cost of entrepreneurship for more prestigious relative to less prestigious founders.
Founders with a higher opportunity cost of continuation in entrepreneurship will therefore stipulate a higher quality threshold for their venture if they are to stick with it. Founders who observe their venture quality to be lower than the threshold would quit their start-up and take wage employment instead (Cooper et al., 1994; Gimeno et al., 1997). Similarly, thresholds influence not only entrepreneurial exit but also entry (McCann & Folta, 2012) and product development (Green, Welsh, & Dehler, 2003) decisions. Therefore, the observation that a prestigious founder has decided to pursue the venture and continues to operate it indicates that the founder perceives the venture to be of high quality, with high future potential (Bernstein, Korteweg, & Laws, 2017). In other words, jobseekers can use founder prestige not only as a signal of underlying founder ability, but also (or alternatively) as a signal of the underlying quality of the venture. They can expect higher quality ventures to perform better, yielding higher future salaries and job security. Therefore, the quality of the venture represents another potential attribute that can be signaled by the presence of a prestigious founder to make a start-up more attractive to jobseekers.

To summarize, in the presence of imperfect information about new ventures, jobseekers can use the observable prestige of a founder to infer how well a venture is going to perform. They can do this by using prestige as a signal for two different underlying attributes that contribute to a venture’s future performance: founder ability, and venture quality. Similarly, recent evidence shows that investors use information about both founder ability and venture quality to predict future venture performance (Bernstein et al., 2017; Gompers, Kaplan, & Mukharlyamov, 2016; Huang & Pearce, 2015; Kaplan, Sensoy, & Strömberg, 2009). I therefore propose:
Hypothesis 1: Having a high prestige founder makes a start-up appear more attractive to jobseekers than having a low prestige founder.

3.2.4.3 Signaling What? – Uncovering the underlying attributes

Documenting a positive relationship between founder prestige and attractiveness to jobseekers does not say much about the underlying mechanism responsible for the relationship. In other words, we would be left without knowing which underlying attribute (founder ability or venture quality) is being signaled by founder prestige. Fortunately, I can use an element of signaling theory to infer the underlying attribute being signaled.

The most important element of signaling theory is the existence of information asymmetry. As discussed in Section 3.2.2, the reason a jobseeker uses an observable characteristic (e.g. founder prestige) as a signal of an unobservable attribute (e.g. founder ability or venture quality) is because these attributes cannot be observed directly. In other words, without information asymmetry, there is no need for a jobseeker to use founder prestige as a signal. Consistent with this view, scholars have found that the strength of a signal diminishes when the degree of information asymmetry regarding an unobservable attribute is reduced (Islam et al., 2018; Ragozzino & Reuer, 2011). Moreover, research also finds that a signal can become useless when other information that can serve as a substitute becomes available (Ozmel et al., 2013).

The model can be easily applied to my research setting. For example, in an environment where jobseekers have abundant information about founder ability, there would be no need for a jobseeker to use founder prestige as a signal to infer founder ability because founder ability would be easily inferred using other information. Therefore, if signaling of founder ability is the main mechanism responsible for the relationship in H1, then the relationship will be weakened
(negatively moderated) in an environment where jobseekers have access to abundant information about founder ability. Hence:

_Hypothesis 2: If founder prestige conveys hidden information about a founder’s ability, the relationship stated in Hypothesis 1 weakens or disappears to the extent that jobseekers access information that reduces the information asymmetry surrounding a founder’s ability._

In a similar manner, in an environment where jobseekers have abundant information about _venture quality_, there would be no need for a jobseeker to use founder prestige as a signal to infer venture quality. Therefore, if signaling of venture quality is the main mechanism responsible for the relationship in H1, then the relationship will be weakened (negatively moderated) in an environment where jobseekers have abundant information (apart from founder prestige) about venture quality. Accordingly:

_Hypothesis 3: If founder prestige conveys hidden information about a venture’s quality, the relationship stated in Hypothesis 1 weakens or disappears to the extent that jobseekers access information that reduces the information asymmetry surrounding a venture’s quality._

### 3.3 Methods

#### 3.3.1 Randomized Experiments in Entrepreneurship Research

Randomized experiments are often known as the ‘golden standard’ of establishing causal relationships (Stevenson, Josefy, McMullen, & Shepherd, 2020). Often taking place in a controlled laboratory setting, randomized experiments involve _randomly_ allocating participants to different groups and administering treatment(s) to a selected group or groups. As the name suggests, the heart of the randomized experiment is the random allocation of the participants into the control/treatment group(s). The randomization process ensures no systematic difference between the treatment and the control group in aspects other than the treatment of interest, and
that any observed difference is due to chance. This allows researchers to eliminate the threat of the omitted variable bias. Moreover, because participants do not self-select into control/treatment group(s), there is no threat of the self-selection bias.

In addition to the randomization process, randomized experiments are often performed in a controlled laboratory setting. This setting allows researchers to hold all other factors constant across the control and the treatment group(s), thus enabling researchers to further eliminate the possibility that some factor other than the treatment of interest is driving the effect. The control setting is particularly valuable for entrepreneurship study because entrepreneurship is a complex phenomenon with numerous factors at different levels affecting the entry, the process, and the outcomes. By eliminating the threats of endogeneity and selection-bias, randomized controlled experiments allow researchers to claim causal effects with extremely high internal validity.

While randomized controlled experiments provide researchers strong internal validity that enables them to claim a causal relationship, randomized controlled experiments have several weaknesses, such as limited generalizability and weak ecological validity (Gregoire et al., 2019). Generalizability, also called external validity, refers to the extent the findings of a study are generalizable outside of the specific sample to the broader population. Randomized experiments are commonly performed using a specific group of participants, often student participants; this is one of the most frequently discussed limitations of randomized controlled experiments. Ecological validity, on the other hand, focuses on the realism of the study and the extent to which an experimental setting reflects the real-life phenomenon a study aims to represent (Grégoire, Binder, & Rauch, 2019). Along with generalizability, weak ecological validity is another commonly discussed weakness of randomized experiments because randomized
experiments are frequently conducted in a laboratory setting and do not capture real-life decisions.

Researchers often compare randomized experiments with other types of experiments, such as quasi-experiments and natural experiments. Quasi-experiments mimic randomized treatment in situations where random administering of treatment is impractical, such as when examining firm-level behaviors in a real-world setting. Despite being similar to randomized experiments in structure, quasi-experiments differ in one important aspect: they lack randomization. Therefore, in a quasi-experiment the treatment is administered in a non-random manner. Although researchers often adopt various techniques, such as matching, difference in differences, and regression discontinuity, to improve internal validity, the threat of self-selection or endogeneity cannot be completely ruled out in a quasi-experiment. For example, although a matching approach allows researchers to create a control group that matches the treated group in many observable attributes, there is always a threat of endogeneity from unobserved variables. However, quasi-experiments often provide higher external and ecological validity than randomized controlled experiments.

Although some researchers use the term natural experiments and quasi-experiments interchangeably (Goldfarb & Tucker, 2014; Meyer, 1995), others separate quasi-experiments from natural experiments. Those who separate the two types of experiments argue that a quasi-experiment still allows researchers to maintain some control over the administration of the treatment (without the randomization). On the other hand, a natural experiment uses a serendipitous event, such as a natural disaster or a sudden change in a government policy, as the treatment of interest. The serendipitous aspect of the event under question allows researchers to reduce the threat of self-selection bias. However, when using a natural experiment, it is
important for researchers to clearly demonstrate that the event is truly serendipitous. Furthermore, while natural experiments are higher in generalizability and ecological validity than randomized controlled experiments, natural experiments have weaker internal validity because they cannot rule out endogeneity based on unobserved variables.

Despite the high internal validity and the ability to make causal inferences, the use of randomized experiments has been limited within the entrepreneurship research. According to the recent review by Stevenson et al. (2020) of the 34 journals that publish entrepreneurship related studies, only 171 studies used randomized experiments to study entrepreneurship related topics in the 20-year period from 2000 to 2019. Of these journals, the *Journal of Business Venturing* published the highest number of randomized experiment papers with 46 papers, followed by *Entrepreneurship Theory and Practice* with 33 papers. Having only 171 studies over the 20-year period seems very low. However, the number of entrepreneurship papers that use randomized experiments has grown rapidly in recent years with 27, 17, and 32 papers being published in the years 2017, 2018, and 2019, respectively (Stevenson et al., 2020), a sign that randomized experiments are gaining acceptance within the community of entrepreneurship scholars.

One of the critical components of randomized experiments is the random allocation of treatment by researcher(s). However, it is often difficult for researchers to recruit and administer treatments at the organizational level. Accordingly, most of the studies tend to administer their experiments at the individual-level and study individual-level theories that originate from psychology. Such theories include cognition-related theories, self-regulation, and motivational theories, among others (Stevenson et al., 2020). On the other hand, theories that originate from different disciplines, such as economics and organizational theory, have been less frequently
examined using experimental methods and provide opportunities for researchers to apply experimental methods.

3.3.2 Logistics – Pilot Studies with MTurk and the Behavioral Lab

In this section, I briefly discuss the pilot studies conducted before the main study. I describe the logistics in this section and provide a detailed discussion of the experimental design in the next section. I ran two pilot studies, which I used to improve the experiments. The first pilot study was administered using Amazon MTurk. In this pilot study, I examined prestigious education and prestigious work experience separately using a control condition and three treatment conditions, with participants randomly allocated into one of the four conditions. In the control condition, the founder was described as having non-prestigious education and non-prestigious work experience. Treatment 1 described the founder as being affiliated with highly prestigious schools and employers. Treatment 2 described the founder as being affiliated with prestigious schools, but non-prestigious employers. Finally, treatment 3 described the founder as being affiliated with non-prestigious schools and prestigious employers. Potential participants were invited to participate in an experimental study on job seeking behavior. Only participants from Canada and the United States were included in the study. Furthermore, to make the sample more relevant to the research question, I limited selection to those aged between 18 and 30. Each participant received $0.50 for their participation in the study and was permitted to participate in only one of the three studies. The experiment was comprised of three studies (I will explain the differences between the studies in the next section) and I recruited 216 participants per study through Amazon MTurk. Unfortunately, many of the participants failed to pass the attention checks, resulting in the final sample sizes of 121, 124, and 128 for Studies 1, 2, and 3, respectively.
In addition to Amazon MTurk, I also used student participants to conduct the pilot study. To do so, I used the behavioral lab of a prominent North American business school. As compensation for participating in the study, the behavioral lab provided students with credits they could use to satisfy their course requirements for research participation. Unfortunately, the behavioral lab is shared by all faculty within the school, which greatly limited the number of students who could participate in the pilot study. The pilot study using student participants had 109, 100, and 105 participants for Studies 1, 2, and 3, respectively. After removing those who failed to pass the attention checks, the final sample size was 100 for Study 1, 87 for Study 2, and 95 for Study 3.

The two pilot studies provided many useful insights that informed in the design of the final experiment. First, the pilot studies illustrated the attractiveness of adopting the ‘test-retest’ method in the studies. Although the random allocation of participants into the control and treatment groups ensures that there is no systematic bias in the results, I cannot rule out the possibility that the participants in the control and the treatment groups differ from each other in terms of characteristics other than the treatment by chance. Therefore, simply comparing the dependent variables across the control and the treatment groups cannot rule out the possibility that the observed difference is driven by an unobserved variable. To overcome this concern, I opted to use the ‘test-retest’ method to enhance the internal validity. The ‘test-retest’ method compares the dependent variables between the control and the treatment group both before and after the treatment is administered. By ensuring that the pre-treatment dependent variable does not differ between the control and the treatment groups, I can argue that any observed differences in the dependent variable post-treatment are due to the treatment of interest.
Second, the pilot study highlighted the importance of student age. In the second pilot study, I accepted student participants of all ages. As a result, most of the participants in the study were first year students, with the mean age of 18.17, 18.54, and 18.43 for Studies 1, 2, and 3, respectively. Because I used firms, such as Goldman Sachs and the Boston Consulting Group to illustrate high prestige work experience, the high proportion of first year students are problematic since they are less likely to be familiar with these firms and therefore, less likely to perceive them as highly prestigious. Furthermore, first year students are unlikely to be familiar with the recruitment process and therefore, are unfit for my research question. This experience highlighted the need to limit participation to third and fourth year students, who are more likely to perceive the above firms as prestigious and who are likely to be going through the recruitment process or planning to do so in the near future.

Finally, I realized that it may not be possible to obtain enough student participants to run the study with three treatment groups. My experimental design involved running three separate studies. However, although I was lucky in the pilot study to be able to recruit many participants, I was informed by the behavioral lab that the same is unlikely to happen again when I run the revised study. Because my research question involves examining the effects of founder prestige, and not how different elements of prestige interact with each other, I decided to drop two treatment conditions and focus on comparing a non-prestigious founder and a founder with both prestigious education and prestigious work experience.

3.3.3 Experiment 1 - Experiment Design

I performed the experiment in the behavioral lab of a prominent North American business school. Since I was interested in how actual jobseekers evaluate start-ups, my subjects were business students in their third or fourth year of studies. Business students typically go through a
recruitment process in their third year (for internships) and in their fourth year (for full-time positions). Limiting the participant sample to third and fourth year students achieves a better match between the sample and the population of interest and improves the external validity of the experiments. To compensate subjects for participating in the experiments, I assigned students credits for use towards their course requirements for research participation. A total of 80 students participated in Experiment 1.

Upon arriving at the behavioral lab, students were first asked to complete a preliminary questionnaire eliciting some basic respondent information, before being asked to imagine undergoing a job search process. Following the questionnaire, each respondent received a hypothetical job post and a one-page description about a start-up venture (‘Start-up 1’), the start-up’s product, and its founder. There were two versions of the job post: one for a Business Analyst (BA) position and the other for a Financial Analyst (FA) position. The two job posts and descriptions for this first start-up venture were identical in all respects except the BA/FA framing.

One of the questions in the preliminary questionnaire asked the participants to choose their area of specialization from the following list: management/strategy, marketing, entrepreneurship, accounting, finance/investment banking, or ‘other’. The experiment was set up so that the participants who recorded management/strategy, marketing, entrepreneurship, or ‘other’ as their area of specialization were presented with the Business Analyst job post; and those who recorded finance/investment banking or accounting were presented with the Financial Analyst job post. The reason for having two different versions of a job post was to reduce the number of participants who dismissed the opportunity as unattractive due to a mismatch between
the job and their background (Stenard & Sauermann, 2016). Appendices 1 and 2 provide details of both types of job post.

After the participants reviewed the job post and description, I asked them to answer a series of questions measuring the attractiveness of the start-up. All participants, regardless of whether they belonged to the treatment or control group, received identical information at this stage, and I checked the answers to the questionnaires to ensure that the two groups did not differ from each other in terms of how they evaluated potential employers. I provide the company description for ‘Start-up 1’ in Appendix 3.

In the final step, I asked the participants to imagine they were continuing with their job search and came across a similar job post at a second, different, start-up (‘Start-up 2’). This process was similar to the process the participants engaged in for Start-up 1. First, the participants were shown a job post similar to the one they reviewed for Start-up 1. The details of the job such as the position title, salary, and job description, remained identical to the one provided for Start-up 1; the only difference was the name of the employer. After the participants had a chance to review the job post, they also received a one-page description containing information about the firm, the product, and the founder of Start-up 2. While there was only one version of the company description for Start-up 1 with all participants being shown the same description, for Start-up 2, I circulated two different versions of the company description, one to a treatment group and the other to a control group.

Participants were randomly divided into two groups of equal size and received either the treatment or control versions of the company description. While both groups received identical venture descriptions in terms of the name of the company, the location of the headquarters, the product, and the founder’s name, gender, level of education, and years of work experience, they
differed in terms of the level of prestige associated with the founder. Specifically, the information provided to the treatment group described the founder as having obtained a Bachelor of Science degree from Stanford University and an MBA degree from Harvard Business School. In terms of work experience, the founder was described as having worked at Google prior to his MBA, and at the Boston Consulting Group after obtaining his MBA degree. For the control group, the founder of the start-up was described as having obtained a Bachelor of Science degree from Regent University and an MBA degree from University of Montana. In terms of work experience, the founder was described as having worked at a local software solutions provider before, and at a local consulting firm after earning his MBA. I provide the company descriptions used for the control and the treatment group in Appendices 4 and 5, respectively.

Since the random assignment into the treatment/control groups occurs at the participant level, the treatment dummy was defined for both Start-up 1 and Start-up 2. The use of two separate start-up descriptions exemplifies a ‘test-retest’ methodology, which is a common approach to enhance the internal validity of experiments (Bickman and Rog, 2008). The purpose of the first start-up (Start-up 1) was to establish whether the participants in the treatment and control groups differed from each other in terms of how they evaluate start-ups. If they did not differ in terms of how they evaluated Start-up 1 but did differ in how they evaluated Start-up 2, where treatment and control groups were formed, support is adduced to the argument that any difference observed for Start-up 2 is attributable to the treatment, rather than being driven by some other omitted factor.

3.3.3.1 Measures

**Independent Variable** A treatment dummy was coded 1 for members of the treatment group and 0 for members of the control group.
Dependent Variable  The dependent variable of interest is a start-up’s attractiveness to jobseekers. It was measured using two scales. The first was Highhouse, Lievens and Sinar's (2003) five-item ‘Intention to Pursue’ scale and the second was the five-item ‘Organizational Attractiveness’ scale also developed by Highhouse et al. (2003). I provide the questions that were used to construct the scales in Appendix 6.

Both scales were developed using a five-point Likert scale ranging from Strongly Disagree to Strongly Agree. I made a slight modification because of a concern that since participating in a research study was a requirement for the students, they may not stay focused throughout the study and would cluster around options such as ‘Somewhat Agree’. Upon consultation with the research officer at the behavioral lab, I decided to extend the scale to range from 1 (Strongly Disagree) to 7 (Strongly Agree). Furthermore, instead of using radio buttons to collect response, I used sliders as they are known to make surveys more engaging for participants (Roster, Lucianetti, & Albaum, 2015). The Cronbach alphas for the two dependent variables averaged .89 and .91.

Control Variables  Several covariates were used to test the randomization of the study and were also included as control variables. These covariates include age, gender, type of job post provided, future entrepreneurship intention, and socioeconomic status. Future entrepreneurship intention was measured using the responses to the question: “Do you think you will ever try to pursue entrepreneurship in the future?” The responses were recorded using a five-point scale with answers ranging from 1 (Definitely not) to 5 (Definitely yes). Gender was measured using a dummy variable with 1 indicating male and 0 indicating female. To measure the socioeconomic status of the participants, I followed the approach of Kish-Gephart and Campbell (2015) and asked the participants directly: “Which of the following best describes your family’s
socioeconomic situation while you were growing up?” Participants could choose from the options: lower, lower-middle, middle, upper-middle, and upper class.

Subjective and objective measures of socioeconomic class are found to be similar in their relationship to various outcomes such as risk-taking and prosocial behavior (Kish-Gephart & Campbell, 2015; Piff, Kraus, Côté, Cheng, & Keltner, 2010). However, to verify the validity of the scale, which is subjective in nature, I calculated the Spearman’s rank correlation between the subjective scale and the parent’s combined income. The correlation between the participants’ perceived socioeconomic status and parent’s combined income was .72 (p < .001). The result is in line with previous research which shows a moderate to strong correlation between subjective and objective measures of socioeconomic class (Kish-Gephart & Campbell, 2015).

Table 1 presents the results of the randomization checks for the control variables. Table 1 shows that the control and the treatment groups were not significantly different from each other. One variable of possible concern is socioeconomic status, the self-reported values of which being higher for members of the treatment group than the control group. With a p-value of .11, the difference comes close to being statistically significant. However, given that my analysis below will control for this variable, I believe the difference will not bias the results.

3.3.4 Experiment 1 – Results

To ensure that participants were focused throughout the experiments, I incorporated several attention checks such as questions that ask the name of the company and the job title as well as questions that instruct participants to move the sliders to the rightmost position. After removing all the responses that failed to pass the attention checks, the final sample size for Experiment 1
was 74. Table 2 presents the descriptive statistics for Experiment 1. The mean age for the participants is a little over 20, reflecting the fact that I only recruited students in their third year or higher. Moreover, there were slightly more male participants than females, and slightly more participants provided with a BA job post than a FA job post. Also noteworthy are the high correlations between the measures for the attractiveness of Start-up 1 and the measures for the attractiveness of Start-up 2. The positive correlations between these measures suggest that there are significant within-subject correlations in the way individuals evaluate different employers.

Table 3 presents the OLS results of Experiment 1. Columns (1) and (2) of Table 3 present the OLS results for Start-up 1 using Intention to Pursue and Organizational Attractiveness, respectively, as dependent variables. Because the treatment and control groups were provided with the identical information for Start-up 1, I would expect the two groups to be similar. This expectation is borne out for both dependent variables (\(b = 0.12\) and \(p = .72\) for Intention to Pursue, and \(b = 0.48\) and \(p = .14\) for Organizational Attractiveness).

Columns (3) and (4) display the OLS results for Start-up 2, where the founder is described as prestigious for the treatment group and non-prestigious for the control group. Given that this was the only difference in the information provided to the treatment and the control group, a significant coefficient on the treatment dummy would indicate a causal effect of having a prestigious founder. The results show that both Intention to Pursue (\(b = 0.63\) and \(p = .06\)) and Organizational Attractiveness (\(b = 0.99\) and \(p = .00\)) are higher for the treatment group than the control group. Holding other factors at the mean, for the male participants who received a BA job post the treatment effects correspond to about a 16.8 percent and a 29.4 percent increase for Intention to Pursue and Organizational Attractiveness, respectively. The results indicate that
having a prestigious founder makes a start-up substantially more attractive to jobseekers, thus supporting Hypothesis 1.\footnote{Results are robust to including the responses from the participants who failed the attention checks.}

3.3.5 Exploring the Underlying Attributes in Experiments 2 and 3

The significant effects found in Experiment 1 confirm the existence of a causal relationship between founder prestige and attractiveness to jobseekers. Yet simply documenting a causal effect of founder prestige does not reveal what drives this effect. Therefore, I adopt the general approach taken by List (2004) and Younkin and Kuppuswamy (2018; 2019) and use a sequential experimental design to examine whether founder prestige attracts jobseekers by signaling founder ability or by signaling business quality. To do so, I conducted two further Experiments, 2 and 3, which provide selective additional information about attributes of founders and their ventures. This was used to test Hypotheses 2 and 3 relating to whether prestige signals founder ability or venture quality, respectively.

The basic idea is as follows. Experiment 2 provides all subjects, both treatment and control, with additional information about founder ability, while Experiment 3 provides all subjects with additional information about venture quality. As noted above, information asymmetry about an unobservable attribute is a necessary condition for signals to be effective. If jobseekers have abundant information about an unobservable attribute (e.g., founder ability), then there is no need for them to rely on imperfect proxies such as founder prestige as a signal. My experimental design utilizes this key requirement for signaling theory. Experiment 2 does so by providing both the treatment and the control group with more information about the founder’s
ability, so reducing the degree of information asymmetry around founder ability. As a result, founder prestige becomes less useful as a signal of founder ability in Experiment 2. I follow a similar approach in Experiment 3, except that I reduce information asymmetry around venture quality. Therefore, in Experiment 3, founder prestige is deliberately made less useful as a signal of venture quality.

If the treatment effect disappears in Experiment 2 but not in Experiment 3, one can infer that the prestige signal conveys information about founder ability, as per Hypothesis 2. If on the other hand the treatment effect disappears in Experiment 3 but not in Experiment 2, one can infer that the prestige signal conveys information about venture quality, as per Hypothesis 3. If the treatment effect disappears in both Experiment 2 and Experiment 3, one can infer that the prestige signal conveys information about both founder ability and venture quality. Finally, if the treatment effect remains robust in both Experiment 2 and Experiment 3, it would suggest that founder prestige makes a start-up more attractive to jobseekers through some other mechanism.

3.3.5.1. Experiments 2 and 3 – Experimental Design

Experiments 2 and 3 followed a similar design to Experiment 1. Like Experiment 1, I recruited 80 (different) undergraduate business students in their third and fourth year of studies for each experiment. Because participants were debriefed at the end of the experiment, I ensured that no students participated in more than one experiment. The participants in Experiments 2 and 3 went through the same process as the participants for Experiment 1. Furthermore, I used the same dependent variables, treatment, and control variables. The differences were in the level of information asymmetry around the key unobservable attributes: founder ability and venture quality.
Experiment 2 tests whether jobseekers use founder prestige as a signal of founder ability (Hypothesis 2). It does so by providing both the control and the treatment group participants with additional information, relative to Experiment 1, which reduces the information asymmetry regarding the founder’s ability. Thus, in addition to the previous information given in Experiment 1, the founder in Start-up 2 was now described as being a member of an international high IQ society; placing second in a nation-wide pitch contest; having a successful prior entrepreneurship experience; being selected as one of the most promising founders by a well-known business magazine; and having personal connections in related industries to that of their current start-up. By providing more information that jobseekers can use to infer founder ability, Experiment 2 reduces jobseekers’ reliance on founder prestige as a signal of founder ability. If this is what explains the positive relationship between founder prestige and the attractiveness of a start-up to jobseekers, then the effects should be reduced or eliminated, as proposed in Hypothesis 2.

Experiment 3 tests whether jobseekers use founder prestige as a signal of venture quality (Hypothesis 3). It does so by providing both treatment and control group respondents with additional information, relative to Experiment 1, which reduces the information asymmetry regarding the venture’s quality. Thus, in addition to the previous information given in Experiment 1, the start-up was now described as showing high market potential; able to build a significant customer base; reaching the break-even point; obtaining significant venture capital funding; being selected as one of the most promising start-ups by a well-known business magazine; and hiring over 50 employees. By providing more information that jobseekers can use to infer venture quality, Experiment 3 reduces jobseekers’ reliance on founder prestige as a signal of venture quality. If this is what explains the positive relationship between founder
prestige and the attractiveness of a start-up to jobseekers, then the effects should be reduced or eliminated, as proposed in Hypothesis 3.

3.3.4.2 Sequential versus Simultaneous Experiments for Studying the Underlying Attribute

Although I conducted the experiments separately, the experiments share a substantially similar structure. Hence, one can ask: Why not combine the data from the three experiments and analyze them together, rather than analyzing them separately for each experiment? In fact, while the sorting of participants into the treatment and control groups within each experiment was randomized, the sorting of participants across the three experiments was not. There was also a significant time gap between the experiments, of about one month. Hence, there could be systematic differences between participants in the experiments in terms of unobserved characteristics. Such differences can include, but are not limited to, the level of stress that can result from mid-terms, assignments, and other commitments such as campus recruiting; and students who choose to fulfill the research requirement early in the semester being more organized than the students who participate later in the semester. These unobserved differences could introduce endogeneity into a pooled sample model by affecting the way students evaluate start-ups, therefore removing the benefit of conducting randomized control trials.

While the above issue makes it undesirable to compare the results across the three experiments, it did not preclude testing of the hypotheses. Tests of Hypotheses 2 and 3 involve examining the effect of founder prestige in environments with a reduced level of information asymmetry around 1) founder ability and 2) venture quality, respectively. This was done by examining the coefficient of the treatment dummy in each experiment separately. Because the sorting of participants into the treatment and control groups within each experiment was randomized, I was still able to infer causal relationships. An alternative approach might have
conducted a single large experiment at the outset, creating different groups for untreated, treated, and treated with additional information, before running an OLS two-way interaction model. I did not follow that approach because it only made sense to conduct Experiments 2 and 3 if Experiment 1 first revealed a significant effect from founder prestige. Also, I faced the practical constraint that the number of subjects that could be accommodated in the laboratory at any one time was limited, making a sequential approach necessary. As noted above, the sequential experimental approach has been used before in the entrepreneurship setting (List, 2004; Younkin & Kuppuswamy, 2018, 2019).

3.3.6 Experiments 2 and 3 – Results

After removing all the responses that failed to pass the attention checks, the final sample sizes for Experiments 2 and 3 were 73 and 76, respectively. Table 1 provides the results of randomization checks. The results of randomization checks show that there were significantly more students in the treated group in Experiment 3 who were provided the BA job post compared to the control group. I control for this variable in the analysis. Table 4 reports the descriptive statistics for both experiments. The mean age for the participants is slightly over 20, like that of Experiment 1. Also, in both experiments, there were slightly more male participants than female participants, and slightly more participants who received a BA job post than those who received a FA job post.

Table 5 reports the results for Experiment 2. Columns (1) and (2) presents the OLS results using Intention to Pursue and Organizational Attractiveness as the dependent variables for Start-up 1, which was used to test if the control and the treatment groups are similar in the way
they evaluate start-ups. Columns (3) and (4) present the OLS results for both dependent variables for Start-up 2, which was used to administer the treatment. As before, the results for columns (1) and (2) reveal that the participants in the control group and the treatment group are similar in terms of evaluating start-ups \((b = -0.09\) and \(p = .71\) for Intention to Pursue and \(b = 0.38\) and \(p = .16\) for Organizational Attractiveness). The results for columns (3) and (4) \((b = 0.20\) and \(p = .41\) for Intention to Pursue and \(b = 0.40\) and \(p = .18\) for Organizational Attractiveness) are consistent with Hypothesis 2, suggesting that when I provide more information from which jobseekers can infer a founder’s ability and therefore reduce the need to use founder prestige as a signal, the benefits of having a prestigious founder are reduced.

Different results were found in Experiment 3. Table 5 also reports the OLS results for Experiment 3. As before, columns (5) and (6) indicate that the control and the treatment groups are similar in the way they evaluate start-ups \((b = 0.16\) and \(p = .60\) for Intention to Pursue and \(b = 0.48\) and \(p = .14\) for Organizational Attractiveness). In columns (7) and (8), both Intention to Pursue \((b = 0.67\) and \(p = .03\) and Organizational Attractiveness \((b = 0.64\) and \(p = .05\) are higher for the treated group compared to the control group. Although the effects for organizational attractiveness are smaller than that in the first experiment, the results suggest that providing more information about the quality of a venture and therefore reducing the information asymmetry around venture quality does not eliminate the benefits of having a prestigious founder. Holding other factors at the mean, for the male participants who received a BA job post the treatment effects corresponds to about 15.3 percent and 14.6 percent for Intention to Pursue and Organizational Attractiveness, respectively. These results do not support Hypothesis 3, implying
that the effects reported in Experiment 1 do not seem to reflect participants using founder prestige as a signal of the unobserved quality of the business.\textsuperscript{14}

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Insert Table 5 Here
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3.3.7 Robustness Check

So far, I used ‘Intention to Pursue’ and ‘Organizational Attractiveness’ scales as the dependent variables. While these measures are widely used in the literature (Jones et al., 2014), it is possible that alternative dependent variables could yield different results. For example, founder prestige may enable start-ups to attract jobseekers at a lower cost. I therefore conducted a robustness check by asking participants: “What is the minimum level of salary at which you would consider working at this company?” I then transformed the answers using the natural log and performed the same analyses using this measure as the dependent variable.

For the results of the robustness check to be consistent with the main results, I should observe a negative treatment effect in Experiments 1 and 3, and no treatment effect in Experiment 2. Table 6 presents the result of the robustness check: columns (1), (2), and (3) show the results for ‘Start-up 2’ in Experiments 1, 2, and 3, respectively.

The results suggest that jobseekers are willing to accept a salary about 12 percent lower to work for a start-up with a prestigious founder (Experiment 1, \( b = -0.13 \) and \( p = 0.06 \)). In addition, the results also show that the effects of having a prestigious founder are diminished when I reduce the level of information asymmetry around the founder’s ability (Experiment 2, \( b = -0.03 \) and \( p = 0.55 \)) but not when I reduce the information asymmetry around the quality of the business (Experiment 3, \( b = -0.14 \) and \( p = 0.03 \)). In summary, the results of the robustness checks

\textsuperscript{14} Results of Experiment 2 and 3 are both robust to including the responses from the participants who failed the attention checks.
are consistent with the main results and suggest that a prestigious founder not only makes a start-up more attractive, but also enables a start-up to attract jobseekers at lower cost.

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Insert Table 6 Here
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3.4 Discussion

Prior research has devoted significant effort to studying how young firms can signal their profit potential to external parties (Certo, 2003; Cohen & Dean, 2005; Pollock et al., 2010). Most of this research has focused on studying how start-ups appeal to investors; far less attention has been paid to studying how they appeal to jobseekers. Given that hiring talent is one of the most important but challenging elements of pursuing growth, my study instead focuses on the second question by asking: Does having a prestigious founder make a start-up more attractive to jobseekers? If so, what is the underlying attribute that is signaled by founder prestige?

To answer these questions, I conducted three randomized laboratory experiments which gave subjects detailed job descriptions to evaluate in terms of attractiveness. The first experiment established that, holding all else constant, having a prestigious founder increases both the intention to pursue and the organizational attractiveness of a start-up to jobseekers. The second experiment explored whether the benefits associated with a prestigious founder would be reduced or eliminated if jobseekers were provided with information about founder ability, thus reducing the need to use founder prestige as a signal. The results were consistent with this argument. The third experiment explored whether the benefits associated with a prestigious founder would be reduced or eliminated if jobseekers were provided with information about venture quality. The results were inconsistent with this notion; founder prestige continued to increase both the intention to pursue and the organizational attractiveness of a start-up to
jobseekers. This outcome suggests that jobseekers are likely to use founder prestige primarily as a signal of founder ability, and this is what confers the benefits associated with a prestigious founder.

This paper carries several implications both for entrepreneurship scholars and for practitioners. In terms of scholarship, growing research attention is focusing on aspects of founder capabilities, such as cognitive ability and job competencies (Aldén, Hammarstedt, & Neuman, 2017; Hoogendoorn, Parker, & Van Praag, 2017; Levine & Rubinstein, 2017). To date, however, this work has not considered the importance of demonstrated founder abilities for attracting jobseekers. I believe this significant lacuna raises several important questions at the interface of entrepreneurship and human resource management. These questions include whether formal job descriptions are an effective way of transmitting signals of founder ability to jobseekers or whether better ways exist (e.g., using online posts or social media). Also, it is unclear whether counter-signaling opportunities exist by less able founders to muddy the separating signals transmitted by their abler counterparts. These topics deserve to be explored in future research.

Second, the paper extends the application of signaling theory in entrepreneurship research. Reflecting the high degree of information asymmetry typically surrounding new firms, signaling theory has received considerable attention from entrepreneurship researchers, and scholars in entrepreneurship and management have made significant contributions in extending signaling theory (Connelly et al., 2011). For example, scholars have extended the signaling theory’s traditional one signal-one attribute model to study how multiple signals can be used to signal an unobservable attribute (Khoury et al., 2013; Ozmel et al., 2013). What has been less closely studied is the case where a single observable characteristic can act as a signal for multiple
unobservable attributes (Quinzii & Rochet, 1985). I have explored this case for founder prestige and developed an empirical strategy for teasing apart the key unobservable attribute likely to be signaled by prestige. Doing so is important because it enables researchers to better understand how observable attributes, such as founder prestige, confer benefits to organizations.

Third, the findings carry implications for an emerging literature on the relative importance to third parties of new venture quality on one hand (“the horse”) and founder characteristics on the other (“the jockey”). Scholars have adduced evidence for the relative importance of each of horse and jockey in different settings (Bernstein et al., 2017; Gompers et al., 2016; Huang & Pearce, 2015; Kaplan et al., 2009). However, most of the research on the horse versus the jockey debate has taken place in the context of how investors, such as venture capital investors and angel investors, assess start-ups. This paper extends this debate by moving the context to hiring. While only a small minority of new ventures access venture capital, hiring is a problem that many entrepreneurs face. Thus, by moving the debate to hiring, the findings apply to a wide range of entrepreneurs. The finding that jobseekers use founder prestige as a signal of the ability of the founder, rather than as a signal of the quality of the business, provide support for the ‘jockey’ side of the argument in this specific context.

Fourth, the paper also carries implications for the so-called ‘threshold model’ of occupational choice (Gimeno et al., 1997). In theorizing the potential for founder prestige to signal venture quality, I utilized the threshold model to argue that highly prestigious founders will choose to pursue only high-quality ventures because they have a greater opportunity cost of pursuing entrepreneurship. However, one may propose a counter argument whereby high prestige founders are also more likely to be wealthy, enabling them to be more ‘reckless’ or indulge a taste for lower-quality ventures. Although I sided with the threshold model and
hypothesized that founder prestige would signal venture quality, I did not find evidence that jobseekers use founder prestige as a signal for venture quality. Therefore, it may be possible that jobseekers also recognize the possibility of the counter argument, which might partly explain why they seem not to use founder prestige as a signal of venture quality.

In terms of practice, this paper demonstrates the benefits for entrepreneurs of obtaining prestigious credentials. Reflecting the high costs associated with obtaining such credentials, there is a keen debate about their usefulness (Miller, Xu, & Mehrotra, 2015). Some have argued, for instance, that credentials such as an Ivy League education are not useful for those who plan to pursue entrepreneurship because they have no need to appeal to employers who make hiring decisions based on such characteristics.\(^\text{15}\) However, the results show that having prestigious credentials is also beneficial for entrepreneurs because it allows their ventures to appear more attractive to the jobseekers they wish to hire. Furthermore, in addition to demonstrating the benefits associated with building prestige, my examination of the underlying attributes being signaled by prestige suggests ways that founders may compensate for a lack of personal prestige. I showed that the benefits associated with prestige disappear when jobseekers have other information from which they can infer the ability of founders. This suggests that an entrepreneur who lacks prestige can overcome this disadvantage by working hard to obtain other forms of personal achievement such as performing well in pitch competitions and having successful entrepreneurship experience, among others. An alternative strategy for entrepreneurs lacking badges of prestige is to recognize their disadvantage and compensate by offering higher remuneration than their more prestigious rivals.

\(^{15}\) https://www.linkedin.com/pulse/20130816025740-8451-if-you-want-to-be-an-entrepreneur-don-t-go-to-harvard/
3.4.1 Limitations and directions for future research

Like all new research, the work presented here is subject to several limitations. First, I assume that jobseekers consider future performance potential when evaluating start-ups and focus on the signaling aspect of founder prestige. However, it is possible that founder prestige provides other benefits apart from signaling. For example, viewing status as a position within a social hierarchy resulting from patterns of affiliations, Podolny (1993) argues that organizational status can benefit firms by allowing them to charge a higher price or produce a given quality of product at a lower cost. Alternatively, jobseekers may prefer prestigious founders simply to indulge a taste for affiliating with prestigious people, and so enhance their own feelings of prestige. If having a prestigious founder enhances organizational status, then the status-seeking behavior may represent another mechanism responsible for the positive effects of founder prestige on venture attractiveness (Akerlof, 1997; Rider & Tan, 2014). While this alternative explanation is consistent with the results supporting Hypothesis 1, it is less effective in explaining the results relating to Hypotheses 2 and 3. If status seeking were the main driver for jobseekers, the benefits of a prestigious founder would be robust to controlling for founder ability and venture quality. That this turns out not to the case, therefore, casts doubt on this alternative explanation.

A second limitation may pertain to the participants in the experiments being business students. Specifically, the results found using student participants may not be generalizable to professionals who have long since graduated. However, a recent review of published research finds that there is no systematic difference between the behavior of students and professionals in several important respects (Fréchette, 2015). Furthermore, I used, as participants, students who were in their third and fourth year of studies, who are very likely to be either going through a recruitment process or are expected to do so shortly. Finally, many jobseekers at young firms are
young themselves (Ouimet & Zarutskie, 2014), as in the laboratory setting for the experiment. Therefore, I believe that there is a good match between my sample and the population of interest. Moreover, the participants were young students who are likely to seek entry-level positions and are more likely to be influenced by founder prestige (Bidwell, Won, Barbulescu, & Mollick, 2015). Thus, the results of this paper may not be generalizable to experienced jobseekers who are further along in their careers. Another concern may be that the sample focuses only on business students and that the students are recruited mainly from one prominent North American business school. Although I control for students’ socioeconomic status, it is possible that the students in my sample are relatively homogenous, and therefore lack variation in this regard. On the other hand, as Hsu et al. (2017) point out, the goal of experiments is to identify causal effects, and the collective work of many scholars is needed to subject these effects to testing under different conditions to obtain generalizability. Therefore, future research is needed to complement and extend this paper by examining whether the findings are robust in different settings using different types of jobseekers.

Finally, in performing my analysis, I used education from prestigious universities and work experience with prestigious firms to manipulate founder prestige. Although these two elements are often the most commonly available sources of information regarding founders, individuals may also derive prestige through types of affiliations other than education and work experience (D'Aveni, 1990). Also, the focus of the present paper was on comparing prestigious versus non-prestigious founders. I did not study how the different types of affiliations interact with each other (i.e., whether they substitute or complement each other) or compare the effects of different types of affiliations separately (i.e., education versus work experience). Thus, future
research can extend this paper by further disentangling elements of prestige and exploring whether they have distinct effects.
3.5 References


### 3.6 Tables

#### Table 3.1 Results from the Randomization Checks

<table>
<thead>
<tr>
<th></th>
<th>Experiment 1</th>
<th></th>
<th></th>
<th></th>
<th>Experiment 2</th>
<th></th>
<th></th>
<th></th>
<th>Experiment 3</th>
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<td>Treatment</td>
<td>p-value</td>
<td>Control</td>
<td>Treatment</td>
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<tr>
<td>Age</td>
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<td>20.19 (0.58)</td>
<td>0.31</td>
<td>20.31 (0.53)</td>
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<td>20.18 (0.45)</td>
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<tr>
<td>Gender (1 = Male)</td>
<td>0.50 (0.51)</td>
<td>0.61 (0.49)</td>
<td>0.34</td>
<td>0.66 (0.48)</td>
<td>0.55 (0.50)</td>
<td>0.37</td>
<td>0.58 (0.50)</td>
<td>0.58 (0.50)</td>
<td>0.94</td>
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<td>3.67 (1.12)</td>
<td>0.43</td>
<td>3.63 (1.14)</td>
<td>4.00 (0.99)</td>
<td>0.14</td>
<td>3.67 (1.17)</td>
<td>3.60 (1.19)</td>
<td>0.81</td>
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<td></td>
</tr>
<tr>
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<td>0.64 (0.49)</td>
<td>0.23</td>
<td>0.60 (0.50)</td>
<td>0.55 (0.50)</td>
<td>0.69</td>
<td>0.47 (0.51)</td>
<td>0.73 (0.45)</td>
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<td>3.83 (0.88)</td>
<td>0.11</td>
<td>3.71 (1.02)</td>
<td>3.66 (1.00)</td>
<td>0.81</td>
<td>3.64 (0.99)</td>
<td>3.60 (0.93)</td>
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<td>Intention to pursue (Start-up 1)</td>
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<td>3.63 (1.23)</td>
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<td>3.68 (1.06)</td>
<td>3.61 (0.93)</td>
<td>0.79</td>
<td>3.62 (1.25)</td>
<td>3.84 (1.21)</td>
<td>0.43</td>
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</tr>
<tr>
<td>Organizational attractiveness (Start-up 1)</td>
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<td>3.61 (1.29)</td>
<td>0.10*</td>
<td>3.12 (1.21)</td>
<td>3.56 (1.13)</td>
<td>0.11</td>
<td>3.26 (1.18)</td>
<td>3.90 (1.51)</td>
<td>0.05**</td>
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</tr>
<tr>
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<td>4.58 (1.14)</td>
<td>0.04**</td>
<td>4.06 (1.09)</td>
<td>4.25 (1.07)</td>
<td>0.45</td>
<td>4.18 (1.40)</td>
<td>4.94 (1.05)</td>
<td>0.01***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Organizational attractiveness (Start-up 2)</td>
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<td>4.81 (1.14)</td>
<td>0.00***</td>
<td>3.90 (1.38)</td>
<td>4.35 (1.20)</td>
<td>0.15</td>
<td>4.17 (1.29)</td>
<td>4.92 (1.27)</td>
<td>0.01**</td>
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<td>36</td>
<td></td>
<td>35</td>
<td>38</td>
<td></td>
<td>36</td>
<td>40</td>
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</tbody>
</table>

Notes: the p-values are from the two-tailed t-tests comparing the mean values between the control and the treatment groups. Values in parentheses are standard deviations.

*** p<0.01, ** p<0.05, * p<0.1
Table 3.2 Descriptive Statistics for Experiment 1

<table>
<thead>
<tr>
<th>Experiment 1</th>
<th>Mean</th>
<th>ST DEV.</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
</tr>
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<tbody>
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<td>1. Age</td>
<td>20.27</td>
<td>0.63</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Gender (1 = Male)</td>
<td>0.55</td>
<td>0.50</td>
<td>0.13</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Consider ENT in the future?</td>
<td>3.57</td>
<td>1.05</td>
<td>0.12</td>
<td>0.07</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. BA dummy</td>
<td>0.57</td>
<td>0.50</td>
<td>0.25</td>
<td>-0.23</td>
<td>0.14</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Socio-economic status</td>
<td>3.65</td>
<td>0.97</td>
<td>-0.31</td>
<td>0.10</td>
<td>-0.06</td>
<td>0.08</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. IP (Start-up 1)</td>
<td>3.57</td>
<td>1.24</td>
<td>0.02</td>
<td>-0.09</td>
<td>-0.17</td>
<td>0.17</td>
<td>-0.03</td>
<td>1.00</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>7. OA (Start-up 1)</td>
<td>3.36</td>
<td>1.28</td>
<td>-0.07</td>
<td>-0.14</td>
<td>0.14</td>
<td>0.18</td>
<td>0.09</td>
<td>0.78</td>
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</tr>
<tr>
<td>8. IP (Start-up 2)</td>
<td>4.26</td>
<td>1.31</td>
<td>-0.12</td>
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<td>9. OA (Start-up 2)</td>
<td>4.32</td>
<td>1.39</td>
<td>-0.14</td>
<td>-0.23</td>
<td>0.06</td>
<td>0.06</td>
<td>0.15</td>
<td>0.51</td>
<td>0.59</td>
<td>0.84</td>
<td>1.00</td>
</tr>
</tbody>
</table>

Notes: IP stands for Intention to Pursue. OA stands for Organizational Attractiveness.
Table 3.3 Results for Experiment 1: The Effects of Founder Prestige on Venture Attractiveness

<table>
<thead>
<tr>
<th>Demographic characteristics</th>
<th>Start-up 1</th>
<th>Organizational attractiveness</th>
<th>Start-up 2</th>
<th>Organizational attractiveness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>-0.02</td>
<td>-0.10</td>
<td>-0.15</td>
<td>-0.03</td>
</tr>
<tr>
<td>Gender (1 = Male)</td>
<td>-0.08</td>
<td>-0.27</td>
<td>-0.54*</td>
<td>-0.83**</td>
</tr>
<tr>
<td>Consider ENT in the future?</td>
<td>-0.24*</td>
<td>-0.20</td>
<td>-0.05</td>
<td>0.09</td>
</tr>
<tr>
<td>BA dummy</td>
<td>0.47</td>
<td>0.41</td>
<td>0.17</td>
<td>-0.20</td>
</tr>
<tr>
<td>Socio-economic status</td>
<td>-0.09</td>
<td>0.04</td>
<td>0.02</td>
<td>0.17</td>
</tr>
<tr>
<td>Treatment dummy</td>
<td>0.12</td>
<td>0.48</td>
<td>0.63*</td>
<td>0.99***</td>
</tr>
<tr>
<td>Constant</td>
<td>4.86</td>
<td>5.58</td>
<td>7.27</td>
<td>4.06</td>
</tr>
<tr>
<td>N</td>
<td>74</td>
<td>74</td>
<td>74</td>
<td>74</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.07</td>
<td>0.11</td>
<td>0.12</td>
<td>0.21</td>
</tr>
</tbody>
</table>

Notes: Start-up 1 job description identical across treatment and control groups. Start-up 2 job description different across treatment and control groups.

Treatment dummy = 1 if respondent is a member of the treatment group, for whom the job description includes a signal of founder prestige in Start-up 2 only. Treatment dummy = 0 if respondent is a member of the control group.

Method of estimation: OLS. Robust standard errors in parentheses.

*** p<0.01, ** p<0.05, * p<0.1

Table 3.4 Descriptive Statistics for Experiments 2 and 3

<table>
<thead>
<tr>
<th>Experiment 2</th>
<th>Mean</th>
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<th>7</th>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Gender (1 = Male)</td>
<td>0.60</td>
<td>0.49</td>
<td>0.09</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>3. Consider ENT in the future?</td>
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<td>1.07</td>
<td>-0.03</td>
<td>0.34</td>
<td>1.00</td>
<td></td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>4. BA dummy</td>
<td>0.58</td>
<td>0.50</td>
<td>0.17</td>
<td>-0.02</td>
<td>-0.04</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>5. SES</td>
<td>3.68</td>
<td>1.00</td>
<td>-0.16</td>
<td>0.19</td>
<td>0.10</td>
<td>-0.19</td>
<td>1.00</td>
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</tr>
<tr>
<td>6. IP (Start-up 1)</td>
<td>3.64</td>
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<td>-0.19</td>
<td>0.09</td>
<td>0.14</td>
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<td>0.04</td>
<td>1.00</td>
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<tr>
<td>7. OA (Start-up 1)</td>
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<td>-0.09</td>
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<td>0.06</td>
<td>0.33</td>
<td>0.25</td>
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<td></td>
</tr>
<tr>
<td>2. Gender (1 = Male)</td>
<td>0.58</td>
<td>0.50</td>
<td>0.22</td>
<td>1.00</td>
<td></td>
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</tr>
<tr>
<td>3. Consider ENT in the future?</td>
<td>3.63</td>
<td>1.18</td>
<td>0.12</td>
<td>0.44</td>
<td>1.00</td>
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<td></td>
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<tr>
<td>4. BA dummy</td>
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<td>-0.20</td>
<td>-0.19</td>
<td>1.00</td>
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<td>5. SES</td>
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<td>0.08</td>
<td>0.1</td>
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<td>1.00</td>
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<td>1.00</td>
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<tr>
<td>7. OA (Start-up 1)</td>
<td>3.60</td>
<td>1.39</td>
<td>0.01</td>
<td>-0.13</td>
<td>0.09</td>
<td>0.30</td>
<td>0.09</td>
<td>0.83</td>
<td>1.00</td>
<td></td>
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</tr>
<tr>
<td>8. IP (Start-up 2)</td>
<td>4.58</td>
<td>1.28</td>
<td>0.02</td>
<td>-0.06</td>
<td>-0.07</td>
<td>0.23</td>
<td>0.03</td>
<td>0.61</td>
<td>0.51</td>
<td>1.00</td>
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</tr>
<tr>
<td>9. OA (Start-up 2)</td>
<td>4.56</td>
<td>1.33</td>
<td>0.09</td>
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<td>-0.02</td>
<td>0.27</td>
<td>0.11</td>
<td>0.43</td>
<td>0.51</td>
<td>0.84</td>
<td>1.00</td>
</tr>
</tbody>
</table>

Notes: IP stands for Intention to Pursue. OA stands for Organizational Attractiveness.
Table 3.5 Results for Experiments 2 and 3: The Effects of Founder Prestige on Venture Attractiveness While Controlling for Founder Ability and Venture Quality, Respectively.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Experiment 2</th>
<th>Experiment 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Start-up 1 (1)</td>
<td>Start-up 2 (2)</td>
</tr>
<tr>
<td></td>
<td>IP OA</td>
<td>IP OA</td>
</tr>
<tr>
<td>Demographic Characteristics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>-0.38*</td>
<td>-0.33</td>
</tr>
<tr>
<td></td>
<td>(0.19)</td>
<td>(0.22)</td>
</tr>
<tr>
<td>Gender (1 = Male)</td>
<td>0.13</td>
<td>0.15</td>
</tr>
<tr>
<td></td>
<td>(0.28)</td>
<td>(0.31)</td>
</tr>
<tr>
<td>Consider ENT in future?</td>
<td>0.11</td>
<td>0.17</td>
</tr>
<tr>
<td></td>
<td>(0.13)</td>
<td>(0.14)</td>
</tr>
<tr>
<td>BA Dummy</td>
<td>0.19</td>
<td>-0.14</td>
</tr>
<tr>
<td></td>
<td>(0.24)</td>
<td>(0.28)</td>
</tr>
<tr>
<td>SES</td>
<td>-0.00</td>
<td>0.08</td>
</tr>
<tr>
<td></td>
<td>(0.12)</td>
<td>(0.14)</td>
</tr>
<tr>
<td>Treatment Dummy</td>
<td>-0.09</td>
<td>0.38</td>
</tr>
<tr>
<td></td>
<td>(0.24)</td>
<td>(0.27)</td>
</tr>
<tr>
<td>Constant</td>
<td>10.89***</td>
<td>8.82**</td>
</tr>
<tr>
<td></td>
<td>(3.86)</td>
<td>(4.29)</td>
</tr>
<tr>
<td>N</td>
<td>73</td>
<td>73</td>
</tr>
<tr>
<td>R-Squared</td>
<td>0.07</td>
<td>0.11</td>
</tr>
</tbody>
</table>

Notes: IP stands for Intention to Pursue. OA stands for Organizational Attractiveness. Otherwise, as for Table 3.3.

Table 3.6 OLS Results Using the Minimum Level of Salary as the Dependent Variable

<table>
<thead>
<tr>
<th>Variables</th>
<th>Experiment 1 (1)</th>
<th>Experiment 2 (2)</th>
<th>Experiment 3 (3)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>IP OA</td>
<td>IP OA</td>
<td>IP OA</td>
</tr>
<tr>
<td>Demographic characteristics</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>0.13*</td>
<td>0.12</td>
<td>0.02</td>
</tr>
<tr>
<td></td>
<td>(0.08)</td>
<td>(0.09)</td>
<td>(0.08)</td>
</tr>
<tr>
<td>Gender (1 = Male)</td>
<td>0.11</td>
<td>0.12**</td>
<td>0.03</td>
</tr>
<tr>
<td></td>
<td>(0.08)</td>
<td>(0.06)</td>
<td>(0.07)</td>
</tr>
<tr>
<td>Consider ENT in the future?</td>
<td>0.02</td>
<td>-0.06</td>
<td>0.03</td>
</tr>
<tr>
<td></td>
<td>(0.03)</td>
<td>(0.04)</td>
<td>(0.03)</td>
</tr>
<tr>
<td>BA dummy</td>
<td>-0.04</td>
<td>-0.10*</td>
<td>-0.00</td>
</tr>
<tr>
<td></td>
<td>(0.08)</td>
<td>(0.06)</td>
<td>(0.06)</td>
</tr>
<tr>
<td>SES</td>
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<td>-0.05</td>
<td>0.04</td>
</tr>
<tr>
<td></td>
<td>(0.04)</td>
<td>(0.03)</td>
<td>(0.04)</td>
</tr>
<tr>
<td>Treatment dummy</td>
<td>-0.13*</td>
<td>-0.03</td>
<td>-0.14**</td>
</tr>
<tr>
<td></td>
<td>(0.07)</td>
<td>(0.06)</td>
<td>(0.06)</td>
</tr>
<tr>
<td>Constant</td>
<td>8.22***</td>
<td>8.99***</td>
<td>10.41***</td>
</tr>
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<td></td>
<td>(1.58)</td>
<td>(2.04)</td>
<td>(1.61)</td>
</tr>
<tr>
<td>N</td>
<td>74</td>
<td>73</td>
<td>75</td>
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<tr>
<td>R-squared</td>
<td>0.20</td>
<td>0.20</td>
<td>0.12</td>
</tr>
</tbody>
</table>

Notes: The results are for Start-up 2, for which the descriptions differed between the control and the treatment group. The results for Start-up 1 showed no statistically significant coefficients for the treatment dummies.

In Experiment 3, one of the participants stated $500,000 as the minimum salary. The responses from this participant was dropped in the robustness check. Method of estimation: OLS. Robust standard errors in parentheses.

*** p<0.01, ** p<0.05, * p<0.1
## 3.7 Appendices

### Appendix 3.1: BA Job Posting

<table>
<thead>
<tr>
<th>Job Type:</th>
<th>After Graduation or Alumni</th>
</tr>
</thead>
<tbody>
<tr>
<td>Position Title:</td>
<td>Business Analyst</td>
</tr>
<tr>
<td>Employer:</td>
<td>ConnecteD</td>
</tr>
<tr>
<td>Geographic Location of Job:</td>
<td>Greater Toronto Area</td>
</tr>
<tr>
<td>Salary:</td>
<td>$50,000/year plus benefits package</td>
</tr>
</tbody>
</table>

**Job Description:**

As a Business Analyst (BA), you will support the chief strategy officer in planning and devising our general strategy, which will include, but are not limited to, long-term strategy, sales and marketing strategy, and product positioning. BAs will have the opportunity to contribute to all areas of our company.

Successful candidates will be results-oriented and dedicated to team success. As a BA, you will be a quick learner, able to multi-task and metrics driven. You will be self-motivated, take ownership of this role and always be looking for ways to enhance productivity.

**Responsibilities**

BAs’ roles and responsibilities will influence our business across different departments. Their responsibilities may include, but are not limited to:

- Market analysis of the competitive environment
- Analysis of our product portfolio and each product’s competitiveness
- Analysis of our organizational/operational structure

In addition to the responsibilities, you will also get to take over your own project(s), where you’ll be given an opportunity to develop a strategic plan in areas such as business development, process implementation and optimization, marketing, recruitment, and more.

**Employment Equity**

We are committed to employment equity and encourages applications from women, visible minorities, Aboriginal peoples and persons with disabilities.

We are committed to accommodating applicants with disabilities throughout the hiring process, in accordance with the Accessibility for Ontarians with Disabilities Act (AODA). We are also committed to working with applicants requesting a special accommodation at any stage of the hiring process.

**Qualifications:**

- University degree or alternative continuing education
- Familiarity with strategic analysis (i.e. SWOT analysis, Porter’s Five Forces) and marketing concepts a plus.
- Highly organized with ability to multi-task
- High energy and always have a ‘can-do’ attitude
- Comfortable working in a fast-paced, dynamic environment
- Highly motivated and results driven
- Solid communication skills both written and verbal
- Fast learner
- Entrepreneurial
- Analytical
- Self-starter
- Team player

**Open to All Majors:** Yes

**Open to Alumni:** Yes

**Degree Program:** Bachelor  
Bachelor (Honors)  
Masters
### Appendix 3.2: FA Job Posting

<table>
<thead>
<tr>
<th>Job Type:</th>
<th>After Graduation or Alumni</th>
</tr>
</thead>
<tbody>
<tr>
<td>Position Title:</td>
<td>Financial Analyst</td>
</tr>
<tr>
<td>Employer:</td>
<td>ConnecteD</td>
</tr>
<tr>
<td>Geographic Location of Job:</td>
<td>Greater Toronto Area</td>
</tr>
<tr>
<td>Salary:</td>
<td>$50,000/year plus benefits package</td>
</tr>
</tbody>
</table>

#### Job Description:

As a Financial Analyst (FA), you will support the chief financial officer in planning and devising our financial strategy, which will include, but are not limited to, corporate finance, project finance, and treasury operations. FAs will have the opportunity to contribute to all finance related areas of our company.

Successful candidates will be results-oriented and dedicated to team success. As a FA, you will be a quick learner, able to multi-task and metrics driven. You will be self-motivated, take ownership of this role and always be looking for ways to enhance productivity.

**Responsibilities**

FAs’ roles and responsibilities will influence our business across different departments. Their responsibilities may include, but are not limited to:
- NPV analysis for potential projects
- Analysis of our different financing options
- Analysis of our treasury operations and financial capital management
- Organizing meetings with department heads

In addition to the responsibilities, you will also get to take over your own project(s), where you’ll be given an opportunity to develop a financial plan in areas such as business development and investment projects.

**Employment Equity**

We are committed to employment equity and encourages applications from women, visible minorities, Aboriginal peoples and persons with disabilities.

We are committed to accommodating applicants with disabilities throughout the hiring process, in accordance with the Accessibility for Ontarians with Disabilities Act (AODA). We are also committed to working with applicants requesting a special accommodation at any stage of the hiring process.

**Qualifications:**

- University degree or alternative continuing education
- Familiarity with basic financial terminology and financial statements
- Highly organized with ability to multi-task
- High energy and always have a ‘can-do’ attitude
- Comfortable working in a fast-paced, dynamic environment
- Highly motivated and results driven
- Solid communication skills both written and verbal
- Fast learner
- Entrepreneurial
- Analytical
- Self-starter
- Team player

**Open to All Majors:** Yes

**Open to Alumni:** Yes

**Degree Program:**
- Bachelor
- Bachelor (Honors)
- Masters
Appendix 3.3: Company Descriptions: Start-up 1

About the Company

Muzik is a start-up that provides an online social network platform that allows users to share their playlists with others and access playlist of others who share similar taste. Founded in 2017, Muzik has been dedicated to the goal of bringing music back into people’s lives by improving the way people access music. Currently based in the technology hub in downtown Toronto, Muzik allows people around the world to freely share their passion for music and connect with others who have similar taste. Staying dedicated to the original mission, Muzik strives to make it easier for people to enjoy, share, discover, and expand their passion for music.

Products

Muzik is a social networking platform dedicated to creating, sharing, and communicating your passion for music. With Muzik, users can create and share their own playlists, connect with others who share similar taste, and receive comments and suggestions about potential selections that may fit with their interest. Also, Muzik allows its users to send and receive special coupons for selected performances around them. Furthermore, users can join or create groups where people who share similar taste can come together and freely discuss their suggestions, opinions, and news about artists, specific songs, performances, and covers among many topics. Users can also post and share their own performance or re-made versions of the songs they like. Finally, Muzik offers a great place for artists to promote their albums, receive reactions and feedback, and find collaborators.

About the Founder

Muzik is founded in 2017 by Will Chatterson who also is also our Chief Executive Officer. Before becoming an entrepreneur to found Muzik, Will had worked at Riverside Music Studio for 4 years after obtaining his MBA degree from the University of Nevada - Reno. Will also has a Bachelor of Science degree from University of Toledo and had worked at Jackson's Music Store for 3 years before pursuing his MBA degree. Apart from work, Will enjoys listening to music, playing guitar, and watching soccer.
Appendix 3.4: Company Descriptions: Start-up 2 – Control Group

About the Company

In today’s interconnected environment, it is getting increasingly important to stay connected to the world and be updated of the current issues that are happening around the world. ConnecteD takes this opportunity and makes sure its users are able to stay connected to the world and updated at all times. Founded in May of 2016 by our CEO Jeremy Miller, ConnecteD offers a mobile app that provides its users the quickest way to stay up to date with viral issues, topics, and news around the world.

Products

ConnecteD is a start-up that provides an app that allows its users to get notifications about the viral and trending issues before traditional media. Using a unique algorithm that analyzes changes in the patterns of various internet contents on outlets such as Twitter, Google, and Facebook, ConnecteD identifies news, topics, and issues that gain extraordinary amount of attention from Internet users, and notifies its users of the issue. With ConnecteD, users can be notified of the most viral news, issues, and topics quickly before they are available through traditional media. People no longer need to go after the media to stay connected. Furthermore, users can also set the level of importance for the issues so that they are only notified of major ones. Finally, ConnecteD also offers a list of highest trending issues on the web so the users can choose to read on themselves.

About the Founder

Jeremy is the CEO and the founder of ConnecteD. Jeremy has a Bachelor of Science degree from Regent University, and an MBA degree from University of Montana. Before pursuing his MBA, Jeremy worked for 3 years as a software developer at Morning Software Solutions, a local software solutions provider. Then, after his MBA, Jeremy had worked for 5 years as a consultant at Synergy Business Services, a local boutique services firm. When not in his office, Jeremy enjoys travelling, reading, and playing tennis.
Appendix 3.5: Company Descriptions: Start-up 2 – Treatment Group

About the Company

In today’s interconnected environment, it is getting increasingly important to stay connected to the world and be updated of the current issues that are happening around the world. ConnecteD takes this opportunity and makes sure its users are able to stay connected to the world and updated at all times. Founded in May of 2016 by our CEO Jeremy Miller, ConnecteD offers a mobile app that provides its users the quickest way to stay up to date with viral issues, topics, and news around the world.

Products

ConnecteD is a start-up that provides an app that allows its users to get notifications about the viral and trending issues before traditional media. Using a unique algorithm that analyzes changes in the patterns of various internet contents on outlets such as Twitter, Google, and Facebook, ConnecteD identifies news, topics, and issues that gain extraordinary amount of attention from Internet users, and notifies its users of the issue. With ConnecteD, users can be notified of the most viral news, issues, and topics quickly before they are available through traditional media. People no longer need to go after the media to stay connected. Furthermore, users can also set the level of importance for the issues so that they are only notified of major ones. Finally, ConnecteD also offers a list of highest trending issues on the web so the users can choose to read on themselves.

About the Founder

Jeremy is the CEO and the founder of ConnecteD. Jeremy has a Bachelor of Science degree from Stanford University, and an MBA degree from Harvard Business School. Before pursuing his MBA, Jeremy worked for 3 years as a software developer at Google. Then, after his MBA, Jeremy had worked for 5 years as a consultant at the Boston Consulting Group. When not in his office, Jeremy enjoys travelling, reading, and playing tennis.
Appendix 3.6: The Questions Included in the Intention to Pursue and the Organizational Attractiveness Scales

Intention to Pursue
1. I would accept a job offer from this company
2. I would make this company one of my first choices as an employer
3. If this company invited me for a job interview, I would go
4. I would exert a great deal of effort to work for this company
5. I would recommend this company to a friend looking for a job

Organizational Attractiveness
1. For me this place would be a good place to work
2. I would not be interested in this company except as a last resort (reverse coded)
3. This company is attractive to me as a place for employment
4. I am interested in learning more about the company
5. A job at this company is appealing to me
Appendix 3.7 Ethics Approval for the Project

Western Research

Date: 14 May 2018
To: Professor Simon Parker
Project ID: 110744

Study Title: Job Seeker Behaviour
Application Type: NMREB Initial Application
Review Type: Delegated
Full Board Reporting Date: 01 Jun 2018
Date Approval Issued: 14 May 2018 13:39
REB Approval Expiry Date: 14 May 2019

Dear Professor Simon Parker,

The Western University Non-Medical Research Ethics Board (NMREB) has reviewed and approved the WREM application form for the above-mentioned study, as of the date noted above. NMREB approval for this study remains valid until the expiry date noted above, conditional to timely submission and acceptance of NMREB Continuing Ethics Review.

This research study is to be conducted by the investigator noted above. All other required institutional approvals must also be obtained prior to the conduct of the study.

Documents Approved:

<table>
<thead>
<tr>
<th>Document Name</th>
<th>Document Type</th>
<th>Document Date</th>
<th>Document Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>Debrief</td>
<td>Debriefing Document</td>
<td>04 May 2018</td>
<td></td>
</tr>
<tr>
<td>LOC with CONSENT CP</td>
<td>Written Consent Assent</td>
<td>04 May 2018</td>
<td></td>
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<tr>
<td>LOC with CONSENT MTurk</td>
<td>Implanted Consent Assent</td>
<td>04 May 2018</td>
<td></td>
</tr>
<tr>
<td>MTurk recruitment PP modified</td>
<td>Recruitment Materials</td>
<td>26 Mar 2018</td>
<td></td>
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<tr>
<td>SONA recruitment CP modified</td>
<td>Recruitment Materials</td>
<td>21 Apr 2018</td>
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<tr>
<td>Study 1</td>
<td>Online Survey</td>
<td>04 May 2018</td>
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<td>Study 2</td>
<td>Online Survey</td>
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</tr>
<tr>
<td>Study 3</td>
<td>Online Survey</td>
<td>04 May 2018</td>
<td></td>
</tr>
</tbody>
</table>

No deviations from, or changes to the protocol (should be initiated without prior written approval of the NMREB, except when necessary to eliminate immediate hazards) to study participants or when the change(s) involves only administrative or logistical aspects of the trial.

The Western University NMREB operates in compliance with the Tri-Council Policy Statement Ethical Conduct for Research Involving Humans (TCPS2), the Ontario Personal Health Information Protection Act (PHIPA, 2004), and the applicable laws and regulations of Ontario. Members of the NMREB who are named as investigators in research studies do not participate in discussions related to, nor vote on such studies when they are presented to the REB. The NMREB is registered with the U.S. Department of Health & Human Services under the REB registration number IRB 00000094.

Please do not hesitate to contact us if you have any questions.

Sincerely,

Kathryn Harris, Research Ethics Officer on behalf of Dr. Randal Graham, NMREB Chair

Note: This correspondence includes an electronic signature (validation and approval via an online system that is compliant with all regulations).

Note: This is the approval for the original application. A series of amendments have been made for the ethics form for this project.
CHAPTER 4: MULTIPLE JOB ROLES, WORKPLACE OUTCOMES AND ENTREPRENEURIAL SORTING: THEORY AND EVIDENCE FROM U.S. SCIENCE GRADUATES

4.1 Introduction

Do entrepreneurs really perform more job roles than employees, and if so, how does this affect key workplace outcomes, such as earnings and job satisfaction? Answers to these questions promise to reveal who becomes entrepreneurs and may help to resolve a lively ongoing debate about whether entrepreneurial sorting reflects idiosyncratic productivity or a ‘taste for variety’.

The productivity theory of Lazear (2005) argues that individuals with balanced skills (‘jacks-of-all-trades’, JAT) are more productive performing multiple job roles and so are more likely to become entrepreneurs. In contrast, the ‘Taste for Variety’ (TV) theory of Åstebro and Thompson (2011) argues that individuals who crave variety are more likely to enjoy performing multiple job roles and so are more likely to become entrepreneurs for that reason. Both theories predict that entrepreneurs possess an above-average diversity of skills and/or experience. Evidence supports this common prediction (Åstebro and Thompson, 2011; Åstebro and Yong, 2016; Chen and Thompson, 2016; Hartog et al., 2010; Lazear, 2005; Stuetzer et al., 2012, 2013; Wagner, 2006).

However, prior research has not yet been conclusively arbitrated between these rival theories. On the one hand, evidence points to more diverse experience being associated with lower incomes among both entrepreneurs and employees, which is consistent with the TV but not the JAT theory (Åstebro and Thompson, 2011; Åstebro and Yong, 2016). On the other hand, positive associations have also been found between balanced skills and entrepreneurial income, which is consistent with the JAT but not the TV theory (Hartog et al., 2010; Bublitz and
Noseleit, 2014). Hence, we are left with a muddled picture about drivers of selection into entrepreneurship. One possible reason is that prior research has assumed paid employment to be homogeneous, failing to distinguish between employees in new and incumbent firms. If the former (known as ‘joiners’) also perform multiple job tasks (Parker, 2009; Elfebein et al., 2010), they may be functionally more similar to entrepreneurs than to employees of incumbent firms (Roach & Sauermann, 2015), leading to possible mis-categorization and hence misleading inferences. Prior research has also implicitly assumed homogeneity of individuals’ preferences, ignoring the possibility that productivity considerations might predominate for some people while a strong taste for variety is more salient for others. If such heterogeneity exists, systematic occupational sorting can be expected to occur, giving each of the theories a potential role to play in explaining observed occupational choice outcomes.

In contrast to previous research which has related the diversity of individuals’ skill sets and/or past experience to participation in entrepreneurship, this paper takes a different tack by investigating the following research question: How does the number of functional roles in current jobs vary across occupations and affect the income and job satisfaction individuals receive in those occupations? Addressing this question allows one to both test an important underlying assumption of the JAT and TV theories and to help identify which of these theories best explain the kinds of occupational sorting observed in practice. Given the growing interest in entrepreneurship as a driver of innovation and economic growth (Audretsch and Keilbach, 2008; Henkel et al., 2015), and as an attractor for talent who join start-ups (Kim, 2018; Roach and Sauermann, 2015), it is essential to identify the determinants of these choices. I also extend previous work by distinguishing between employees of young firms (‘joiners’) and employees of incumbent firms, as well as by analyzing both income and job satisfaction.
I tackle the research question by first developing a conceptual framework to generate predictions about how performing numerous functional roles is associated with two key workplace outcomes, income and job satisfaction, and how these outcomes differ for entrepreneurs, employees of young firms (‘joiners’), and employees of incumbent firms. I then confront these predictions with data drawn from the National Survey of College Graduates (NSCG), a survey of college graduates working in the fields of science and engineering in the United States. The NSCG is unusual because it contains data on the number of functional roles respondents undertake in their current jobs, which matches the purpose of this study. The NSCG sample is also of interest because highly educated individuals in the science and engineering fields are known to make a disproportionately large contribution to innovation and productivity growth (Acs and Szerb, 2007; Wong et al., 2005). The empirical results reveal significant differences in workplace outcomes in ways that carry implications for occupational sorting. The results also reveal novel differences between working for young and incumbent firms, which may recommend separate analyses of these workers in future research on occupational choice.

4.2 Theory and Hypotheses

I commence with a discussion of a theme common to the JAT and TV theories, namely the number of functional job roles performed by entrepreneurs and joiners relative to employees of incumbent firms. The analysis will then explore how the number of job roles is related to two key workplace outcomes: income and job satisfaction. After hypothesizing ‘main’ effects, I will develop theoretical arguments about how occupational type ‘moderates’ the main effects. I will go on to discuss how the hypotheses might help distinguish between the JAT and TV theories.
4.2.1 Functional Roles and Entrepreneurship

Researchers have long been interested in studying the factors that influence the choice between entrepreneurship and wage employment. Previous research has focused on factors including ability (Lucas, 1978), risk preferences (Kihlstrom and Laffont, 1979), and other demographic factors including age, gender, and education (Chapter 5 of Parker 2018 offers a detailed review of the literature). Recently, scholars have paid attention to differences in the work activities performed by entrepreneurs versus wage employees. Entrepreneurs perform many roles. An entrepreneur must cross functional boundaries and manage all aspects of a business including product development, sales and marketing, quality assurance, finance and accounting, and human resource management, among others. This contrasts with wage employees, who usually enjoy clearly outlined responsibilities and seldom cross functional boundaries. The difference in the breadth of activities undertaken by entrepreneurs and wage employees has led to several theories of occupational choice within the entrepreneurship literature, such as the jack-of-all-trades theory (Lazear, 2004; 2005).

At its heart, the JAT theory is a productivity story. According to Lazear (2005), entrepreneurs need to perform several functional roles to be productive, unlike employees who can specialize in just a few. For example, regardless of how well an entrepreneur develops the product, the venture is unlikely to perform well if the entrepreneur fails to market the product. On the other hand, an employee hired in the product development department is unlikely to be evaluated based on his/her performance in marketing. Based on this important difference, Lazear argues that entrepreneurship and wage employment differ significantly in relation to the composition of individuals’ skillsets.
Consider for simplicity that there are only two skills, $x_1$ and $x_2$. Wage employees are expected to specialize in their area of expertise and are not expected to cross functional boundaries. Therefore, performance of wage employees depends on the highest of $x_1$ and $x_2$. Accordingly, employee wages can be viewed as

$$Wages = \max[x_1, x_2].$$

On the other hand, entrepreneurs must be ‘jacks of all trades’ who are proficient in all activities. For an entrepreneur, having a high value of $x_1$ does not improve his/her performance if $x_2$ is low. Therefore, entrepreneurs are viewed as generalists whose performance depends on the weakest of the two skills. Accordingly, entrepreneurial earnings are portrayed as

$$\text{Entrepreneurial earning} = \lambda \min[x_1, x_2].$$

The above illustrations of employee wages and entrepreneurial earnings lead Lazear to argue that specialists, who invest in only $x_1$ or $x_2$, have a comparative advantage in wage employment and will choose to be wage employees instead of pursuing entrepreneurship. In contrast, generalists, who invest in both $x_1$ and $x_2$, have a comparative advantage in entrepreneurship and will sort into entrepreneurship. In other words, those who are better able to carry out the numerous functional roles required in entrepreneurship prefer this occupation because they are most productive and earn more than they would in paid employment.

The need for entrepreneurs to undertake multiple functional roles also plays a central role in the taste for variety (TV) theory introduced by Åstebro and Thompson (2011). While the JAT theory focuses on productivity and the resulting differences in income as the main motivator of individuals’ sorting into entrepreneurship, the TV theory instead focuses on the non-pecuniary aspects (Åstebro and Thompson, 2011). According to the TV theory, some individuals have a

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16 Lazear (2004; 2005) defines $\lambda$ as ‘the market value of entrepreneurial talent’ (Lazear, 2005: 652), which can be viewed as the premium for pursuing entrepreneurship.
strong taste for variety, deriving job satisfaction from engaging in a variety of different activities (Åstebro and Thompson, 2011; Bublitz and Noseleit, 2014; Chen and Thompson, 2016). The TV theory can also be illustrated using the two skillsets: $x_1$ and $x_2$. The TV theory follows the same depiction of employee wages as the JAT theory and assumes that employee wages are a function of $\max[x_1$ and $x_2]$. However, the TV theory makes two different assumptions regarding the payoff for entrepreneurs. First, unlike the JAT theory, which only examines productivity, the TV theory introduces another element: taste for variety ($v$). Second, unlike the JAT theory, the TV theory does not assume that entrepreneurial productivity depends on the weakest skill, and instead assumes that productivity depends on the average of the two skills. Reflecting the two assumptions, the payoff to entrepreneurship is described as $v + \lambda (x_1 + x_2)/2$. Under the TV theory, individuals choose to pursue entrepreneurship if 

$$ v > \max[x_1, x_2] - \lambda (x_1 + x_2)/2. $$

Considering $x_1$, $x_2$, and $\lambda$ as fixed, the TV theory argues that some individuals have a strong taste for variety (high $v$). Such individuals choose to become entrepreneurs not because they are better at doing so, but because it allows them to perform more functional roles than working in paid employment. This choice generally comes at the expense of income, because (to borrow the jargon of labor economists) indulging one’s TV can be viewed as a ‘compensating differential’ (Smith, 1979), which can be satisfied with lower income than would otherwise be required to make an occupation attractive.

Both theories assume that the number of functional roles is an intrinsic feature of jobs, with more roles being needed in entrepreneurship than in incumbent firms. This can be stated as a testable (non-novel) baseline hypothesis:
**Hypothesis 0:** Entrepreneurs undertake more functional roles than employees of incumbent firms.

The JAT theory and the TV theory both offer explanations for the sorting of generalists into entrepreneurship. However, what about joiners? These individuals are employed in the workplaces created by entrepreneurs, and these workplaces differ in important respects from those of incumbent firms. Most young ventures are small and resource-constrained; flat rather than hierarchical in structure; and lacking well-established structures and systems (Hannan et al., 1996; Sørensen, 2007). Flexibility is critical because young firms face a dynamic and uncertain environment (Alvarez and Parker, 2009; Koudstaal et al., 2015; Risseeuw and Masurel, 1994) with high risks of failure (Kerr and Nanda, 2010; Schnabel et al., 2011). New ventures also frequently undergo pivots to their products and target markets (Eisenmann et al., 2012).

With relatively few employees to cope with these challenges in young firms, joiners need to be productive in multiple functional areas and step into and between more roles compared to employees in incumbent firms, where hierarchies are entrenched and specialized roles tend to be specified precisely (Cardon and Stevens, 2004). Switching between multiple job roles is frequently easier for joiners than for their counterparts in incumbent firms as well because flatter hierarchies and greater flexibility facilitate multiple role holding without bureaucratic restrictions that are more common in older organizations. Therefore, it is reasonable to expect that, like entrepreneurs, joiners will perform multiple roles.

**Hypothesis 1:** Joiners undertake more functional roles than employees of incumbent firms.

**4.2.2 Functional Roles and Workplace Outcomes**

Income and job satisfaction are two salient workplace outcomes. The former captures financial benefits from work, whereas the latter encompasses non-pecuniary job attributes such as
autonomy, responsibility, and variety (Benz and Frey, 2008a, b; Blanchflower, 2000; Hundley, 2001). This subsection will explore the relationships between multiple job roles and these workplace outcomes. The discussion below treats only ‘main’ effect relationships, without distinguishing between different occupations. The subsection that follows will ask whether occupational types ‘moderate’ the relationships proposed here.

I start with job satisfaction. Research shows a strong positive association between job satisfaction and entrepreneurship (Benz and Frey, 2008b; Bernhard-Oettel et al., 2019; Hurst and Pugsley, 2011; Van der Zwan et al., 2018). However, this literature does not address the question of whether performing more functional roles—regardless of which occupation that takes place in—is rewarded with higher job satisfaction. For evidence on this question, I turn to the psychology literature, where performing a variety of tasks has been found to be positively related to non-pecuniary benefits that generate higher job satisfaction (Dodd and Ganster, 1996; Hackman and Lawler, 1971; Hackman and Oldham, 1976). It is argued that jobs providing high task variety become personally meaningful to employees by allowing them to utilize many different skills (Hackman and Lawer, 1971: 264). Consistent with this argument, scholars find that task variety is positively related to job satisfaction and subjective competence (Kelloway and Barling, 1991; Humphrey et al., 2007) and negatively related to burnout, depression, and turnover intentions (Zaniboni et al., 2013; Howard and Kranitz, 2017; Crawford et al., 2010). This idea has of course been expressed more recently in terms of a ‘taste for variety’ (Åstebro and Thompson, 2011), which individuals carry with them into a variety of jobs.

While ‘task variety’ in psychology and most of the job design literature (Oldham and Fried, 2016) is measured in terms of variety in the activities performed by employees that do not necessarily cross functional boundaries, the same arguments can be applied to those who perform
multiple functional roles. In fact, performing roles across functional areas are likely to induce individuals to tap into significantly more diverse skill sets and present them with greater intellectual challenge, which is also positively related to job satisfaction (Kirk-Brown and Wallace, 2004). Thus, I expect there to be a positive relationship between the number of functional roles one undertakes and job satisfaction:

**Hypothesis 2a: There is a positive relationship between the number of functional roles and job satisfaction.**

An extensive body of literature has also explored the relationship between entrepreneurship and income (Åstebro and Chen, 2014; Åstebro et al., 2014; Berglann et al., 2011; Hall and Woodward, 2010; Hamilton, 2000; Hyytinen et al., 2013; Manso, 2016; Sorgner et al., 2017). Specifically, this research has asked whether entrepreneurs enjoy a wage premium or suffer a wage penalty relative to employees. The literature has also investigated the income of joiners relative to employees of incumbent firms (Nyström and Elvung, 2014, 2015; Burton et al., 2018; Kim, 2018; Sauermann, 2018).

The present inquiry is focused on a completely different question, namely whether jobs requiring individuals to perform more functional roles, regardless of occupation, are rewarded with higher incomes. Although little prior research has addressed this question, there is reason to believe that the answer is likely affirmative. Undertaking multiple functional roles enhances a person’s knowledge about how a firm operates, including how different functional groups are related and complement each other. According to the resource-based view (RBV), the way a firm is organized is a unique characteristic that enables it to obtain competitive advantage (Barney, 1996; Barney and Wright, 1998). Therefore, having a good understanding of the organizing
structure of a firm can represent a form of productive firm-specific human capital, which translates into higher income.

Consistent with this argument, studies show that functional breadth is positively related to promotion and compensation (Lyness and Thompson, 2000). In addition, undertaking multiple functional roles also allows a person to be more creative and develop innovative ideas by providing a broad knowledge base that can be combined and reconfigured (Åstebro and Yong, 2016; Leiponen and Helfat, 2010). Therefore, while employees will not necessarily be required to undertake multiple functional roles, I expect there are positive effects of doing so:

*Hypothesis 2b: There is a positive relationship between the number of functional roles and income.*

### 4.2.3 Moderating Role of Occupational Types

The previous subsection related the number of functional job roles to both job satisfaction and income, as a pair of ‘main’ effects. Below, I explore ‘moderating’ effects to these relationships for entrepreneurs and joiners.

#### 4.2.3.1 Job Satisfaction

According to the JAT theory, entrepreneurs are generalists who have a balanced skillset. Therefore, entrepreneurs are better than employees of incumbent firms in managing multiple roles and earn higher earnings from doing so. Studies find that earnings are positively related to job satisfaction (Sloan and Williams, 2000; Bender and Heywood, 2006; Tessema and Ready, 2013). Accordingly, the JAT theory would predict that entrepreneurs, who are more productive in managing multiple tasks, should also obtain higher satisfaction from doing so than employees of incumbent firms who are better fitted to specialize in a few roles.
The TV theory also makes the same prediction, albeit through a different mechanism. According to the TV theory, entrepreneurs are those who have a strong taste for variety (Astebro and Thompson, 2011). Entrepreneurs, therefore, obtain higher non-pecuniary utility from engaging in multiple roles than employees of incumbent firms, who have a weaker taste for variety. If the non-pecuniary utility from indulging in one’s taste for variety contributes positively to one’s job satisfaction, this should result in a stronger relationship between the number of roles and job satisfaction for entrepreneurs than for employees of incumbent firms. Therefore,

**Hypothesis 3a**: Undertaking more functional roles is associated with higher job satisfaction for entrepreneurs than for employees of incumbent firms.

Similar arguments can be applied to examine joiners. In the above section, I argued that joiners are like entrepreneurs in that they are expected to undertake a higher number of roles than employees of incumbent firms. The higher number of roles associated with joiners makes both the JAT and the TV theories relevant. For example, similar to entrepreneurs, joiners may also possess a generalist skillset and have a comparative advantage in occupations that involve multiple roles. Similarly, entrepreneurs, as noted earlier, may also be those who have a strong taste for variety and enjoy performing multiple roles. Under these assumptions, I can apply the same arguments made for entrepreneurs to hypothesize the relationship between the number of roles and job satisfaction for joiners versus employees of incumbent firms. Therefore,

**Hypothesis 3b**: Undertaking more functional roles is associated with higher job satisfaction for joiners than for employees of incumbent firms.
4.2.3.2 Earnings

The JAT theory and the TV theory make the same prediction regarding the moderating effect of occupational type on the relationship between the number of roles and job satisfaction. However, the two theories differ in the prediction they make about earnings. Under the JAT theory, job satisfaction is driven mainly by earnings. Entrepreneurs (and joiners) are those who possess a balanced skillset and are better able to perform multiple roles and earn more from doing so. As a result, the jack-of-all-trades theory predicts that the relationship between the number of roles and earnings is stronger for entrepreneurs (and joiners) than for employees of incumbent firms.

On the other hand, the TV theory makes an opposite prediction. Under the TV theory, entrepreneurs (and joiners) are not necessarily better than employees of incumbent firms in managing multiple roles. Instead, entrepreneurs (and joiners) receive non-pecuniary utility from performing multiple roles, which is a result of indulging their strong taste for variety. This non-pecuniary utility may create a compensating differential whereby individuals are willing to become entrepreneurs (and joiners) and accept lower income in exchange for the utility from performing multiple roles. According to the theory of compensating differentials, workers consider multiple factors when assessing the attractiveness of a job and are willing to trade one factor for another when choosing their occupations (Block et al., 2018; Smith, 1979). Examples of such tradeoffs include those between wages and security (Schnabel et al., 2011), wages and social status (Parker and van Praag, 2010), and wages and non-pecuniary job attributes (Benz and Frey, 2008a; Campbell, 2013; Dorner et al., 2017). Therefore, under the TV theory, one can expect the positive relationship between the number of roles and earnings to be weaker for entrepreneurs (and joiners) compared to employees of incumbent firms.
The JAT theory and the TV theory both provide a plausible explanation for the sorting of individuals into entrepreneurship and young firms. However, is one theory more likely to explain entry into one occupation over another? The recent stream of research on joiners and entrepreneurs may help answer this question. According to Roach and Sauermann (2015), preferences for entrepreneurial job attributes, such as autonomy, are strongly associated with one’s interest in becoming a founder. On the other hand, contextual factors, such as norms at one’s school, play a larger role in predicting one’s interest in becoming a joiner. Consistent with this study, Eesley and Wang (2017) find that contextual factors, such as being mentored by an entrepreneur, increase students’ joiner intentions, but have no effect on their founder intentions.

According to Lazear, individuals obtain balanced skills from varied education and work experience (Lazear, 2005), which corresponds to what Roach and Sauermann (2015) consider contextual factors. On the other hand, taste for variety may reflect a preference for entrepreneurial job attributes, such as task variety. Combining this view with the findings on the relative importance of preferences and contextual factors, I can hypothesize that entrepreneurs are likely to be driven by their taste for variety while joiners are more likely to be driven by their jack-of-all-trades productivity. Applying this argument to the predictions associated with the moderating role of occupations on the relationship between the number of roles and earnings, I hypothesize that:

**Hypothesis 4a:** Undertaking more functional roles is associated with lower income for entrepreneurs than for employees of incumbent firms.

**Hypothesis 4b:** Undertaking more functional roles is associated with higher income for joiners than for employees of incumbent firms.
4.3 Methods

4.3.1 Data and Sample – The National Survey of College Graduates

The data for the study comes from the 2010, 2013, and 2015 waves of the National Survey of College Graduates (NSCG). Sponsored by the National Center for Science and Engineering Statistics (NCSES) within the National Science Foundation (NSF), the survey is conducted biennially to study the occupational patterns of college graduates with a focus on the science and engineering workforce in the United States. Other sampling criteria used by the survey include, living in the United States during the reference week; having at least a bachelor’s degree in any field; and being less than 76 years old at the time the survey is administered. The survey contains rich data on the participants’ demographic characteristics, educational backgrounds, and career interests.

The NSCG survey uses a ‘four-panel rotating panel design’ beginning with the 2010 wave. Under this design, participants in a new panel complete an initial survey and three biennial follow-up surveys before being rotated out of the survey. Data collection for the NSCG is performed by the US Census Bureau using selected individuals from the US Census Bureau’s American Community Survey (ACS). The cases that originated from the 2009 ACS are included in four waves of the NSCG (2010, 2013, 2015, and 2017). The 2017 NSCG marks the full implementation of this design and includes cases originating from the 2009, 2011, 2013, and 2015 ACS. The NSCG collected data through a trimodal approach including Web survey, mail survey, and computer-assisted telephone interview. The NSCG data serves as an input for several congressionally mandated reports, such as Women, Minorities and Persons with Disabilities in Science and Engineering and Science and Engineering Indicators. Furthermore, the NSCG is

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often used by government agencies, educational institutes, and employers to formulate policies, design educational curricula, and analyze trends in science and engineering fields.

In this paper, I employed several additional sample restrictions. First, because workers in the public sector can exhibit different occupational choice patterns from workers in the private sector (Bellante and Link, 1981), I only included in the sample those who identify themselves as working in one of the following four employment types: 1) ‘self-employed or a business owner in a non-incorporated business, professional practice, or farm,’ 2) ‘self-employed in an incorporated business, professional practice, or farm,’ 3) ‘private sector employee in a for-profit company or organization,’ or 4) ‘private sector employee in a non-profit organization (including tax-exempt and charitable organizations).’ The above step removes all public sector workers from the sample as well as those who selected ‘other types.’ Unfortunately, the NSCG does not specify the type of occupations that comprise the ‘other types.’ From the initial sample of 272,787 observations, this step removes about 24 percent of observations.

Also, to avoid confounding the choice among the different employer types with choices regarding retirement, full-time education, and the decision to enter or exit the labor force, I drop from the sample those who were not in the labor force, and those who were younger than 22, or older than 65 years of age at the time the survey was administered. Because part-time employees have different drivers of organizational commitment and job satisfaction (Lee and Johnson, 1991) as well as different career outcomes (Kalleberg, 2000), and because I use annual salary to perform the analyses, I remove those who worked fewer than 30 hours per week and those who worked fewer than 30 weeks a year. Because there can be significant differences in the working environment for those who are working abroad, I also drop those who were working outside of the US. All these steps are consistent with Elfenbein et al.’s (2010) sample construction criteria.
(based on the SESTAT data, which includes data from the NSCG), and altogether remove about 25 percent of observations from the sample.

My sample is not nationally representative, so care must be exercised when comparing my results with those of other studies. Specifically, the NSCG samples highly educated individuals (college graduates) with a focus on those who are part of the science and engineering workforce. These workers are known to be important contributors to innovation and productivity growth (Acs and Szerb, 2007; Wakelin, 2001; Wong et al., 2005). To see how the sample composition differs from the general population, note that only about 33 percent of the population in the United States have a four-year college degree or higher\(^\text{19}\) and that the science and engineering workforce accounts for less than 10 percent of total US employment.\(^\text{20}\)

4.3.2 Measures

4.3.2.1 Dependent Variables

There are three dependent variables in this study: the number of functional roles, income, and job satisfaction. The number of functional roles, a self-reported number of activities performed at work, is used to measure the number of functional roles undertaken. As part of the survey, all respondents are asked the following question about their principal job: ‘Which of the following work activities occupied at least 10 percent of your time during a typical work week on this job?’ The question lists 14 work activities, ranging from management-related activities such as accounting and sales, to technical activities such as basic research and computer programming. The respondents are asked to answer either ‘yes’ or ‘no’ to each work activity. To construct a variable for the number of work activities, I simply count the number of activities indicated as


\(^{20}\) https://fas.org/sgp/crs/misc/R43061.pdf [Date Retrieved: 2019.10.22]

180
'yes’. The resulting variable is constructed as a count variable and ranges from 1 to 14. While the number of functional roles variables is the dependent variable for testing my baseline hypotheses (Hypotheses 0-1), it is also used as one of the independent variables for testing the main hypotheses (Hypotheses 2-4).

The second dependent variable is income. To construct this variable, I rely on the answers to the question: ‘As of the week of [survey reference date], what was your basic annual salary on your principal job, before deductions?’ The answers are transformed using the natural log. Several factors make measurement of entrepreneurial income challenging (Åstebro, 2017; Parker, 2018). First, entrepreneurs’ incomes include both returns to the entrepreneur’s labor and invested capital. Without separating the returns to labor from the returns to capital, the returns to labor can be overestimated (Christensen, 1971). In contrast, salaries for employees are less subject to this problem, obscuring income comparisons between entrepreneurs and employees. Second, entrepreneurs tend to under-report their incomes in surveys relative to employees (Pissarides and Weber, 1989). Third, income data typically omits fringe benefits and business capital gains, which can also distort the comparison of income between the two groups.

Fortunately, I am not interested in comparing the income of entrepreneurs and employees; including occupational dummies for entrepreneurs and employees of young firms should control for systematic biases leading to mean differences. Instead, the main hypotheses regarding income (Hypotheses 4) pertain to interactions between the number of functional roles and the occupational type dummies. Therefore, unless there is a systematic difference between entrepreneurs and employees performing a given number of roles in the way they report their

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21 Given that the question asks whether a specific work activity occupies at least 10 percent of time during a typical week, it may seem puzzling that this variable can take values exceeding 10; however, it is possible for some individuals to perform several work activities contemporaneously.
income, there should be no systematic bias induced by income measurement issues (Bublitz and Noseleit, 2014).

The third dependent variable is job satisfaction. The variable for job satisfaction is constructed using answers to the question: ‘How would you rate your overall satisfaction with the principal job you held during the week of [survey reference date]?’ The respondents could choose one of the four options: 1) very satisfied, 2) somewhat satisfied, 3) somewhat dissatisfied, and 4) very dissatisfied. The variable is then reverse-coded, so a higher value represents higher satisfaction.

4.3.2.2 Independent Variables

As noted above, the number of functional roles is used as an independent variable to test Hypotheses 2-4. This variable is interacted with another independent variable, namely the type of occupation pursued by the respondents. This variable is constructed using the answer to the question: ‘Which of the following best describes your principal employer during the week of [survey reference date]? Were you…?’ Those who stated they were ‘self-employed or a business owner in a non-incorporated business, professional practice, or farm,’ and those who stated they were ‘self-employed or a business owner in an incorporated business, professional practice, or farm’ are labeled as entrepreneurs.22 Respondents who stated they were a ‘private sector employee in a for-profit company or organization’, or a ‘private sector employee in a non-profit organization (including tax-exempt and charitable organizations)’ are treated as wage employees. This group is further divided into two subgroups based on the answer to the question: ‘Did your principal employer come into being as a new business within the past 5 years?’ The employees who answered ‘yes’ to the question are viewed as joiners, and those who stated they work as a

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22 There were 614 farmers in total. 395 were self-employed, 10 were joiners, and 209 were employees of incumbent firms. Dropping these observations does not change the results.
private sector employee but answered ‘no’ to the second question are categorized as employees of incumbent firms.

Although the 5-year age threshold is based on data availability, it is consistent with the operationalization of entrepreneurial firms used by other researchers (Block et al., 2018; Kim, 2018; Sauermann, 2018). Moreover, research finds that the failure rates for young firms typically peak around 2 to 4 years since founding, and then start to fall (Parker, 2018: Chap. 17; van Praag, 2003). This suggests that firms tend to stabilize after 5 years of founding. Furthermore, the 5-year rule has also been used by government programs such as the US International Entrepreneur Rule of the US Citizenship and Immigration Service to define start-ups.\(^{23}\) Of the sample, about 17.5 percent are classified as entrepreneurs, 4.2 percent are classified as employees of young firms, and 78.4 percent are classified as employees of incumbent firms.

### 4.3.2.3 Control Variables

I include several control variables to reduce the risk of omitted variable bias. First, I control for age and \(age^2\) because older people have more time to experience different activities leading them to engage in multiple functional roles. Also, age can influence income because older individuals have had more time to acquire human capital (Mincer, 1958). Age is also known to be related to job satisfaction in a curvilinear manner, decreasing first with age and then increasing later into retirement (Clark et al., 1996).

Second, I control for gender. While it is unclear how gender will influence the number of roles undertaken, it is known to significantly affect income (Bublitz and Noseleit, 2014; Kim, 2018) and job satisfaction (Clark et al., 1996). To measure gender, I construct a dummy variable with 1 indicating female and 0 indicating male. Third, I control for two variables related to

family structure: 1) a dummy variable for *living with children* as a part of the family, and 2) a dummy variable for *marital status*. Studies have found that family responsibilities influence income (Hill, 1979) by affecting individuals’ attachment to the labor market. In addition, being married and having children are shown to be positively associated with job satisfaction (Clark et al., 1996). Fourth, I control for the *level of education*. A higher level of education such as a master’s or doctoral degree may suggest specialization in one field and affect the diversity of the roles one engages in. Moreover, education is positively related to income and job satisfaction (Fabra and Camisón, 2009; Glenn and Weaver, 1982). I code a set of dummy variables representing highest degree types, from the following set: Bachelor’s, Master’s, Doctorate, or Professional. For example, a Juris Doctor and a Doctor of Medicine is counted as a professional degree, while an MBA is considered a master’s degree. In the analysis, a bachelor’s degree is used as the baseline.

In addition to the demographic characteristics, I include as a fifth control variable, the *number of employees* in the respondent’s firm, because those who work at firms with few employees may be forced to serve many roles, regardless of the type of occupation. Evidence has also linked firm size with employee incomes (Brown and Medoff, 1989) and job satisfaction (Idson, 1990). The number of employees variable is constructed using the question: ‘Counting all locations where this employer operates, how many people work for your principal employer?’ The respondents (including entrepreneurs) are asked to choose one of eight options: 1) 10 or fewer employees, 2) 11 – 24 employees, 3) 25 - 99 employees, 4) 100 – 499 employees, 5) 500 – 999 employees, 6) 1,000 – 4,999 employees, 7) 5,000 to 24,999 employees, and 8) 25,000+ employees. I construct a set of dummy variables for each category with the baseline being the 25,000+ employees category.
Sixth, I control for *job tenure*. Individuals with longer job tenure may be more familiar with their jobs, giving them the expertise and confidence to undertake more roles. Because entrepreneurs and employees of young firms tend to have shorter job tenure on average, this factor may affect the relationship between the number of roles and occupation types. Also, those with shorter tenure may be less productive at their jobs, leading to a lower income (Shaw and Lazear, 2008). Finally, longer job tenure and the resulting increase in productivity can lead to higher job satisfaction. I calculate job tenure as the difference between the year the surveys were administered, and the year stated as the starting year for the principal job.

Seventh, I control for the *type of job*. Unfortunately, the dataset does not provide data on the industry of employer. However, the focus of this paper is on the nature of the work performed by individuals as part of their jobs. Therefore, the type of job may be a more relevant measure in this context because the type of job one has can influence earnings, job satisfaction, and the number of roles one undertakes (Julian, 2012; Johnson et al., 2005). I construct dummies for the type of job by utilizing the answer to the question: ‘Choose the code that best describes the principal job during the week of [survey reference date].’ There are 39 different job types that respondents can belong to. Examples of job types include, computer and information scientists, economists, psychologist, industrial engineers, and mechanical engineers, among others. Finally, I control for year effects by including dummy variables for the survey years treating 2010 as the baseline. Table 1 presents descriptive statistics and a correlation matrix.\(^{24}\)

\(^{24}\) We found little indication of multicollinearity as none of the VIF scores exceeded 5.
4.4 Results

4.4.1 Occupational Choice and Functional Roles

In my sample, individuals belong to one of three occupational types: 1) entrepreneurs, 2) joiners, or 3) employees of incumbent firms. To test the baseline hypotheses 0 and 1, which asserted that entrepreneurs and joiners undertake more functional roles than employees of incumbent firms, I used Poisson regression with the number of functional roles as the dependent variable. Table 2 presents the results of the Poisson regression models.

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INSERT TABLE 2 ABOUT HERE
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Model (1) of Table 2 presents the results using only the control variables and Model (2) adds indicator variables for entrepreneurs and joiners, with employees of incumbent firms used as the baseline. The results indicate that older workers perform more functional roles, but the coefficient on the quadratic term is negative and statistically significant. Those whose highest degree is professional perform fewer roles on average. Upon controlling for the occupational types, having a master’s or a PhD degree seems to be associated with more roles. Furthermore, compared to those who work at very large firms (25,000+ employees), those who work at very small firms (1 to 99 employees) perform significantly more functional roles. While this result is not unexpected, the results also show that those who work for medium-sized firms (100 to 4,999 employees) perform significantly fewer roles.

Consistent with the predictions of Hypotheses 0 and 1, the indicator variables for entrepreneurs and employees of young firms are both positive and statistically significant. Therefore, these hypotheses are supported, allowing me to examine further how the number of roles is related to income and job satisfaction.
4.4.2 Job Satisfaction

Given the ordinal structure of the job satisfaction variable, I used ordered logistic regression to study the relationship between the number of roles and job satisfaction. Table 3 presents the results. Model (1) includes only the control variables; Model (2) adds dummies for entrepreneurs and joiners; Model (3) adds the number of work activities; and Model (4) adds the interaction terms between the number of functional roles and the dummies for entrepreneurs and joiners.

INSERT TABLE 3 ABOUT HERE

The results for Model (1) show that age is negatively related to job satisfaction, with the quadratic term being positive and significant, but numerically small. Females exhibit lower job satisfaction, but this effect becomes non-significant when I include the number of functional roles performed. Married people and those living with children are consistently more likely to report higher job satisfaction, as are those with degrees higher than a bachelor’s degree. Job tenure is positively related to the likelihood of reporting high job satisfaction, as is working in, or operating, firms with fewer than 10 employees. Combined with evidence of a significant income discount associated with the smallest firms (see Table 4), the results are suggestive of significant non-pecuniary benefits associated with working in these firms.

Turning to Model (2), entrepreneurs report significantly higher job satisfaction than employees of incumbent firms, while the opposite is the case for joiners. One possible explanation for this difference is that entrepreneurs enjoy greater autonomy than employees of young firms by virtue of being their own boss. Model (3) shows that the number of functional roles is positively related to the likelihood of reporting high job satisfaction, supporting Hypothesis 2a. Model (4) adds the interaction of the number of functional roles with the dummy
variable for entrepreneurs and the dummy variable for joiners. The interactions are positive and significant for both entrepreneurs and joiners, relative to employees of established firms. These findings support Hypotheses 3a and 3b.

4.4.3 Income

To test Hypotheses 2b, 4a, and 4b I used ordinary least square (OLS) regression with the natural log-transformed annual salary from the principal job as the dependent variable. Table 4 presents the results of the OLS regression models.

| Model (1) of Table 4 includes just the control variables. The results are broadly in line with expectations. Age is positively related to income in a curvilinear fashion; males, those who live with children, those who are married, and those with graduate degrees receive higher incomes; job tenure is positively associated with income; and those working for small firms earn less on average than those working for large firms. |
| Model (2) adds dummy variables for entrepreneurs and joiners. The coefficients are positive and significant for both occupational types. Although this result contrasts with findings from some prior research (Brixy et al., 2007; Nyström and Elvung, 2014), it could be a consequence of controlling for organization size (Burton et al., 2018). Consistent with this explanation, when I exclude the control variables for the number of employees in an unreported model, the coefficients on the dummies for entrepreneurs and joiners become negative and significant. This finding highlights the importance of separating size effects from age effects when studying the relationship between occupations and average incomes (Sauermann, 2018). |
Model (3) adds the number of functional roles to the model. The coefficient for the number of functional roles is positive and significant suggesting that those who perform more activities earn higher incomes on average. This result is consistent with Hypothesis 2b. Model (4) adds the interaction of the number of activities with the dummy variable for entrepreneurs and the dummy variable for joiners. The interaction is negative and significant for entrepreneurs, and positive and significant for joiners, relative to employees of incumbent firms. The findings suggest that, compared to employees of incumbent firms, entrepreneurs earn lower incomes when undertaking many functional roles at their work, while joiners earn more. These findings support Hypotheses 4a and 4b.

These results are consistent with an interpretation in which individuals with a strong ‘taste for variety’ (TV) sort into entrepreneurship, where they obtain higher job satisfaction from performing multiple job roles but receive lower income owing to compensating differentials. Other individuals, with weaker TV preferences, are valued for their jack-of-all-trades (JAT) capabilities in young firms and consequently join young firms and perform multiple job tasks, earning higher income as a result.

4.4.4 Robustness Checks

To test Hypotheses 3 and 4 regarding the strength of the relationships between the number of functional roles and workplace outcomes across different occupational types, I included dummy variables to represent entrepreneurs and joiners and then examined the coefficients for two interaction terms: 1) between the entrepreneurship dummy and the number of functional roles; and 2) between the joiner dummy and the number of functional roles. However, this approach may be problematic if occupational dummies are endogenous. Problems of endogeneity can be effectively dealt with by obtaining instrumental variables that only affect the endogenous
variables without affecting the dependent variables. In my case, this approach requires that I find a variable that would affect people’s occupational types without affecting their income and job satisfaction. Because workers choose occupations at least in part based on the incomes and job satisfaction they offer, it is difficult to imagine a variable that meets this requirement.

Therefore, as an alternative, I tested Hypotheses 3 and 4 further by conducting subsample analyses for each occupational type, comparing the size of the coefficients for the number of functional roles on workplace outcomes across occupational types. Similar approaches have been used before (e.g., by Åstebro and Thompson (2011)) to compare the returns to variety for entrepreneurs and wage employees; and by Bublitz and Noseleit (2014) to examine how the relationship between skill variety and income differs for entrepreneurs and employees across firms of different sizes. After analyzing each occupational type separately, the Wald test of equality of coefficients can be used to test for statistically significant differences across the three occupational types. Table 5 presents the results for the robustness checks.

Columns (1) and (2) in Panel A of Table 5 present the coefficients for the ‘number of functional roles’ variable in the job satisfaction and income regressions, using the same control variables as the main analyses. Panel B reports the Wald test statistics. According to Panel A, the number of functional roles is positively related to both job satisfaction and income for all occupational types, supporting Hypotheses 2a and 2b. Furthermore, the relationship between the number of functional roles and job satisfaction is stronger for both entrepreneurs and joiners compared to employees of incumbent firms, supporting Hypotheses 3a and 3b. The relationship between the number of functional roles one undertakes and income turns out to be weaker for
entrepreneurs, supporting Hypothesis 4a. Finally, although the relationship between the number of functional roles and income appears to be stronger for joiners than for employees of incumbent firms, a result consistent with Hypothesis 4b, this difference fails to attain statistical significance.

To summarize, the results of the robustness checks are consistent with the main results except for the results regarding Hypothesis 4b. In the main analysis, Hypothesis 4b was supported via a positive and significant interaction term between the number of functional roles and the joiner dummy in predicting income. Consistent with Hypothesis 4b, the subsample analyses also found that the coefficient for the number of functional roles in predicting income was larger for joiners than for entrepreneurs. However, the difference failed to reach significance using the Wald test of equality of coefficients. Notwithstanding, I believe that the results of the subsample analysis are broadly in line with the main results, thus providing confidence in my findings. I next discuss the implications of these findings for scholarship and practice.

4.5 Discussion
This paper has explored how entrepreneurs, employees of young firms (‘joiners’), and employees of incumbent firms differ in the number of functional roles they undertake and the impact of performing multiple roles on associated workplace outcomes. My results show that even after controlling for firm size, entrepreneurs and joiners perform more functional roles than employees of incumbent firms. Moreover, I find a positive relationship between the number of functional roles and job satisfaction, with this relationship being stronger for both entrepreneurs and joiners relative to employees of incumbent firms. In addition, I find that the positive relationship between the number of functional roles and income is weaker for entrepreneurs and stronger for joiners (relative to employees of incumbent firms).
These findings carry implications for the literature on individual sorting into entrepreneurship. Prior research, which has explored background characteristics as markers of TV preferences or JAT capabilities, has been unable to cleanly distinguish empirically between the TV and JAT theories. The present article took a different tack by analyzing the number of multiple job roles in current jobs, and their implications for workplace outcomes. My finding that the positive relationship between the number of functional roles and income is weaker for entrepreneurs and stronger for joiners (compared to employees of incumbent firms) are consistent with the notion that entrepreneurs have a strong taste for variety, while joiners have a weaker taste for variety and are rewarded for their jack-of-all-trades productivity in this work setting. This suggests that future research may want to acknowledge the possibility that both the TV and JAT theories have a role to play in explaining occupational choices as they pertain to entrepreneurship and working in new entrepreneurial ventures.

Most entrepreneurship research has viewed occupational choice as a dichotomy between entrepreneurship and wage employment. As a result, the heterogeneity among wage employees has been overlooked. Recognizing this shortfall, recent scholars have argued that employees of young firms may differ substantially from employees of incumbent firms (Kim, 2018; Roach and Sauermann, 2015; Sauermann, 2018) as well as from entrepreneurs (Dobrev and Barnett, 2005; Eesley and Wang, 2017; Roach and Sauermann, 2015). My results demonstrate that distinguishing between joiners and employees of incumbent firms clarifies our understanding about how multiple job roles influence the key workplace outcomes of income and job satisfaction. I believe this distinction may also be informative for researchers working on other topics in entrepreneurship, such as entrepreneurial careers over the lifecycle (Dyer, 1995).
I went on to uncover evidence that when controlling for firm size, entrepreneurs and joiners earn more on average than employees of incumbent firms. This came as a surprise given prior research suggesting that they earn less. I believe that this discrepancy is a result of separating employer size from employer age (Sauermann, 2018). Without controlling for employer size (in unreported models), entrepreneurs and employees of young firms earned lower incomes on average. Although the examination of the employer size and age effect on income was not the main topic this paper set out to examine, the finding does have implications for research on relative entrepreneurial incomes (Åstebro, 2017; Hamilton, 2000; Hartog et al., 2010).

My findings also carry implications for those who seek to join start-ups as employees. Although pursuing employment with young firms might not have been a typical career path in the past, increasing numbers of people seem now to regard joining start-ups as an attractive employment option (Kim, 2018). My findings show that working for young firms entails performing more functional roles than working for incumbent firms. Furthermore, the results show that being involved in multiple functional roles is particularly beneficial for joiners, as doing so is associated with higher income and job satisfaction compared to employees of incumbent firms. Therefore, the results suggest that it is beneficial for those who wish to pursue employment at young firms to develop the capabilities that will prepare them to cross functional boundaries.

This last point highlights an important limitation of this study. While I analyzed the number of functional roles performed in current jobs, data limitations prevented me from directly observing individual capabilities that could also help explain productivity in those jobs. Those capabilities might be shaped by skill bundles, or prior experience; this has of course been the
focus of prior research on balanced skills. I anticipate benefits from combining the number of roles undertaken in the current job with prior work experience and skill sets, to examine whether having a varied work experience or balanced skill sets allow one to better manage multiple roles at one’s current job.

A second limitation of the paper is that the findings cannot be interpreted as causal effects. Although I controlled for various demographic and employment related factors and investigated the possibility of endogeneity in the empirical analysis, the findings do not establish causal relationships involving the number of functional roles. Therefore, a valuable extension of this research would be to examine if there is a causal effect of performing a greater number of functional roles on income and job satisfaction, perhaps by using randomized experiments or a more comprehensive instrumental variables approach. Unfortunately, data limitations made it difficult to fully address the endogeneity concerns in this paper. Given these limitations, my best effort was to examine each occupational type separately, which aligns with the practice used by others (Åstebro and Thompson, 2011; Bublitz and Noseleit, 2014). I believe the intrinsic difficulty of identifying instruments that affect occupational choices but not workplace outcomes associated with those choices could be insuperable, making an experimental approach perhaps the more promising way forward.

Finally, this research relied on the NSCG dataset for the empirical analysis. As the NSCG focuses on highly educated individuals (those who have at least a bachelor’s degree) who work in specific fields (science and engineering), the generalizability of the findings may be a concern. On the other hand, highly educated individuals in the science and engineering workforce play a disproportionally large role in society in terms of innovation, productivity improvements, and economic growth. Nevertheless, a valuable extension of this research would be to examine
whether the findings are generalizable to other types of individuals or to a nationally representative sample.
4.6 References


Hundley, G., 2001. Why and when are the self-employed more satisfied with their work? *Industrial Relations* 40, 293-316.


Management Strategy 19, 919-945.
### 4.7 Tables

**Table 4.1: Descriptive Statistics and Correlation Matrix**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>1.</th>
<th>2.</th>
<th>3.</th>
<th>4.</th>
<th>5.</th>
<th>6.</th>
<th>7.</th>
<th>8.</th>
<th>9.</th>
<th>10.</th>
<th>11.</th>
<th>12.</th>
<th>13.</th>
<th>14.</th>
<th>15.</th>
<th>16.</th>
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<td></td>
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<td>3. Occupation_Incumbent firms</td>
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<td>8. Female</td>
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<td>9. Living with children</td>
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<td>11. Education_Bachelor's</td>
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<td>12. Education_Master's</td>
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<td>13. Education_Phd</td>
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<td>0.04</td>
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<td>16. Employer size</td>
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<td>0.43</td>
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<td>0.03</td>
<td>-0.13</td>
<td>-0.06</td>
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</tbody>
</table>

*Note:* Although the occupational type variable and education variable are constructed as categorical, we created a dummy variable to indicate each category for the descriptive statistics. Employer size is measured using an ordinal scale. Because the interval between the levels are uneven, one should exercise care when interpreting the correlation measure. Job type dummies are excluded from this table.
Table 4.2: Results of Poisson Regression Models Predicting # of Functional Roles

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>(1) # of Work Activities</th>
<th>(2) # of Work Activities</th>
</tr>
</thead>
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<tr>
<td>Occupation_Entrepreneur</td>
<td>0.05***</td>
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</tr>
<tr>
<td></td>
<td>(0.00)</td>
<td></td>
</tr>
<tr>
<td>Occupation_Young firms</td>
<td>0.05***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.01)</td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>0.01***</td>
<td>0.01***</td>
</tr>
<tr>
<td></td>
<td>(0.00)</td>
<td>(0.00)</td>
</tr>
<tr>
<td>Age^2</td>
<td>-0.00***</td>
<td>-0.00***</td>
</tr>
<tr>
<td></td>
<td>(0.00)</td>
<td>(0.00)</td>
</tr>
<tr>
<td>Gender (Female dummy)</td>
<td>-0.05***</td>
<td>-0.05***</td>
</tr>
<tr>
<td></td>
<td>(0.00)</td>
<td>(0.00)</td>
</tr>
<tr>
<td>Living with children (Dummy)</td>
<td>0.01***</td>
<td>0.01***</td>
</tr>
<tr>
<td></td>
<td>(0.00)</td>
<td>(0.00)</td>
</tr>
<tr>
<td>Married (Dummy)</td>
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<td>-0.01***</td>
</tr>
<tr>
<td></td>
<td>(0.00)</td>
<td>(0.00)</td>
</tr>
<tr>
<td>Highest Degree - Master's</td>
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<tr>
<td></td>
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<td>Highest Degree - PhD</td>
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<td>0.02**</td>
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<tr>
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<td>(0.01)</td>
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<tr>
<td>Highest Degree - Professional</td>
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<td>-0.12***</td>
</tr>
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<td>(0.01)</td>
</tr>
<tr>
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<td>0.00***</td>
</tr>
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<tr>
<td>10 or fewer employees</td>
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<td>0.09***</td>
</tr>
<tr>
<td></td>
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<td>(0.01)</td>
</tr>
<tr>
<td>11 - 24 employees</td>
<td>0.08***</td>
<td>0.07***</td>
</tr>
<tr>
<td></td>
<td>(0.01)</td>
<td>(0.01)</td>
</tr>
<tr>
<td>25 - 99 employees</td>
<td>0.05***</td>
<td>0.04***</td>
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<tr>
<td>100 - 499 employees</td>
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<td>0.02***</td>
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<tr>
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<tr>
<td>500 - 999 employees</td>
<td>0.02**</td>
<td>0.01*</td>
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<tr>
<td>1000 - 4999 employees</td>
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<td></td>
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</table>

Notes: Employee at incumbent firms used as the base category. Base category for the highest degree is bachelor’s degree, and the base category for the number of employees is more than 25,000. Errors are clustered at the individual level.

*** p<0.01, ** p<0.05, * p<0.1
<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>(1) Overall Satisfaction</th>
<th>(2) Overall Satisfaction</th>
<th>(3) Overall Satisfaction</th>
<th>(4) Overall Satisfaction</th>
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<td>0.14***</td>
<td>0.08**</td>
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<td></td>
<td>(0.02)</td>
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<td>(0.03)</td>
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<td>Occupation_Joiner</td>
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<td>-0.18***</td>
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<tr>
<td># of work activities * Entrepreneur</td>
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<tr>
<td></td>
<td></td>
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</tr>
<tr>
<td># of work activities * Young firms</td>
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<td></td>
<td></td>
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</tr>
<tr>
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<td>Age^2</td>
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<tr>
<td>Living with children</td>
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</tr>
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</tr>
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</tr>
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<td>(0.00)</td>
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</tr>
<tr>
<td>10 or fewer employees</td>
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<tr>
<td></td>
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</tr>
<tr>
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</tr>
<tr>
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<td>-0.04*</td>
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</tr>
<tr>
<td></td>
<td>(0.02)</td>
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<td></td>
</tr>
<tr>
<td>500 - 999 employees</td>
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<td>-0.08***</td>
<td>-0.08***</td>
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</tr>
<tr>
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<td>(0.02)</td>
<td>(0.03)</td>
<td></td>
</tr>
<tr>
<td>1000 - 4999 employees</td>
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<td>-0.01</td>
<td>-0.01</td>
<td>-0.01</td>
</tr>
<tr>
<td></td>
<td>(0.02)</td>
<td>(0.02)</td>
<td>(0.02)</td>
<td></td>
</tr>
<tr>
<td>5000 - 24999 employees</td>
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<td>0.02</td>
<td>0.02</td>
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</tr>
<tr>
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</tr>
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<td></td>
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<td>(0.01)</td>
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</tr>
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<td>-0.02*</td>
<td>-0.02*</td>
</tr>
<tr>
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<td>(0.01)</td>
<td>(0.01)</td>
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</tr>
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<td>-4.18***</td>
<td>-4.04***</td>
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<td>(0.10)</td>
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<td></td>
</tr>
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</tr>
<tr>
<td>Constant cut3</td>
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<td>0.02</td>
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<td></td>
<td>(0.10)</td>
<td>(0.10)</td>
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<td></td>
</tr>
<tr>
<td>Occupational Dummies</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Wald Chi-squared</td>
<td>4,092.09***</td>
<td>4,166.66***</td>
<td>4,406.45</td>
<td>4,412.30</td>
</tr>
<tr>
<td>Pseudo R-squared</td>
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</tr>
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</table>

Notes: As for Table 2
## Table 4.4: Results of OLS Regression Models Predicting Income

<table>
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<th>VARIABLES</th>
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<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ln_salary</td>
<td>0.01**</td>
<td>0.01</td>
<td>0.06***</td>
<td></td>
</tr>
<tr>
<td>Occupation_Entrepreneur</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td></td>
</tr>
<tr>
<td>ln_salary</td>
<td>0.04***</td>
<td>0.04***</td>
<td>0.01</td>
<td></td>
</tr>
<tr>
<td>Occupation_Young firms</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td></td>
</tr>
<tr>
<td># of work activities</td>
<td>0.01***</td>
<td>0.01***</td>
<td>0.01***</td>
<td></td>
</tr>
<tr>
<td># of work activities * Entrepreneur</td>
<td></td>
<td></td>
<td></td>
<td>-0.01***</td>
</tr>
<tr>
<td># of work activities * Young firms</td>
<td></td>
<td></td>
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<td>0.01***</td>
</tr>
<tr>
<td>Age</td>
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<td>0.06***</td>
<td>0.06***</td>
<td>0.06***</td>
</tr>
<tr>
<td>Age^2</td>
<td>-0.00***</td>
<td>-0.00***</td>
<td>-0.00***</td>
<td>-0.00***</td>
</tr>
<tr>
<td>Gender (Female)</td>
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<td>-0.16***</td>
<td>-0.16***</td>
</tr>
<tr>
<td>Living with children</td>
<td>0.01**</td>
<td>0.01**</td>
<td>0.01**</td>
<td>0.01**</td>
</tr>
<tr>
<td>Married</td>
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<td>0.09***</td>
<td>0.09***</td>
<td>0.09***</td>
</tr>
<tr>
<td>Highest Degree - Master's</td>
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<td>0.16***</td>
<td>0.16***</td>
<td>0.16***</td>
</tr>
<tr>
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<td>0.01***</td>
<td>0.01***</td>
<td>0.01***</td>
</tr>
<tr>
<td>10 or fewer employees</td>
<td>-0.45***</td>
<td>-0.46***</td>
<td>-0.47***</td>
<td>-0.46***</td>
</tr>
<tr>
<td>11 - 24 employees</td>
<td>-0.25***</td>
<td>-0.25***</td>
<td>-0.26***</td>
<td>-0.26***</td>
</tr>
<tr>
<td>25 - 49 employees</td>
<td>-0.19***</td>
<td>-0.19***</td>
<td>-0.20***</td>
<td>-0.20***</td>
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<tr>
<td>100 - 499 employees</td>
<td>-0.16***</td>
<td>-0.16***</td>
<td>-0.16***</td>
<td>-0.16***</td>
</tr>
<tr>
<td>500 - 999 employees</td>
<td>-0.13***</td>
<td>-0.13***</td>
<td>-0.13***</td>
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</tr>
<tr>
<td>1000 - 4999 employees</td>
<td>-0.09***</td>
<td>-0.09***</td>
<td>-0.09***</td>
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<tr>
<td>5000 - 24999 employees</td>
<td>-0.06***</td>
<td>-0.06***</td>
<td>-0.06***</td>
<td>-0.06***</td>
</tr>
<tr>
<td>2013.REFYR</td>
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<td>0.03***</td>
<td>0.03***</td>
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<tr>
<td>2015.REFYR</td>
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<td>0.09***</td>
<td>0.08***</td>
<td>0.08***</td>
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<tr>
<td>Constant</td>
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<td>9.87***</td>
<td>9.83***</td>
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**Notes:** As for Table 2
Table 4.5: Robustness Check: Subsample Analyses

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<td>Job Satisfaction</td>
<td>Income</td>
</tr>
<tr>
<td>A.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Entrepreneurs (ENT)</td>
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<td>0.01***</td>
</tr>
<tr>
<td></td>
<td>(0.01)</td>
<td>(0.00)</td>
</tr>
<tr>
<td>N = 24,268</td>
<td>N = 23,749</td>
<td></td>
</tr>
<tr>
<td>Joiners (JN)</td>
<td>0.06***</td>
<td>0.02***</td>
</tr>
<tr>
<td></td>
<td>(0.01)</td>
<td>(0.00)</td>
</tr>
<tr>
<td>N = 5,776</td>
<td>N = 5,756</td>
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<tr>
<td>Employees (EMP)</td>
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<td>0.01***</td>
</tr>
<tr>
<td></td>
<td>(0.00)</td>
<td>(0.00)</td>
</tr>
<tr>
<td>N = 108,817</td>
<td>N = 108,748</td>
<td></td>
</tr>
<tr>
<td>B.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENT vs. EMP</td>
<td>Chi²</td>
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</tr>
<tr>
<td></td>
<td>p-value</td>
<td>(0.01)</td>
</tr>
<tr>
<td>JN vs. EMP</td>
<td>Chi²</td>
<td>2.96*</td>
</tr>
<tr>
<td></td>
<td>p-value</td>
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<tr>
<td>ENT vs. JN</td>
<td>Chi²</td>
<td>0.06</td>
</tr>
<tr>
<td></td>
<td>p-value</td>
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</table>

Notes: Panel A: entries are coefficients for the 'number of functional roles'. Dependent and control variables identical to those used in Tables 3 and 4. Errors are clustered at the individual level. N is sample size for the given subsample. Panel B: entries are Wald statistics and p-values. *** p<0.01, ** p<0.05, * p<0.1
CHAPTER 5: CONCLUSION

Entrepreneurship plays an integral role in society. Through entrepreneurship, we develop new technologies (Garud & Karnøe, 2003), new products and services (Shane & Venkataraman, 2000), and new jobs (Decker, Haltiwanger, Jarmin, & Miranda, 2014; Haltiwanger, Jarmin, & Miranda, 2013). Accordingly, entrepreneurship has been studied extensively by numerous scholars around the world (Shepherd, Wennberg, Suddaby, & Wiklund, 2019) who study entrepreneurship from a number of different perspectives including economics, sociology, psychology, and strategic management. Despite the numerous different perspectives through which one can study and understand entrepreneurship, one thing is common across all of the perspectives: entrepreneurship involves people. Therefore, to understand entrepreneurship is to understand the people who pursue entrepreneurship and their experiences (Cardon & Stevens, 2004; Katz, Aldrich, Welbourne, & Williams, 2000).

Despite the popular view within the entrepreneurship literature that focuses heavily on the founders, entrepreneurship is rarely pursued by a founder alone. Rather, managing and growing entrepreneurial firms often requires entrepreneurs to hire employees (Coad, Nielsen, & Timmermans, 2017; Zhao, 2013). Despite the important role played by the employees, recruiting talent remains one of the biggest challenges facing entrepreneurs (Williamson, 2000; Zhao, 2013). While there is a growing research interest on the human resources side of entrepreneurship (Leung, Zhang, Wong, & Der Foo, 2006; Williamson, 2000; Yamakawa & Cardon, 2017; Zhao, 2013), we still lack understanding of the different ways entrepreneurs can overcome this challenge. This dissertation was an effort to join and contribute to our scholarly understanding of how entrepreneurs can overcome the challenges associated with recruiting talent.
In the first essay (Chapter 2), I provided a thorough review of the previous research that can inform entrepreneurial recruitment. One of the challenges facing researchers who study entrepreneurial recruitment and joiners is that the prior studies related to the topics are scattered throughout many disciplines including economics, psychology, sociology, and management. This makes it challenging for scholars to become familiar with the state of the literature and makes it difficult for knowledge to accumulate. So, in this paper, I provided a detailed review of the studies related to entrepreneurial recruitment and joiners. Recruitment involves a two-sided matching process between employers and employees (Nyström, 2019). Accordingly, this review covered both perspectives: that of start-ups and that of joiners. Based on the literature review, I provided directions for future research in terms of promising research questions and empirical methods and highlighted several theoretical perspectives that scholars may find useful in their study of entrepreneurial recruitment and joiners.

In the second essay (Chapter 3), through the perspective of start-ups, I examined how a start-up can better recruit employees. One of the biggest challenges that start-ups face when recruiting talent is information asymmetry (Stiglitz, 2002). While jobseekers have limited ways to obtain information about start-ups, all start-ups wish to present themselves as attractive employers that have highly promising future performance potentials. In an environment with high information asymmetry, firms often rely on signals to convey their quality (Spence, 1973). This chapter demonstrated that the level of prestige associated with the founder’s education and work experience can serve as a signal to attract jobseekers. Using a series of randomized laboratory experiments, I demonstrated that founder prestige has a positive causal influence on the attractiveness of a start-up to jobseekers, and that this occurs because founder prestige signals founder’s ability, rather than signaling venture quality. Given the increasingly fierce competition
for talent (Beechler & Woodward, 2009), the findings of this chapter are particularly relevant to those entrepreneurs who seek to hire employees.

The third essay (Chapter 4) focuses on the perspective of joiners and examines what it means to work for start-ups and how that differs from working for established firms or pursuing entrepreneurship. One of the key differences between pursuing entrepreneurship and working as a wage employee is that an entrepreneur must be involved in all aspects of a business and therefore, perform a wide variety of tasks (Lazear, 2005). I focused on this aspect and examined whether joiners are similar to entrepreneurs in that they perform a higher number of tasks than employees of established firms. Using data from the National Survey of College Graduates, I found that employees of young firms indeed perform a higher number of functional roles than employees of established firms, controlling for employer size. Moreover, I found that both joiners and entrepreneurs exhibit a stronger relationship between the number of roles and job satisfaction than employees of incumbent firms. Finally, the relationship between earnings and the number of roles turned out to be stronger for joiners and weaker for entrepreneurs, compared to employees of established firms. I interpret the empirical findings as suggesting that joiners are likely to be driven by their ‘jack-of-all-trades’ productivity (Lazear, 2005), while entrepreneurs are more likely to be driven by their taste for variety (Åstebro & Thompson, 2011).

5.1 Contribution to Entrepreneurship Research

This dissertation made several contributions to the entrepreneurship literature. First, in this thesis, I argued that human resources are critical for entrepreneurial firms and highlighted the challenges entrepreneurs face with respect to recruitment. Previous research on the resources associated with entrepreneurship has mainly focused on financial resources (Chahine, Filatotchev, & Zahra, 2011; Ko & McKelvie, 2018; Steigenberger & Wilhelm, 2018) and
endorsements from third parties (Stuart, Hoang, & Hybels, 1999), resulting in a lack of understanding about how start-ups acquire and utilize human resources. This dissertation recognized the importance of human resources in the entrepreneurial process and presented several ways future entrepreneurship researchers can extend our understanding of recruitment and human resources within the context of entrepreneurship.

Second, by focusing on the joiners, this dissertation contributes to the occupational choice literature (Kihlstrom & Laffont, 1979; Lucas, 1978; Parker, 2009; Parker & van Praag, 2010). Traditionally, studies of occupational choice have mainly treated the choice as a dichotomy between self-employment and wage employment. As a result, joiners have been largely ignored by entrepreneurship scholars until recently (Roach & Sauermann, 2015). Although several recent studies highlighted the importance of joiners in the past (Cardon & Stevens, 2004), the mainstream entrepreneurship literature is yet to incorporate the choice to join start-ups as employees into the models used. By highlighting the importance of joiners, this thesis joins the effort to view occupational choice as a continuum rather than a dichotomy and extends our understanding of the occupational choice between entrepreneurship and wage employment.

Third, this thesis contributes to the research on signaling theory in entrepreneurship. Given the high level of information asymmetry surrounding start-ups, signaling theory has been used widely by entrepreneurship scholars to study how start-ups convey their quality to outside parties (Connelly, Certo, Ireland, & Reutzel, 2011). However, most of the studies of signaling in entrepreneurship research are conducted in the context of how start-ups appeal to investors. In this dissertation, I argue that signaling theory can also be used to study how start-ups recruit talent and apply the theory to study how the level of prestige associated with founders can attract
jobseekers (Chapter 3). This provides an interesting twist to the original model developed by Spence (1973) by reversing the direction of signaling from jobseekers to employers (as in Spence’s model) to a model where signals are sent by employers to jobseekers. Moreover, I extend the one-signal-one-attribute model of the traditional signaling theory (Spence, 1973) to a one-signal-multiple-attributes model by conceptualizing founder prestige as potentially signaling two separate attributes: 1) founder ability and 2) venture quality. Furthermore, the chapter introduced an empirical strategy based on a series of randomized laboratory experiments to discern between the two attributes.

Lastly, this theory contributes to the study of the jack-of-all-trades theory (Lazear, 2005) of entrepreneurship. While the jack-of-all-trades theory has led to a large body of literature on the relationship between skill variety and entrepreneurship, most of the studies in this literature have focused on comparing entrepreneurs (self-employed) to wage employees (Hartog, Van Praag, & Van Der Sluis, 2010; Stuetzer, Goethner, & Cantner, 2012; Stuetzer, Obschonka, & Schmitt-Rodermund, 2013; Wagner, 2006), thus treating wage employees as a homogenous group. However, in this dissertation, I argue that wage employees are a highly heterogeneous group and that employees of young start-ups can also be expected to undertake multiple roles, thus resembling entrepreneurs (Chapter 4). By doing so, I contribute to the literature on the jack-of-all-trades theory by applying it to study joiners as well as entrepreneurs.

5.2 Implications for Practice

On top of contributing to the scholarly research on entrepreneurship, this thesis offers implications for practitioners as well. Most entrepreneurs and the start-ups they manage lack resources and must seek to acquire resources from external parties. However, resource providers are often selective in choosing the start-ups to which they allocate their finite resources.
Therefore, start-ups need to convey their quality to the resource providers and convince them to apply. Unfortunately, this is not an easy task because there exists a high degree of information asymmetry between resource providers and the start-ups. In Chapter 3, I focus specifically on this problem and introduce the level of prestige associated with the founder’s background as a signal that founders can use to overcome the problems associated with information asymmetry and appeal to resource providers. Although this dissertation examines the phenomenon in the context of recruitment, the findings may help entrepreneurs appeal to other types of resource providers because information asymmetry is a problem that spans a wide range of resource providers including investors and strategic alliance partners.

In addition to studying how start-ups can better appeal to jobseekers, this dissertation also examines the work experience of a joiner and how it differs from pursuing entrepreneurship or working for an established firm (Chapter 4). Regarding this question, I found that joiners are similar to entrepreneurs in that they perform a higher number of functional roles than employees of established firms. Going further, I found that entrepreneurs and joiners are likely to be driven by different motives; specifically, I found evidence that entrepreneurs are likely to be driven by their taste for variety (Åstebro & Thompson, 2011), while joiners are likely to be driven by their jack-of-all-trades productivity (Lazear, 2005). For those who plan to pursue a career as a joiner, the findings suggest that it would be beneficial to develop a diverse skillset because they are likely to be involved in various roles.

5.3 Conclusion

From Bill Gates of Microsoft to Elon Musk of Tesla, when thinking about entrepreneurship, I often focus the spotlight on the founder. However, regardless of how talented the founder is, no founder can manage and grow a venture without employees, who are often overlooked in the
entrepreneurship research. As Katz and colleagues observe, “at a time of unparalleled technological development, it is the human resources that paradoxically spell success or failure for all firms, and especially entrepreneurial ones” (Katz et al., 2000: 7). By recognizing joiners as crucial elements of the entrepreneurship process, the essays in this dissertation provide new insights on entrepreneurship by expanding the traditional view of entrepreneurship that focuses specifically on founders. Also, this dissertation highlights the importance and the challenges associated with recruiting joiners and suggests ways for entrepreneurs to overcome such challenges. As the scholarly research on entrepreneurship continues to grow, I hope that the arguments and the findings presented in this dissertation will stimulate further research around the topics of entrepreneurial recruitment and joiners.
5.4 REFERENCES


Curriculum Vitae: Danny Chung

EDUCATION

Doctor of Philosophy (Ph.D.) in General Management (Expected) 2021
- Ivey Business School, Western University
- Concentration: Entrepreneurship
- Dissertation title: *Entrepreneurial Joiners and Recruitment*
- Thesis supervisory committee: Simon C. Parker (Advisor), Lawrence Plummer, Rod Duclos

Bachelor of Commerce 2009-2013
- Smith School of Business, Queen’s University
- Dean’s List with Distinction

Student Exchange 2011
- Tsinghua University – School of Economics and Management

RESEARCH INTERESTS

- Entrepreneurship
- Joiners (Individuals who join start-ups as wage employees)
- Recruitment
- Occupational Choice
- Experiments

TEACHING INTERESTS

- Entrepreneurship (including New Venture Creation, Managing High Growth Companies, New Venture Planning)
- Strategic Management

WORKING PAPERS

Chung, D. & Parker, S. “The Effects of Founder Prestige on Job Seeker Evaluations of Start-ups.”
- *Job market paper*
- Revise & resubmit at Strategic Entrepreneurship Journal
- Presented at the *Academy of Management Annual Meeting*, Boston, MA, 2019
- Presented at the *Great Lakes Entrepreneurship Network (GLEN) Conference*, Minneapolis, MN, 2019

- Accepted for presentation at the *Babson College Entrepreneurship Research Conference*, 2021
- Presented at the *Academy of Management Annual Meeting*, Virtual, 2020
- Target: *Journal of Business Venturing Insights*
Chung, D. “Quitting Your Job to Pursue Entrepreneurship or Join Start-ups: Implications on Job Satisfaction.”
- Accepted for presentation at the *Academy of Management Annual Meeting*, Virtual, 2021
- Selected as one of the best accepted papers (approximately 10% of papers get selected)
- Target journal: *Journal of Business Venturing*

**WORK IN PROGRESS**

Chung, D. “The Joiner Effect: Joiner Experience and Subsequent Entry into Entrepreneurship.”
- Data analysis stage
- Target journal: *Journal of Business Venturing*

- Draft writing stage
- Target journal: *Entrepreneurship Theory and Practice*

**GRANTS & AWARDS**

- Best Reviewer Award, ENT Division, Academy of Management, 2020
- Plan for Excellence Ph.D., Ivey Business School, Western University, 2016-2019
- C.B. (Bud) Johnston Ontario Graduate Scholarship, Ivey Business School, Western University, 2017-2018
- Ontario Graduate Scholarship, Province of Ontario, Canada, 2017-2018
- D.I. McLeod Dean’s List with Distinction Scholarship, Queen’s School of Business, Queen’s University, 2009-2013
- Palmer Hoar Memorial Book Prize, Queen’s School of Business, Queen’s University, 2011
- The Sutton’s Award in the School of Business, Queen’s School of Business, Queen’s University, 2010
- Principal’s Scholarship, Queen’s School of Business, Queen’s University, 2009-2010

**CONFERENCE PRESENTATIONS**


WORKSHOP PARTICIPATIONS

Lean Innovation Educators Summit, Virtual 2020
BCERC Doctoral Consortium, Knoxville, TN 2020
AOM ENT Division Doctoral Consortium, Vancouver, Canada 2020
New Organizational Theory Exploration Sessions (NOTES), London, Canada 2018-2020
Lazaridis Meet the Editors Workshop, Waterloo, Canada 2019
Lazaridis Entrepreneurship Research Day, Waterloo, Canada 2018

TEACHING EXPERIENCE

Substitute Lecturer, King’s University College – Western University 2019
• MOS 3331A – Project Management for Management & Organizational Studies
• Served as a substitute lecturer for four sessions, responsible for preparing and delivering lectures
• Sessions included both textbook-based lectures and case-based discussions
• Satisfaction with Professor: 4.94 / 5
• Satisfaction with Sessions: 4.71 / 5

Faculty Shadow, Ivey Business School, Western University 2018
• BUS 4566 – Managing High Growth Companies with Dr. Dominic S. Lim
• Shadowed a faculty member for an entire course including preparation, delivery, and evaluation

SERVICE

Reviewer, The Toronto Fintech Conference 2020
Reviewer, Academy of Management Conference – ENT and OMT division 2018-2020
Judge, The 24th Annual BCG HBA Case Competition 2020
CaseMate, Ivey Publishing 2018
• Selected the best business cases to accompany each chapter for an entrepreneurship textbook.

Organizer, Ivey Ph.D. New Student Orientation Day 2017

PROFESSIONAL EXPERIENCE

Shinhan Bank Canada, Toronto, ON 2015
Financial Services Associate

Boston Consulting Group, Seoul, South Korea 2014
Research Assistant

Accenture, Seoul, South Korea 2013
Research Assistant

CITIZENSHIPS

Canadian Citizenship