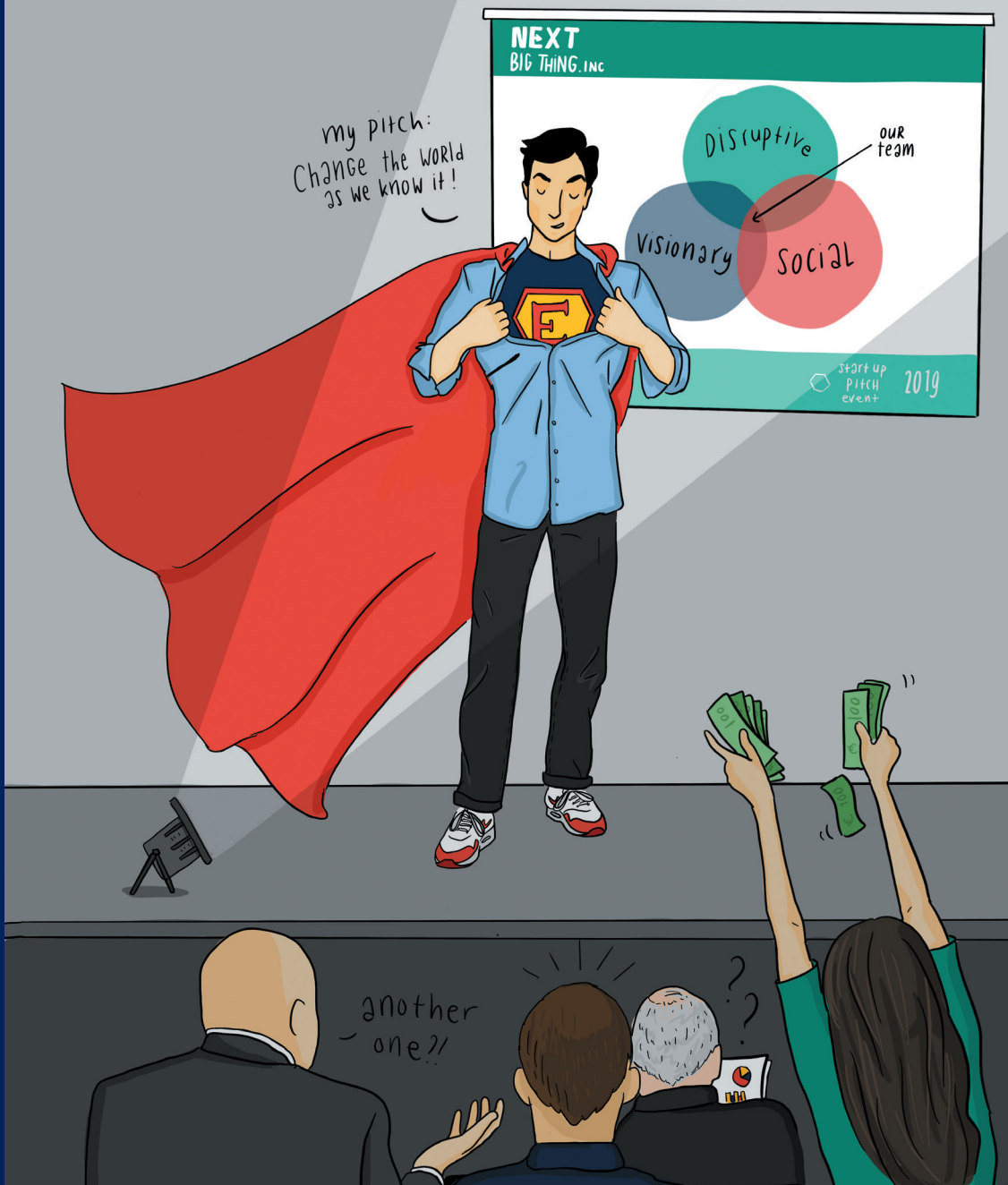
TIMO VAN BALEN

Challenges of Early Stage Entrepreneurs

The Roles of Vision Communication and Team Membership Change



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Uitdagingen van Ondernemers:
De Rol van Visiecommunicatie en Teamwisselingen

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My mother often tells the story of my grandfather who called me ‘the little philosopher’ when I was young. Apparently I asked him all kinds of questions about life and the things around me. I have to admit, I don’t clearly remember this myself, but I do know that I’ve always wanted to know how and why things worked. This alone could’ve been a motivation to do my PhD. Though, looking back at my decision in 2014, coming from the MPhil research masters, my foremost reason was to look for a way to challenge myself intellectually, and, ‘oh boy!’, did I find my challenge. It took a lot of hard work, tears and years of therapy (pun intended) to get through it. But I’m proud of how it turned out and I, for sure, don’t regret taking on the challenge. The experience has changed me. I like to think for the better. Now, I can qualify the name ‘little philosopher’ with my title as Doctor of Philosophy. Importantly, I have many people to thank for pulling me through this arduous ordeal that is the PhD.

Most of all, thank you Murat for all the years as my daily supervisor. Our journey started out with you as my master thesis coach and our collaboration is still going strong, but now with you as my co-author. With no one, have I ever worked as closely together and have I learned as much from as I did from Murat. Much credit goes out to his unique goal-oriented way of working and his hands-on approach to supervision. He always provided direction and structure to my work. When I felt lost, it was never for long. Despite his bad humor and somewhat uncomfortably direct way of communicating, the depth of his supervision is a rare sight in the world of busy professors. I sincerely hope that future PhD’s will benefit as much from his collaboration as I did.

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Ashish for all his insights and kindness during our collaboration. Also, thank you Ashish for your warm welcome at your home in Atlanta in 2017.

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Timo van Balen

Amsterdam, February 2019

CONTENTS

CHAPTER 1

INTRODUCTION

1.1 BACKGROUND AND MOTIVATION

Start-ups are the key source of technological breakthroughs, economic growth, and disruptions of the marketplace (Audretsch & Keilbach, 2004; Penrose, 1959; Schumpeter, 1934). Start-ups are defined as the newly founded ventures that aim to create scalable, high growth businesses (Davila, Foster, & Gupta, 2003; DeSantola & Gulati, 2017; Gundry & Welsch, 2001). They open society up to new technologies, products and services; and create entirely new market segments and jobs along the way (Carree & Klomp, 1996; Feldman & Audretsch, 1999; Glaeser, Kallal, Scheinkman, & Shleifer, 1992). However, as prior work documents, most start-ups fail to realize their envisioned impact or do not even survive their first four years of existence (DeSantola & Gulati, 2017; Kerr, Lerner, & Schoar, 2014). This observation is not surprising, given the fact that the entrepreneurs face hard-to-overcome challenges in the early stages of the venture's life cycle (e.g., Fisher, Kotha, & Lahiri, 2016; Huang & Knight, 2017). Inter alia, three of these challenges stand out as particularly important in determining start-up growth and survival (DeSantola & Gulati, 2017).

The first challenge is the acquisition of financial capital. Access to funding is the central driver of growth and success from the onset of venture life (Brush, Greene, & Hart, 2001; Huang, 2018). Financial capital is needed to develop new products and offerings, acquire assets, and attract valuable human resources. However,

acquiring these resources is perhaps also the most daunting challenge of early stage high growth entrepreneurship (Aldrich & Fiol, 1994). New ventures and their entrepreneurs are new to the world and, thus, relatively unknown to wider audiences (Stinchcombe, 2000). Therefore, there is considerable uncertainty about their potential for success, making investors reluctant to provide resources (Hallen & Pahnke, 2016; Hellmann, 2002; Ruhnka & Young, 1991). Our understanding of how to surmount the challenge of acquiring financial investments is of key importance to both entrepreneurs and academics.

The second challenge, assuming that some entrepreneurs acquire financial capital, is to attract talent to the venture. Dedicated talent is essential for start-ups in the development of the innovative offerings that will fuel high growth (DeSantola & Gulati, 2017; Sauermann, 2017). Nonetheless, similar to the challenge of attracting investments, the uncertainty around early stage ventures makes the attraction of crucial human resources on itself a pressing challenge. In particular, early stage growth ventures expect demanding work of their employees, while lacking the resources to offer them the same benefits as established firms (Barber, Wesson, Roberson, & Taylor, 1999; Burton, Dahl, & Sorenson, 2018). Thus, our understanding of how entrepreneurs can convince talent to join the venture makes for a second important query.

Assuming that some entrepreneurs manage to attract dedicated talent to the venture team, entrepreneurs are presented with the third challenge of managing the rapidly growing venture team (DeSantola & Gulati, 2017). They need to build the structures and routines for an effective new venture team that is organized for high performance and high growth (Klotz, Hmieleski, Bradley, & Busenitz, 2014). Specifically, as the venture team grows it becomes highly dynamic. There is a constant influx of new people that help further grow the business, but also an outflow of old team members as they and the changing team grow apart (Boeker & Karichalil, 2002). Balancing this membership change, in order to ensure their team's future performance, is the entrepreneurs' third major challenge.

In this dissertation, I shed new light on entrepreneurs' ability in overcoming these three hurdles to venture success: (1) the acquisition of vast amounts of financial capital, (2) the attraction of dedicated talent to the venture team, and (3) the management of team dynamics. In the next sections of this Chapter, I will explain the theoretical angles I use in my investigations and lay out the contents of this dissertation.

1.2 CHALLENGE 1: ATTRACTING FINANCIAL CAPITAL

Entrepreneurship refers to the enactment and exploitation of opportunities for new means-end relationships in firms, markets and society that may provide gains through addressing competitive imperfections in product or factor markets (Alvarez, Barney, & Anderson, 2013; Ramoglou & Tsang, 2016; Shane & Venkataraman, 2000; Wood & Mckinley, 2017). To achieve the exploitation of those opportunities they need funding and other resources (e.g. expertise, network, etc.) provided by investors. However, a good idea by itself does not guarantee that the needed investments will flow into the venture. This is because there is an information asymmetry between entrepreneurs and investors, resulting in considerable uncertainty regarding a start-ups potential for growth and survival (Shane, 2003). As a consequence, entrepreneurs' have to proactively convince stakeholders to support the venture. In fact, the entrepreneurship literature is shifting its attention from the characteristics of entrepreneurs and their discovery of entrepreneurial opportunities, to the actions and behaviors of entrepreneurs and their interplay with stakeholders, in explaining entrepreneurial outcomes (for reviews, see Alvarez & Barney, 2010; Battilana, Leca, & Boxenbaum, 2009). From that viewpoint, new venture creation is a way to pursue the opportunities, and entrepreneurs are the individuals who seek to enact and exploit them through on-going interaction with stakeholders (Alvarez & Barney, 2013; Wood & Mckinley, 2017).

In investigating these interactions between entrepreneurs and stakeholders, entrepreneurship research draws from literature on impression management. Impression management research dictates that the uncertainty about the value of the entrepreneurial opportunity, between entrepreneurs and resource holders can be addressed through communications (e.g., Busenitz, Fiet, & Moesel, 2005; Fisher, Kuratko, Bloodgood, & Hornsby, 2017; Lounsbury & Glynn, 2001; Martens, Jennings, & Jennings, 2007; Navis & Glynn, 2011). The communications by entrepreneurs help establish identities that distinguish the venture from other market constituents in the eyes of the audience (i.e., optimal distinctiveness, Glynn & Navis, 2013). These identities define who the entrepreneurs are and what the venture does (Navis & Glynn, 2011), and aim to position the venture as "desirable, proper, or appropriate within some socially constructed system of norms, beliefs, and definitions" (Suchman, 1995, p. 574). Both Chapter 2 and 3 build on theories of impression management.

1.2.1 Vision Communication

Specifically, I focus on the entrepreneurs' communication of visions. This impression management activity is likely to shape the sensemaking of entrepreneurs' actions in the eyes of external audiences (Bird & Schjoedt, 2009; Lounsbury & Glynn, 2001; Navis & Glynn, 2011), and convince them of the opportunity that the venture represents (Alvarez, Young, & Woolley, 2015; Garud, Gehman, & Giuliani, 2014). Consider the examples of Elon Musk with Tesla and SpaceX, Travis Kalanick with Uber, or Boyan Slat with The Ocean Clean-up. For example, Musk envisions a future were humankind explores space and colonizes Mars, Kalanick wants to evolve the world of transportation, and Slat sees a future with oceans free of plastic. Their visions are the "elaborate fictions of proposed possible future states of existence" (Gartner, Bird, & Starr, 1992, p. 17) aimed at provoking thought and action (Smith & Anderson, 2004)

In Chapter 2, I point out that vision communication prompts distinctive cues of entrepreneurial identities (cf. Garud, Schildt, & Lant, 2014; Navis & Glynn, 2011; van Werven, Bouwmeester, & Cornelissen, 2015). This is because visions outline 'what the venture will become,' and 'what it will attain', by conveying stories and images of the future of the venture and its ecosystem (e.g., including technology, customers, and/or competitors) (Berson, Shamir, Avolio, & Popper, 2001; Garud et al., 2014; House & Shamir, 1993; Van Knippenberg & Stam, 2014). In particular, the contents of these visions affect investor perceptions of the intrinsic or substantive value of what the venture aims to achieve (Cornelissen & Werner, 2014), and influences what people think is desirable or possible for members of the ecosystem and for themselves to achieve (Stam, Lord, Knippenberg, & Wisse, 2014; Wry, Lounsbury, & Glynn, 2011). Entrepreneurial visions can, thereby, motivate audiences to act in support of the venture's pursuits (Baum, Locke, & Kirkpatrick, 1998; Stam et al., 2014).

1.2.2 Audience Sensemaking.

Of particular importance in the investigation of the relationship between the communication of these visions and entrepreneurial outcomes is theorizing about audience sensemaking (cf. Weick, Sutcliffe, & Obstfeld, 2005). How specific audiences, such as investors and potential employees, make sense of entrepreneurs' communications can help future research better understand the underlying mechanisms of various vision content types. It enables us to understand the audiences perspective on entrepreneurs' communications (Fisher et al., 2017). This

is important, because prior research on audience sensemaking tends to be theoretical and case-based, and so-far forgoes specific interpretations of vision content (e.g., Garud et al., 2014; Huang, 2018; Navis & Glynn, 2011; Zott & Huy, 2007). Therefore, in Chapter 2 I focus on a type of vision content popular in practice and its effects on attracting financial investments.

1.2.3 Disruptive Vision and Financial Investments

I investigate how the venture's communication of a *disruptive vision*—one that promotes the notion that the venture's activities will fundamentally change, disturb, or re-order the ways in which organizations, markets, and ecosystems operates—affects their ability to acquire a first round of funding. I test my hypotheses on a dataset of 918 Israeli start-ups and with an online randomized experiment. I find that start-ups that communicate with a disruptive vision have 22 percent higher odds of acquiring a first round of investments, but obtain 24 percent less funds in that round.

Expectation of Extraordinary Return. In my explanation of investors' sensemaking of disruptive visions I zoom in on their expectations of extraordinary return as the underlying mechanism. Investors construct interpretations around risks and uncertainties in the early stage of venturing that motivate them to invest (Huang & Knight, 2017; Huang, 2018). Therein, the concept of extraordinary return in early stage investor sensemaking has received increasing attention (Huang & Pearce, 2015; Maples Jr., 2016). Despite its appearance in prior academic literature, Chapter 2 is the first work to empirically document that the investors' expectation of extraordinary return[1] underlies early stage investment decision making. Disruptive vision communication can foster these expectations, because the image of disruption suggests that the venture may cause an industry shake-out, with the candidate venture controlling the dominant design (Argyres, Bigelow, & Nickerson, 2015). Thus, yielding extraordinary returns for the responsible venture and its investors.

Chapter 2 also shows that, beyond the positive effect of disruptive vision communication on the likelihood of receiving a first-round investment, there is a negative effect of communicating a disruptive vision on the amount of funds

[1] Expectation of extraordinary return involves the notion that a venture's business idea is "something so ridiculous that it could actually work" (Huang & Pearce, 2015, p. 641), potentially culminating in market leadership, and possibly generating returns on investment (ROI) of tenfold or better (Sahlman, 1990) through an Initial Public Offering (IPO) or exit sale to another entity (Prowse, 1998).

received. This is because investors initially have no incentive to provide large sums of money to a venture that communicates a highly risky and hard-to-achieve plan. I find that this effect upholds, even when controlling for the positive effects of investor expectations of extraordinary return.

1.3 CHALLENGE 2: ATTRACTING TALENT

In Chapter 3, I investigate the second challenge of early stage entrepreneurs: attracting talent to the venture team. Start-ups may struggle in attracting talent because they are quite unknown to wider audiences (Stinchcombe, 2000), lack resources to offer the same job benefits as established firms (Barber et al., 1999; Burton et al., 2018; Cardon & Stevens, 2004), while expecting potential recruits to go outside their formal role descriptions and work long hours (Cardon & Stevens, 2004). Similar to Chapter 2, I approach this challenge from the lens of vision communication and audience sensemaking. Therefore, in Chapter 3 I focus on another popular type of vision content often used to attract talent in practice.

Specifically, I investigate how the communication of a social vision by an early stage venture affects their ability to attract talent to the venture team. A *social vision* presents an image of the future where current issues revolving around physical earth and/or societal welfare (e.g., disadvantaged groups) are being addressed by the venture's activities. In this chapter, I test my hypotheses through a field-experiment with 102 job seekers. I find that a start-up that communicates with a social vision has 72 percent lower odds of eliciting either contact details or an application from job seekers. Additionally, I find that talent sets a premium of 252 euros on the minimum required gross monthly salary for considering employment at the start-up that communicates with a social vision.

Perceived Opportunity for Achievement. I focus on job seekers' perceived opportunity for achievement as the underlying sensemaking mechanism. From a vast stream of work in social psychology, we know that people innately desire personal development and growth, and, hence, achievement (Deci, Olafsen, & Ryan, 2017; Harackiewicz, Abrahams, & Wageman, 1987; Senko & Harackiewicz, 2005). Their decision to work at the start-up will at least depend partly on perceiving it as an opportunity for personal advancement, influence, distinction and excellence (e.g., Jarvenpaa & Staples, 2001; Wanous, Keon, & Latack, 1983). Despite the scholarly interest in entrepreneurs' social vision communications, to date it remains unclear how job seekers interpret social visions in relation to their personal desire for achievement. I show that social vision communication negatively affects talent

attraction and elicits higher salary premiums, because job seekers perceive the start-up communicating with a social vision to a lesser extent as an opportunity for personal achievement than a start-up that does not communicate a social vision.

1.4 CHALLENGE 3: MANAGING OF VENTURE TEAM DYNAMICS

Whereas Chapter 2 and 3 cover the two hurdles of financial capital and human resource acquisition, Chapter 4 will elucidate how the management of venture team dynamics affects venture team performance. As the entrepreneurs of the venture attract talented recruits, they start growing and organizing themselves into an effective team (Lichtenstein, Dooley, & Lumpkin, 2006; Mueller, S., Volery, & von Siemens, 2012). Venture teams include all team members that actively participate in both the development, implementation, and execution of the new venture's evolving strategy (cf. Klotz et al., 2014). As these members start performing well together, they converge in their thinking and create efficient coordination routines (Brannick, Roach, & Salas, 1993; Marks, Mathieu, Zaccaro, & Mathieu, 2001; Mohammed, Ferzandi, & Hamilton, 2010; Rico, Sánchez-Manzanares, Gil, & Gibson, 2008). However, venture teams are not stable and members change very often as new people are hired and old ones leave. This raises the question how regular membership change affects high performance venture teams (i.e. those that have come as far as scaling-up their business). Despite a substantial literature on new venture management teams (e.g., Boeker & Karichalil, 2002; Fiet, Busenitz, Moesel, & Barney, 1997; Hmieleski & Ensley, 2007; Klotz et al., 2014; Lim, Busenitz, & Chidambaram, 2013), the research about venture teams in general is scarce (DeSantola & Gulati, 2017). Therefore, Chapter 4 look at the issue from the standpoint of the conventional literature about team dynamics, since there is no reason to suspect that venture team processes would work differently from high growth teams in general.

Team dynamics literature suggests that when the teams start performing well, their team members converge in thinking and develop rigid routines (Mohammed et al., 2010; Peterson & Behfar, 2003; Staw, Sandelands, & Dutton, 1981), stifling creativity and subsequent performance (Katz, 1982; March, 1991). They suggest that team membership change can counteract inertia and stagnation, and promote innovation (e.g., Choi & Thompson, 2005; March, 1991; Perretti & Negro, 2007) through the influx of new ideas and perspectives. In Chapter 4, I challenge this received wisdom with respect to the effects of membership change on team performance, for high performance teams.

Coordination. In doing so, I draw from the often used concept of coordination. Teams that achieve high performance, do so because they have effective coordination among their members. Coordination is "the process of orchestrating the sequence and timing of interdependent actions" (Marks et al., 2001, p. 367-368) and involves explicit and purposeful exchange of information to synchronize team members' actions and behaviors (Brannick et al., 1993; Rico et al., 2008). It is built on team members' shared understanding about members' knowledge, roles, and task environment, and how these factors contribute to team success (Brandon & Hollingshead, 2004; Klimoski & Mohammed, 1994; Ren & Argote, 2011). In Chapter 4, I show that membership change disrupts the coordination routines of high performance teams, and leads to detriments in subsequent performance. Whereas low performance teams may use membership change to improve their coordination, and enhance their subsequent performance as a result. Thereby, this Chapter contributes to a pressing issue in research on (venture) team dynamics.

1.5 SUMMARY OF DISSERTATION

Start-up growth and survival are inextricably linked to the entrepreneurs' ability to overcome the challenges of acquiring financial resources, attracting talent, and organizing of this talent into an effective team. In the Chapters of this dissertation, I provide new insights into the roles of vision communication and the management of team dynamics in facing these aforementioned challenges.

Entrepreneurs' communications are often coined as elementary in attracting both financial and human resources. However, despite the prevalence of vision communication in practice, it remains unclear how visions and their particular content affect the sensemaking of investors and job seekers. Therefore, this dissertation investigates how disruptive (Chapter 2) and social vision (Chapter 3) communication by early stage venture affects their ability to attract investments and new recruits, respectively. Furthermore, once the entrepreneurs have managed to build and organize their new venture team into a high performance team, the question becomes how they can maintain this high performance as their organization continues to grow. Literature on teams currently provides conflicting accounts of whether membership change will help or hamper teams that have achieved high performance before. Thus, in this dissertation I investigate exactly that (Chapter 4), and focus on the underlying mechanism that explains the relationship.

I conclude this dissertation by providing numerous opportunities for future research and practice to deepen the understanding of how entrepreneurs attract and manage financial and human resources.

1.6 OUTLINE AND KEY FINDINGS OF CHAPTERS

Chapter 2: **Do disruptive visions pay off? The Impact of Disruptive Entrepreneurial Visions on Venture Funding.**

- Start-ups that communicate with a disruptive vision have 22 percent higher odds of acquiring a first round of investments, but obtain 24 percent less funds in that round.
- Investors' expectations of extraordinary return mediate the positive relationship between disruptive visions and the investment decision.

Chapter 3: **Making the world a better place with you? Attracting talent through entrepreneurs' social vision communication.**

- A start-up that communicates with a social vision has 72 percent lower odds of job seekers' providing their contact information or of them applying for the job.
- A start-up that communicates with a social vision elicits a premium on minimum required salary of 252 euro's from job seekers.
- Job seekers' perception of the start-up as an opportunity for achievement mediates this negative relationship between social vision communication and the attraction and salary outcomes.

Chapter 4: **Never Change a Winning Team? The Moderating Effect of Prior Team Performance on the Membership Change - Venture Team Success Relationship.**

- Membership change negatively impacts the performance of venture teams with high prior performance, but boosts the performance of venture teams with low prior performance.
- Team coordination mediates the moderated relationship between team membership change and team performance.

1.7 CONTRIBUTIONS TO THIS THESIS

This section summarizes the contributions of all individuals and organizations to the chapters in this thesis.

1.7.1 Data Collection

- Data for Study 1 in Chapter 2 were obtained with the cooperation of Start-up Nation Central, from their Start-up Nation Finder platform. Lior Karol and Daniela Kandel assisted in providing access this data and helped in understanding the nature of the Israeli start-up scene. Murat Tarakci created access and later assisted the author in managing the relationship with Start-up Nation Central.
- Data for Study 2 in Chapter 2 were obtained using an online randomized experiment on the survey platform Prolific academic. Participants were recruited and selected through the platform on the basis of scientific standards, and received a monetary compensation in accordance with Prolific academic's regulations.
- Data for Chapter 3 were obtained using a field experiment with Master of Science students from the Technology and Operations Management department at the Rotterdam School of Management (RSM). The academic directors of the masters, RSM program management, and the master coordinators assisted the author by providing student contact details and background information.
- Data for Chapter 4 were obtained by means of a web scraper from the online database MobyGames, a comprehensive community based repository. Murat Tarakci initiated the collection of this dataset through the hiring of a web programmer. The author manually corrected all team data with the assistance of three Master students. These data were also used in the author's MPhil thesis, and feature in the theses of four additional MSc students, of which two were supervised by the author and two by Murat Tarakci.

1.7.2 Research

The chapters and underlying research presented in this thesis were written and conducted mostly independently by the author. The author was responsible for studying all relevant literature, collecting and analyzing the data, and writing the research and chapters in this thesis. Several individuals have substantially contributed to the quality of the research in the following chapters:

- Chapter 1 and 5: Jan van den Ende and Murat Tarakci were involved in providing feedback on the content and structure of this dissertation.

- Chapter 2 and 3: Murat Tarakci was involved in defining the research questions, developing the conceptual frameworks, providing feedback on the analyses, and co-authored both chapters. Ashish Sood co-authored Chapter 2, providing feedback and guidance on the conceptual frameworks and empirical research. Daan Stam provided extensive feedback on Chapter 3.
- Chapter 4: Murat Tarakci was involved in defining the research questions, developing the conceptual frameworks, providing feedback on the analyses, and serves a co-author of this chapter.
- Chapter 2, 3 and 4 all received feedback and reviews from colleagues, both internal and external to the Rotterdam School of Management.

1.7.3 Publishing Status

Chapter 2:

- The chapter has been published in Journal of Management Studies:

  van Balen, T., Tarakci, M., & Sood, A. (2019). Do disruptive visions pay off? The Impact of Disruptive Entrepreneurial Visions on Venture Funding. *Journal of Management Studies.*56(2): 303-342.
- A summary version of Chapter 2 was published in Harvard Business Review:

  van Balen, T., Tarakci, M., & Sood, A. (2018). Disruptive Startups Get Funding More Easily, but Less of It. *Harvard Business Review*. https://hbr.org/2018/09/disruptive-startups-get-funding-more-easily-but-less-of-it.
- The chapter was presented at AOM conference 2017 and Druid conference 2017, and published in their proceeding.

Chapter 3:

- The chapter is being prepared for submission to the Academy of Management Journal.
- The chapter has been submitted to the Academy of Management Conference.

Chapter 4:

- The chapter remains a work in progress and is being adjusted based on the reviews from reviewers at Journal of Applied Psychology and Journal of Management.

- Chapter 4 was presented at the INGRoup conference 2015 in Pittsburgh and the AOM conference 2016 in Anaheim. It was also published in the best paper proceedings of the latter conference.

CHAPTER 2

DO DISRUPTIVE VISIONS PAY OFF?

The Impact of Disruptive Entrepreneurial Visions on Venture Funding[2]

2.1 INTRODUCTION

Disruption has become a hot topic in recent years both in research (Hopp, Antons, Kaminski, & Oliver Salge, 2018) and in practice (Christensen, Raynor, & McDonald, 2015) – from practitioners citing lists of successful disruptors (Howard, 2013), encouraging ventures to develop disruptive business models (e.g., Berry, 2012), appointing 'Chief Disruption Officers' (Carr, 2013), to naming an entire entrepreneur trade show (e.g., TechCrunch Disrupt). While there is disagreement over how to define and identify disruptive innovations in both academic literature (Christensen et al., 2015; Danneels, 2004; King & Baatartogtokh, 2015) and the business press (Lepore, 2014; The Economist, 2015), there is general consensus on the outcome of disruption being a fundamental change, disturbance, or re-ordering of the ways in which organizations, markets, and ecosystems operate. For disruption to occur, the entrepreneur's communications are crucial in persuading ecosystem members to embrace the new venture and its innovation (Ansari, Garud, & Kumaraswamy, 2016; Gurses & Ozcan, 2015). Communications by entrepreneurs can motivate potential customers to try new products, encourage suppliers and incumbents to collaborate, and, above all, convince investors to fund the venture.

[2] This chapter is based on published work by van Balen, T., Tarakci, M., & Sood, A. (2019). Do Disruptive Visions Pay Off? The Impact of Disruptive Entrepreneurial Visions on Venture Funding. *Journal of Management Studies*, 56(2): 303-342.

For example, investors often rely on the entrepreneur's communications to make sense of the new venture, especially in early-stage investments where the uncertainty surrounding a venture's viability is highest (e.g., Busenitz et al., 2005; Lounsbury & Glynn, 2001; Martens et al., 2007; Navis & Glynn, 2011).

As documented by prior research into disruption and impression management, entrepreneurs follow impression management strategies (e.g., Ansari et al., 2016; Gurses & Ozcan, 2015; Lounsbury & Glynn, 2001; Martens et al., 2007; Navis & Glynn, 2011; Wry et al., 2011; Zott & Huy, 2007) that showcase high-status affiliations (Burton, Sorensen, & Beckman, 2002), industry leadership (Martens et al., 2007), entrepreneurial track record, and the venture's resource base (e.g., Bernstein, Korteweg, & Laws, 2017; Lounsbury & Glynn, 2001) in order to shape investors' sensemaking of the venture. However, these impression management strategies are backward-looking entrepreneurial communications, describing 'who the entrepreneurs are' and 'what the venture does'. Although Garud et al. (2014) have recently recognized the importance of future-oriented communications that promote 'what the venture will become' and 'what the entrepreneurs will achieve', there is little research on the extent to which forward-looking communications influence investor perceptions of a venture. Gaining insight into the entrepreneur's future-oriented communications is vital as it enables scholars in entrepreneurship, disruption and impression management fields to obtain a better understanding of the relationship between the entrepreneur's activities and disruption, which is essentially a future event that the entrepreneurs may aim to achieve.

As a form of future-oriented impression management in the disruption process, we introduce and define *disruptive visions* – the thematic content of vision communication that articulates intentions to disrupt organizations, markets, and ecosystems. Vision communication aims to impart stories and images of the future of a collective (e.g., technology, customers, or ecosystems) (Berson et al., 2001; Garud et al., 2014; House & Shamir, 1993; Van Knippenberg & Stam, 2014) Similar to the use of 'disruptive innovation' as a modifying label for innovations aiming to upend incumbent offerings (Christensen, McDonald, Altman, & Palmer, 2016; Christensen, 1997), we use 'disruptive vision' as a label for an entrepreneur's vision to upend existing market structures. In that regard, our conceptualization of disruption and disruptive vision reflects how entrepreneurs and investors understand disruption in practice (e.g., Cosper, 2015; Rachleff, 2013; The Economist, 2015).

We examine how the communication of a disruptive vision drives the likelihood and the amount of an initial round of funding. We argue that the more that a

venture's vision communication portrays an image of disruption, the higher the odds of receiving first-round funding, since the game-changing appeal of a potential disruption fosters expectation of extraordinary investor returns. However, a highly disruptive vision also conveys uncertainty regarding a venture's potential for success, deterring investors from making large speculative investments into the venture. We thus hypothesize that communicating a more disruptive vision *increases the likelihood* of first-round funding (i.e., Seed funding or Series A) while it *shrinks the amount* of capital received. We tested these hypotheses in two complementary studies. In Study 1, we used a unique dataset of start-ups in Israel – a well-known cradle of entrepreneurship with more high-tech start-ups per capita than any other country (Senor & Singer, 2009). We found that increasing a venture's disruptive vision communication by one standard deviation improved the odds of receiving funding by 22 per cent. We also noted that one standard deviation increase in disruptive vision communication cut the amount of funds invested by 24 per cent – amounting to a $87,000 drop for a typical venture in the Seed round, and a $361,000 reduction in the series A funding round. In Study 2, we replicated these results in a randomized online experiment to ascertain whether investor expectation of extraordinary returns is the mechanism driving these results.

We offer several contributions to the literature on disruption, impression management, and entrepreneurial visions. First, in its classical formulation, the disruption process is explained as relative performance trajectories of competing technologies (Christensen, 1997). Recent research, however, has also unearthed the role of entrepreneurs' framing of innovations during the disruption process (e.g., Ansari et al., 2016; Gurses and Ozcan, 2015). We introduce and provide a deeper understanding of the role entrepreneurial visions play in acquiring resources critical to the disruption process. Second, we contribute to the burgeoning stream of literature on impression management, which notes that entrepreneurs frame communications to foster categorization and to establish their ventures' identities (e.g., Cornelissen & Werner, 2014; Martens et al., 2007; Navis & Glynn, 2011; Werven, Bouwmeester, & Cornelissen, 2015; Zott & Huy, 2007). Until now, there has been limited examination of the relative impacts of future-oriented communications on outcomes at the venture level (Garud et al., 2014). We assess the efficacy of future-oriented communications for early-stage ventures and introduce a new category of impression management strategies: the communication of disruptive visions. Third, we integrate research on real options and impression management by positing how impression management affects investor evaluations of ventures as real options. We demonstrate opposing effects of impression

management on the selection and endowment of investment options. Fourth, we challenge prior research on entrepreneurial visions espousing only a positive impact from strong vision communication (e.g., Baum et al., 1998; Baum & Locke, 2004; Elenkov, Judge, & Wright, 2005). Our study is the first to show that specific thematic contents of entrepreneurial visions may damage an entrepreneur's ability to attract large investments. Equally important, we offer practical advice for entrepreneurial framing of disruptive visions and highlight the consequences of following it.

2.2 THEORETICAL FRAMEWORK

2.2.1 Impression Management and Investor Sensemaking

Prior research on disruption and impression management has argued that entrepreneurs' impression management efforts are key in the disruption process. Ansari et al. (2016) and Gurses and Ozcan (2015) have shown that framing value propositions as complementary to incumbents has been critical for achieving disruption in the digital video recording and pay-TV industries. Impression management activities have also included communications about venture activities, innovations, capabilities, achievements, and affiliations that help regulators, competitors, suppliers, and investors to embrace the venture (Fisher et al., 2017; Hallen, 2008; Huang & Pearce, 2015; Martens et al., 2007; Parhankangas & Ehrlich, 2014; Zott & Huy, 2007). These communications attempt to establish identities that distinguish the venture from other market constituents in the eyes of investors (i.e., optimal distinctiveness, Glynn & Navis, 2013). Such well-established identities define who the entrepreneurs are and what the ventures do (Navis and Glynn, 2011). These presentations aim to showcase the venture as 'desirable, proper, or appropriate within some socially constructed system of norms, beliefs, and definitions' (Suchman, 1995, p. 574).

Entrepreneurs attempt to set themselves apart in at least three ways (e.g., Bernstein et al., 2017; Burton et al., 2002; Florin, Lubatkin, & Schulze, 2003; Huang & Pearce, 2015; Lounsbury & Glynn, 2001; Martens et al., 2007; Maxwell, Jeffrey, & Lévesque, 2011; Zott & Huy, 2007). One, they may feature track records and past performances of the entrepreneur(s) and/or the team (e.g., entrepreneur or employee tenure, experience, or successful prior exits). Two, they may highlight market success as a venture (e.g., attaining industry leadership or first-mover status, winning awards and prizes, or achieving customer favour). Three, they may stress resource-based advantages (e.g., networks, affiliations, technologies, patents, or

prototypes). Appendix Table AII lists examples of such communications within our dataset.

These impression management efforts are, by their very nature, backward-looking, with a focus on the entrepreneurs' and/or ventures' identities and past or current accomplishments (see Hallen, 2008). While the extant literature has recently recognized the importance of future-oriented communications (Garud et al., 2014), studies of disruption and impression management have omitted vision communication – that is, conveying stories and images of the future of the venture and its ecosystem (e.g, including technology, customers, and/or competitors) (Berson et al., 2001; Garud et al., 2014; House & Shamir, 1993; Van Knippenberg & Stam, 2014). Specifically, entrepreneurial visions are future-oriented impression management efforts and outline 'what the venture will become', and 'what it will attain'. This is a key omission since vision communication prompts distinctive cues of entrepreneurial identities (see Navis and Glynn, 2011; van Werven et al., 2015).

Specifically, vision content (e.g., with a focus on disruption) affects investor perceptions of the intrinsic or substantive value of what the venture aims to achieve (Cornelissen and Werner, 2014), and influences what people think is desirable or possible for members of the ecosystem and for themselves to achieve (Stam et al., 2014; Wry et al., 2011). Entrepreneurial visions can, thereby, motivate audiences to act in support of the venture's pursuits (Baum et al., 1998; Stam et al., 2014). Since stakeholders within a venture's ecosystem shape how the disruption process unfolds (Ansari et al., 2016; Gurses and Ozcan, 2015), some entrepreneurs choose to articulate disruptive visions to influence investors. In the following section, we introduce and conceptualize disruptive visions to develop a more complete picture of how the disruptiveness of entrepreneurial visions affects acquisition of funding.

2.2.2 Disruptive Vision

Disruptive innovation theory defines disruptive innovations as innovations with initially inferior performance attributes, with the potential to dethrone incumbent technologies, services and/or business models (Christensen, 1997; Christensen & Raynor, 2003). However, there is a heated ongoing debate of how to define disruptive innovations (e.g., whether they underperform initially, whether they improve over time, whether they are introduced by new entrants, whether they progress toward the mainstream solely through a niche market, etc.) (Christensen et al., 2015; Danneels, 2004; King & Baatartogtokh, 2015; Markides, 2006; Tellis, 2006). The core insight emanating from this debate is that disruptive innovations

should be separated from their outcome: disruption (Sood & Tellis, 2011). Understood from a practitioner perspective (The Economist, 2015), old market linkages in a disrupted market or ecosystem become uprooted in favour of new ones. Therefore, a disrupted market or ecosystem hosts new firms, new market leaders, new products, and new ways of doing business. This view also aligns closely with the description of disruption by Christensen et al. (2015, p. 46) as being 'able to successfully challenge established incumbent businesses'. Similarly, Ansari et al. (2016, p. 4) place disruption in ecosystem domains where incumbent business models are disturbed by the adoption of an innovation in that ecosystem. Thus, while the extant research still lacks consensus on the antecedents, drivers, or definition of disruptive innovation, there is more convergence on the generally observed outcomes of disruption.

Disruption is contingent upon the persuasion of various stakeholders in the ecosystem, which can be achieved through the entrepreneur's communications (Ansari et al., 2016). Hence, a disruptive vision communicates an image of disruption. A disruptive vision details deficiencies in the current market, and promises a paradigm shift that will mark 'a [considerable] difference or break from the previous business models and products in an industry or market' (Cornelissen, 2013, p. 708). This impending change is framed as an opportunity for improvement and advantage (Mullins & Komisar, 2010). Since fundamental changes tend to arise from innovations (Ireland, Hitt, & Sirmon, 2003), disruptive visions cast their images of a disrupted market as completely new approaches to business stemming from innovation. Therefore, a disruptive vision spotlights an innovation that promotes new functionality, formerly unseen in the market, and that purports to achieve conventional market objectives in a very different way. See Appendix for examples within our dataset.

2.3 HYPOTHESIS DEVELOPMENT

2.3.1 Disruptive Visions and Investment Acquisition

To explain how a disruptive vision affects investor sensemaking, we turn to the literature on impression management and real options theory. Both are often used to explain investment decisions under uncertainty (Huang & Knight, 2017; Trigeorgis & Reuer, 2017). Impression management refers to the entrepreneur's communication of symbolic cues and narratives to investors that, in turn, influence how investors make sense of the venture. Sensemaking is the process by which investors rationalize what the venture is doing and give meaning to its assessment

as an investment opportunity (see Navis & Glynn, 2011; Weick et al., 2005). The central premise underlying real options theory is that an investor has the ability or freedom to act (e.g., exercise, defer, expand, or abandon) at any point in time on the options they hold (Klingebiel & Adner, 2015). An early-stage investment can be viewed as a real option since investors have the ability to fund a position later when new details about a venture's prospects arise. The value of a real option is determined by investors' perception of the balance between the venture's potential upside and any associated risks (Hoffmann & Post, 2017). We argue that this perception, and thus real option valuation, can be influenced by an entrepreneur's impression management efforts, on top of traditional data on venture or entrepreneur status, experience, and prior achievements available to investors.

Disruption, if achieved, has the power to create new industry leaders and shift overall market demand from existing products, services, or business models to new ones. A successful disruption may create an industry shake-out, with the candidate venture controlling the dominant design (Argyres et al., 2015), thereby yielding extraordinary returns for the responsible venture and its investors. Thus, ventures can create the expectation of extraordinary returns by communicating a vision of disruption. Such ventures may be alluring options among wider holdings of early-stage investments, since returns in such portfolios tend to follow the power law whereby the best-return investment exceeds the combined returns of all remaining investment options (Maples Jr., 2016). Therefore, a single huge success can ensure the viability of the investor's entire portfolio (Ruhnka & Young, 1991).

Conversely, images of disruption may also be associated with greater potential exposure to uncertainty. Nonetheless, investors are often prepared to accept risk of the unknown if the focal venture has a chance of becoming a great success (Huang and Pearce, 2015). Here, a large gain not only ensures portfolio viability, but also improves public image among fellow investors (Dimov, Shepherd, & Sutcliffe, 2007; Gompers, 1996). Moreover, risk tolerance is bolstered when the option permits the exercising or abandoning of an investment at a later stage, when the speculative risks become clearer.

A highly disruptive vision also instills a fear of missing out on the next big change in the market. Investors may act on the anticipated regret of forgone extraordinary returns. This is especially the case when the investors face the prospect of a competitor capitalizing on the ensuing upheaval in the marketplace and the extraordinary returns associated with such a change (Hooshangi & Loewenstein, 2018). Hence, a fear of missing out a potentially significant

investment opportunity may drive investors to select the venture as an investment option.

Furthermore, since a venture's vision of disruption implies the potential loss of valuable competencies in current market structures and dynamics (Henderson, 2006), as well as potential obsolescence in an investor's current portfolio, market linkages between ecosystem participants may not persist. This drives investors to select an option that hedges against the potential loss of market access and increases the flexibility to exercise diversified strategic alternatives at a later stage. Consequently, early-stage investors may be prompted by disruptive vision communication to see the venture as an option for future extraordinary returns. Therefore, we argue that:

> *Hypothesis 1:* The more disruptive a venture's vision communication, the higher the likelihood of attracting financial investments.

2.3.2 Disruptive Visions and Amount of Investment Acquired

We hypothesize a negative effect of disruptive vision on the amount of funding provided by investors. We return to real options theory and impression management literature to elaborate the negative effect of disruptive vision. Because options (e.g., the right to increase or abandon an investment) can be exercised at later stages of market development when the level of uncertainty regarding the new venture has reduced, there is less incentive for investors to provide large amounts of capital during initial stages (Klingebiel & Adner, 2015).

While investments in all young ventures are risky and uncertain, the perception of this risk and uncertainty is largely shaped by how the entrepreneurs communicate their visions and form impressions in the minds of potential investors (Huang and Pearce, 2015; Lounsbury and Glynn, 2001). These perceptions affect the amount of funding acquired from investors. Articulation of a highly disruptive vision increases uncertainty about the outcome. The more disruptive the vision, the more likely is the investors' perception that a venture may need to diverge from specific plans (Garud et al., 2014). Additionally, research has shown that excessive promotions of innovation and novelty force investors to weigh the challenges in commercializing the innovation more carefully (Dimov & Murray, 2008; Parhankangas & Ehrlich, 2014) and may point investors toward the possibility that unknown fatal flaws in the business idea exist (Maxwell et al., 2011).

A disruptive vision thus discourages high-volume stakes in a venture. This is because investors tend to be risk-averse toward low probabilities of success that hinder overall portfolio returns (Tversky & Kahneman, 1992). Instead, investors take smaller positions (i.e., investments) in a venture that communicates a more disruptive vision than in a less disruptive one, and await market news before exercising further options. We argue that the communication of a disruptive vision has a direct negative effect on the amount of financial funding in a first investment round. Therefore, we hypothesize that:

> *Hypothesis 2:* Communicating a more disruptive vision lowers the amount of venture funding.

2.3.3 Expectations of Extraordinary Returns and its Mediating Effects

When ventures successfully 'disrupt' the status quo of existing products, firms, or markets, they may create an industry shake-out with the candidate venture becoming the dominant player. Ventures that communicate a disruptive vision often promise huge opportunities for investors. However, disruption is difficult to achieve and the necessary steps and timing are largely unknown. The distant and volatile nature of disruption entails high risks that are unknowable. The tension between the great potential opportunity and the endemic riskiness fosters an investor mindset that a venture's business idea is 'something so ridiculous that it could actually work' (Huang and Pearce, 2015, p. 641), possibly generating returns on investment (ROI) of tenfold or better (Sahlman, 1990) through an Initial Public Offering (IPO) or exit sale to another entity (Prowse, 1998). Overall, this game-changing appeal of a disruptive vision lures investors with the expectation of a significant investment outcome among a portfolio of early-stage investments.

The expectation of extraordinary returns logically increases the likelihood of funding. Investors naturally pursue unconventionally high investment returns (Huang and Pearce, 2015). Yet, early-stage investments are also associated with higher likelihood of subsequent losses. As an offset, early-stage investors expect exceptionally high rates of return (Ruhnka and Young, 1991) that help ensure the viability of their portfolios (Maples, 2016).

Moreover, seizing investment opportunities that yield large ROIs increases the visibility and standing of investors among fellow capitalists (Dimov et al., 2007). For example, early investors in ventures that disrupt markets and ecosystems are

often celebrated in entrepreneurial circles (e.g., Peter Thiel for Facebook; Jeremy Liew's Lightspeed Venture Partners for Snapchat; Chris Fralic's first round capital for Uber). Such gains in visibility are important as they may attract larger capital flows to the investor's fund later (Gompers, 1996). In addition, leaving such an opportunity unexploited adds to the anticipated regret of missing out on the potential monetary and social gains.

In contrast, the lack of a disruptive vision may cool expectation of extraordinary returns, hampering the venture's profile as a valuable investment option among others. Thus, the stronger the expectation of extraordinary returns created by a disruptive vision, the more likely it is that investors will take an option in the venture.

> *Hypothesis 3:* The positive relationship between the disruptiveness of a venture's vision communication and the likelihood of attracting financial investments is mediated by the investor's expectation of extraordinary returns.

Arguably, investors who perceive a venture as likely to offer extraordinary returns might also increase their stakes in that venture. For example, if investors believe it to be highly likely that the venture will increase its valuation tenfold within five years, they may be more inclined to capitalize on the opportunity, seeking a higher stake in the venture and thus endowing the venture with more financial capital. In such a case, there should be a positive relationship between the expectation of extraordinary returns and the amount funded. Because highly disruptive visions positively affect the expectation of extraordinary return, we argue that disruptive visions also exert a positive, indirect impact on the amount of funding from investors (i.e., similar to our arguments for Hypothesis 3) through the expectation of extraordinary returns.

Despite this positive, indirect effect of a disruptive vision through the expectation of extraordinary returns, we still expect a negative, direct effect of the disruptive vision on funding amounts (see arguments for Hypothesis 2). This is called inconsistent mediation (for details, see Aguinis, Edwards, & Bradley, 2017; MacKinnon, Fairchild, & Fritz, 2007; for recent empirical examples, see Gardner, Wright, & Moynihan, 2011; Jayasinghe, 2016). With inconsistent mediation, the direct effect of the independent variable has an opposing sign to the mediated effect. Incurring the opposite mediating effect from the expectation of extraordinary

returns helps expose the direct negative effect of the disruptive vision on the amounts of funding acquired.

> *Hypothesis 4:* Expectation of extraordinary returns mediates the relationship between the disruptiveness of a venture's vision communication and the amount of venture funding.

OVERVIEW OF STUDIES

The aim of our paper is to investigate the efficacy of disruptive visions for acquiring a first round of funding. We tested our hypotheses using two complementary studies. Our first study uses an archive of Israeli start-ups. With this study, we empirically tested the main effects of disruptive visions on investment decisions (i.e., Hypotheses 1 and 2). This field study also provided ecological validity for our findings. Study 2 was comprised of a randomized online experiment that both replicated findings from the first study and identified the mechanism underlying the positive effects of disruptive visions on investment decisions (i.e., Hypotheses 3 and 4). This experimental study generalized our findings beyond the Israeli venture context, and the randomized control nature of the experiment pinpointed the causality driving our results.

2.4 STUDY 1: THE DISRUPTIVE VISIONS OF ISRAELI START-UPS

2.4.1 Method

2.4.1.1 Sample

We test our hypotheses using a comprehensive database of Israeli start-ups. Israel is often dubbed a 'Start-up Nation' for its strong entrepreneurship scene, having the most high-tech start-ups per capita (Senor and Singer, 2009) and a vibrant venture capital scene (Avnimelech & Teubal, 2006). Israeli start-ups are young, internationally oriented, knowledge-intensive organizations that mainly produce innovative, proprietary self-developed technologies (Engel & del-Palacio, 2011). We obtained data from Start-Up Nation Central – a private non-profit organization that has exhaustively collected and accurately stored data on all Israeli start-ups since 2013 (www.startupnationcentral.org). The data featured on Start-Up Nation Finder (Start-Up Nation Central's 'Innovation Discovery Platform',

https://finder.startupnationcentral.org) provide detailed information on venture activities, products, locations, founders, management teams, funding, and investors.

This dataset is uniquely qualified for testing our hypotheses for two reasons. First, it offers rich and reliable information on venture, entrepreneur, and funding outcomes. Second, the data allow us to correct for selection bias since they include firms that obtained funds and those that did not. Prior research has mainly considered ventures that have already obtained funding (e.g. Gompers, 1995; Kanze & Iyengar, 2017; Ter Wal, Alexy, Block, & Sandner, 2016), creating a methodological sample-selection problem. With our data, we can regress the models on both the likelihood of funding and the amount of funding to properly correct for selection bias.

We sampled ventures founded between 2013 (when Start-Up Nation Central began) and 2016, including only their first round of funding (Seed or A round). Our cross-sectional sample totals 2139 ventures. We randomly chose 1000 start-up firms from this sample. After removing missing values for the variables selected in our models, the final dataset contained 918 start-ups.

2.4.1.2 Measures

Dependent Variables.

We coded ventures that had first-round funding as *investment received* (1 if yes, 0 otherwise). The amount of funding received was measured as the *amount of funding* in US dollars that a venture received in its first funding round. Generally, the first funding round referred to a Seed round, but in some cases, ventures skipped the Seed round and went straight to the A series – a recent trend known as bootstrapping (Newlands, 2015). We applied the natural log of this variable because of skewness (Skewness = 4.17, Kurtosis = 21.92, Shapiro–Wilk test $W = 0.56$, $p < 0.001$).

Independent Variables.

We followed the standard practice of coding vision statements (e.g., Baum et al., 1998; Baum and Locke, 2004; Berson et al., 2001) to measure disruptive vision. Vision statements were displayed on the Start-Up Nation Finder for investors. Since the Start-Up Nation Finder platform is used by investors to seek and select promising start-ups, these statements are important in entrepreneurs' communication with investors. Two graduate assistants coded the vision statements. After initial instruction meetings and resolution of disagreements on a trial set of vision statements, the two coders were directed to proceed in isolation and refrain from any further discussion.

A disruptive vision conveys a drastic change in the way organizations or ecosystems operate, showcasing a significant break from existing products, services, and business models (Cornelissen, 2013). Since fundamental changes tend to emerge from innovations (Ireland et al., 2003), disruptive visions evoke images of a disrupted market and a new approach to business stemming from innovation. Therefore, we operationalized *disruptive vision* using the following four items indicating (1 if yes, 0 otherwise) whether the vision statement (i) 'promotes drastic [or fundamental] change in the future: it makes a claim of pursuing dramatic change at a market or larger level, with implicit consequences for multiple stakeholders' (Kappa = 0.61); (ii) 'features a future that contrasts with the status quo: it delineates deficiencies in the current market situation and promises a substantial improvement' (Kappa = 0.66); (iii) 'includes ideas, plans or other evidence of achieving the conventional market objective in a completely different manner' (Kappa = 0.46); and (iv) 'promotes the venture's innovation or activities as enabling a completely new function' (Kappa = 0.21). Because of the low Kappa value of the last item, we removed it from our measure for empirical purposes.[3] On the three-item measure, both coders presented sufficient agreement across items per vision statement (mean Rwg = 0.83). Next, the average for the two coders was calculated for each item. The resulting averages were then summed to calculate a disruptive vision score per statement. The coders displayed good agreement and reliability in the calculated disruptive vision measure (mean ICC2 = 0.82).

Control Variables.

We drew from prior literature to identify four sets of control variables in our models related to the characteristics of the venture and its communications, the founders, the product and market, and the funding round.

The first set of controls included traits of a venture's communication style and reach. We controlled for a venture's *social media exposure*, since this may increase the visibility of the venture and enhance investor awareness (Fischer & Reuber, 2011). Start-Up Nation Finder displays direct links to various social media platforms (i.e., Facebook, LinkedIn, Google+, and Twitter). We operationalized social media exposure by measuring the number of social media platforms for which the venture had a link in the Start-Up Nation Finder database.

[3] We tested and ascertained the robustness of our findings when this item is included. See the Robustness Checks section of Study 1 in the Results section.

We also controlled for the extent to which a venture's vision statement includes the *promotion of achievements*. Investors may conduct their own due diligence about a venture's and its entrepreneur's achievements, having alternative sources to assess claims. However, prior research on impression management agrees that investors also rely on cues conveyed by entrepreneurs. In particular, the emphasis on achievements may be an important determinant of the credibility and legitimacy of a venture's claims in the eyes of investors. The coders rated each company statement regarding three items indicating (1 if yes, 0 otherwise) whether it (i) 'features evidence of past performance/experience of entrepreneurs and employees' (Kappa = 0.69); (ii) 'presents evidence of past and current successes of the venture in the market, including customers, locations, market leadership, and awards and prizes' (Kappa = 0.63); and (iii) 'features claims of accrued resources, such as the latest/proprietary technology, partnerships/networks/affiliations, and patents/prototypes' (Kappa = 0.61). Both coders had high agreement across items per vision statement (mean Rwg = 0.88). Next, the average for the two coders was computed for each item, and resulting averages were then summed to calculate a score per venture. The coders showed good agreement and reliability in the summed promotion of achievements measure (mean ICC2 = 0.84).

Vision communication is often associated with *imagery* (Emrich, Brower, Feldman, & Garland, 2001). Messages high in imagery induce more vivid portraits of what is communicated (Carton, Murphy, & Clark, 2014). We controlled for imagery to isolate the effect of disruptive visions beyond imagery. We used the Toronto Word Pool, which rates words on degrees of imagery using a 1-to-7 scale (Friendly, Franklin, Hoffman, & Rubin, 1982). Imagery scores were then averaged for the words in a venture's vision statement.

The second set of controls pertained to features of the venture itself. Venture capitalists and angel investors who focus on early-stage investments are more likely to favour younger ventures (Huang and Pearce, 2015; Ter Wal et al., 2016). Therefore, we controlled for *venture age* by subtracting the year of founding from 2016. Furthermore, if start-ups stated in the vision statement that they were a part of another firm, we coded them as *Subsidiary* ventures. We included this as a control since these ventures may require and receive different levels of external funding due to affiliation with a larger established firm (D'Mello, Krishnaswami, & Larkin, 2008). We also coded whether ventures were members of (corporate) accelerators, co-working environments, or entrepreneurship programs, as these relationships assist ventures in developing their activities, markets, strategy, and resources. These programs may also offer networking, educational, mentorship, and pitch-making

opportunities (Cohen, 2013). We mark ventures as a *Member of a program* using a dummy variable in our models (member = 1, non-member = 0).

Additionally, Start-Up Nation Finder displays categorizing tags on a venture's page. By clicking a tag, ventures with similar characteristics can be found. By including the *Number of tags* in our models, we controlled for the exposure to investors through Start-Up Nation Finder. This skewed variable was log-transformed (Skewness = 1.03, Kurtosis = 3.73, W = 0.95, $p < 0.001$). Finally, ventures in our dataset were assigned to one sector: software, healthcare, security and safety technologies, or other. We included sector dummies because funding requirements and timing vary across sectors.

The third set of controls pertains to founder, and product and market characteristics. We controlled for *serial entrepreneurship*. Serial entrepreneurs can call upon amassed experience and networks that enable access to valuable resources (Cassar, 2014). We coded Serial entrepreneur as 1 if a (co-)founder appeared as a (co-)founder of another start-up in our full database (i.e., including all ventures in the Start-Up Nation Finder database that were founded before 2017). We controlled for *geographic scope* since the number of target markets can affect sales and growth potential as well as capital needs in serving different markets (Gupta & Sapienza, 1992). Start-Up Nation Finder lists each start-up's geographical target markets. Geographic areas included North and South America, Europe, Asia, Africa, the Middle East, and Oceania. Geographic scope was proxied by tallying the regions where a venture was active. Furthermore, products in research and development phases are riskier investments than those already launched (Audretsch, Bönte, & Mahagaonkar, 2012). We controlled for the stage of development by including a dummy variable, *Released product*, marked as '1' when a venture's products were released commercially, or as '0' otherwise.

Finally, we included two control variables for a venture's first-round funding. In our analysis, we included only ventures initiating Series A or Seed funding. Generally, funding levels increase with the funding series, and start-ups can leapfrog through bootstrapping – i.e., building and growing a venture with personal finances or using initial operating cash flow (Newlands, 2015). We included a dummy variable in our models for *A-Round* funding to indicate ventures that bypassed the Seed round and went straight to A-series in their first round. Lastly, we controlled for investor prior experience as this may influence investment decisions (Huang and Pearce, 2015). We operationalized *investor experience* by averaging the total number of funding rounds the investors took part in before the focal funding round.

We calculated this variable using the full database, including all funding rounds in the Start-Up Nation Finder database that occurred prior to 2017.

2.4.1.3 Analytical Approach

The fact that funding decisions by investors are not random may introduce bias into our coefficient estimates for the amount of funds acquired. To mitigate sample-selection bias induced by a non-random selection of observations for received funds, we applied the Heckman correction using 'full-information maximum-likelihood' estimation (FIML). The FIML estimator offers more efficiency than the two-step estimator (Greene, 2012) since all parameters of the selection and outcome equations are estimated simultaneously using the likelihood function (Certo, Busenbark, Woo, & Semadeni, 2016).

Prior research advises an exclusion restriction such that there is at least one variable with a non-zero coefficient in a selection equation estimating acquired funds that is excluded from the outcome equation estimating funding amount (Certo et al., 2016). We used number of tags and social media exposure as exclusionary variables since they proxy the probability that an investor landed at the venture's page on Start-Up Nation Finder via click-through (internal and external, respectively). Both elements primarily influence the awareness of a venture and, thus, its likelihood of funding, but not the amount of funding. After all, the number of tags or social media links is quite uninformative about venture risk or upside potential. In the results section to follow, we discuss diagnostics regarding our selection correction approach.

We used Probit regression to estimate the selection equation for a venture's propensity to receive a first investment round. To test Hypothesis 1 concerning the likelihood of obtaining a first funding round, we conduct and report on a logistic regression instead of the Probit selection equation[4]. The model specification of our logistic regression was identical to that of the Probit selection equation.

2.4.2 Results

[4] Although logistic regression and Probit regressions provide similar results and conclusions, the interpretation of their coefficients is not identical because of the difference in link functions (Greene, 2012). In a Probit model, the value of a coefficient is understood as the increase in z-value on a cumulative distribution function.

We first report the descriptive statistics and bi-variate correlations as model-free evidence. Tables Ia and Ib present descriptive statistics for all variables in Study 1. We observe that ventures were almost two years old on average, operated mostly in one geographic area, and that 43 per cent of ventures operated in the software sector.

Table Ia. Study 1 descriptive statistics for continuous variables.

	Minimum	***Median***	***Arithmetic Mean***	***Geometric Mean***	***Maximum***	***Standard Deviation***
Amount of funding received (in '000$)	10.00	1000.00	2199.39	905.23	25 000.00	3521.71
Disruptive vision	0.00	0.50	0.61	1.45	3.00	0.78
Promotion of achievements	0.00	0.50	0.52	1.42	3.00	0.62
Imagery	0.00	0.04	0.05	1.04	0.21	0.03
Social media exposure	0.00	2.00	1.79	2.43	4.00	1.35
Venture age	0.00	2.00	1.94	2.79	3.00	0.86
Number of tags	1.00	7.00	7.60	7.96	31.00	3.32
Geographic scope	1.00	1.00	1.25	2.19	6.00	0.63
Investor experience	1.00	4.00	9.30	6.28	85.00	13.02

Table Ib. Study 1 descriptive statistics for dummy variables.

	0	***1***	***Percentage***
Investment received	782	136	14.81
Subsidiary	849	69	7.52
Member of program	768	150	16.34
Sector Software	522	396	43.14
Sector Healthcare	807	111	12.09
Sector Security and Safety	837	81	8.82
Serial entrepreneur	486	432	47.06

Product released	565	353	38.45
A-round	112	24	17.65

Furthermore, we note that 38 per cent of ventures had released products, 47 per cent were founded by at least one serial entrepreneur, nearly 18 per cent had an A-series as first-round funding, and that 7.5 per cent of ventures were subsidiaries. Importantly, only 14.8 per cent of ventures received an investment, and those that did, acquired an average of $905,227 (geometric mean).

Table II presents the Pearson correlations. We observe that venture age has a significant positive association with having received an investment, but a negative association with the amount of funding received. Older ventures also are more likely to release products and to be active in social media. Importantly for the exclusion restrictions, ventures with more links to social platforms and more tags on their Start-Up Nation Finder page were positively correlated with receiving an investment, but not with the amount of investment received. We also observe that the promotion of achievements was positively and significantly correlated with both receiving funding and acquiring higher amounts. Regarding our main variable of interest: we observe a positive significant association of a disruptive vision with receiving an investment; and while not significant, but in line with our inconsistent mediation hypothesis, we note a negative association of a disruptive vision with the amount of funding.

2.4.2.1 Sample-Selection Correction Diagnostics

Sample selection impacted our data since the independent variable predicted significantly in the selection equation, and rho emerged as significant in our full model ($rho = -0.81$, $S.E. = 0.13$, $p < 0.001$, Model 4 in Table III) (Certo et al., 2016). Moreover, our independent variable did not correlate with error terms of the selection equation ($r < 0.01$, $p = 0.94$) or the outcome equation ($r < 0.01$, $p = 0.99$), and thus proved to be exogenous. Therefore, we deemed the results of our outcome equation to be unbiased (Certo et al., 2016). Also, the correlation between our

Table II. Pearson correlations of Study 1.

	Name	***1***	***2***	***3***	***4***	***5***	***6***	***7***	***8***
1	Investment received								
2	Amount of funding received (log)	-0.04							
3	Disruptive vision	0.06†	-0.11						
4	Promotion of achievements	0.14***	0.19**	0.07*					
5	Imagery	0.01	-0.18*	0.25***	0.12***				
6	Social media exposure	0.24***	0.03	0.02	-0.01	0.05			
7	Venture age	0.08*	-0.18*	0.07	0.04	0.08*	0.22***		
8	Subsidiary	0.00	-0.01	0.00	0.03	0.02	0.04	-0.01	
9	Member of program	0.11**	-0.04	0.03	0.04	-0.03	0.02	0.02	-0.07*
10	Number of tags (log)	0.15***	0.01	-0.01	0.12***	0.20***	0.20***	0.08*	0.06†
11	Sector Software	-0.06†	-0.06	0.02	-0.06†	0.02	0.12***	-0.04	0.07*
12	Sector Healthcare	0.00	0.14†	0.06†	0.12***	-0.05	-0.25***	-0.02	-0.04
13	Sector Security and Safety	0.14***	0.23**	-0.01	0.14***	-0.07*	-0.05	-0.09**	-0.03
14	Serial entrepreneur	0.09**	0.05	0.01	-0.01	-0.04	0.13***	-0.08*	-0.05
15	Geographic scope	0.02	-0.05	-0.01	0.07*	0.07*	0.07*	0.02	0.08*
16	Released product	0.13***	-0.01	-0.07*	0.05	0.07*	0.32***	0.22***	0.16***
17	A-round		0.45***	-0.04	0.16†	-0.07	0.18*	-0.01	-0.13
18	Investor experience		0.26***	0.10	0.15*	0.02	-0.02	-0.19**	-0.09

†$p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table II. Pearson correlations of Study 1 (cont.).

	Name	***9***	***10***	***11***	***12***	***13***	***14***	***15***	***16***	***17***
1	Investment received									
2	Amount of funding received (log)									
3	Disruptive vision									
4	Promotion of achievements									
5	Imagery									
6	Social media exposure									
7	Venture age									
8	Subsidiary									
9	Member of program									
10	Number of tags (log)	-0.02								
11	Sector Software	0.00	-0.22***							
12	Sector Healthcare	0.00	0.04	-0.32***						
13	Sector Security and Safety	0.00	0.08*	-0.27***	-0.12***					
14	Serial entrepreneur	0.10**	0.05	0.01	-0.12***	0.05				
15	Geographic scope	-0.02	0.17***	0.04	-0.04	0.04	0.02			
16	Released product	-0.03	0.15***	0.08*	-0.16***	0.01	-0.03	0.10**		
17	A-round	-0.01	0.15^{+}	-0.07	0.07	0.13	-0.08	0.08	0.08	
18	Investor experience	0.08	-0.10	0.17*	-0.09	0.05	0.17*	-0.02	0.05	0.11

$^{+}p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table III. Study 1 results.

Dependent variable	Investment received (1 = Yes)		Amount of funding received ('000$)	
	Model 1 Estimate (Std .Error)	**Model 2** Estimate (Std .Error)	**Model 3** Estimate (Std .Error)	**Model 4** Estimate (Std .Error)
Intercept	-4.16*** (0.72)	-4.30*** (0.73)	15.38*** (0.79)	15.27*** (0.85)
Disruptive vision		0.20* (0.10)		-0.27** (0.11)
Promotion of achievements	0.27** (0.09)	0.26** (0.10)	-0.02 (0.13)	0.00 (0.13)
Imagery	0.02 (0.10)	-0.03 (0.11)	-0.20† (0.11)	-0.13 (0.11)
Social media exposure	0.69*** (0.12)	0.68*** (0.12)		
Venture age	0.13 (0.11)	0.11 (0.11)	-0.24† (0.14)	-0.22 (0.14)
Subsidiary	0.02 (0.38)	0.00 (0.38)	0.87† (0.46)	0.90* (0.45)
Member of program	0.63** (0.24)	0.62** (0.24)	-0.45 (0.32)	-0.47 (0.32)
Number of tags (log)	0.70* (0.30)	0.76* (0.31)		
Sector dummies	*Yes*	*Yes*	*Yes*	*Yes*
Serial entrepreneur	0.36† (0.21)	0.36† (0.21)	0.10 (0.28)	0.13 (0.28)
Geographic scope	-0.05 (0.10)	-0.05 (0.10)	-0.25† (0.14)	-0.26† (0.13)
Released product	0.30 (0.22)	0.34 (0.22)	-0.61* (0.27)	-0.64* (0.28)
A-round			1.42*** (0.31)	1.43*** (0.31)
Investor experience			0.24* (0.11)	0.27* (0.11)
AIC	685.42	683.60		
Sigma			1.70*** (0.25)	1.64*** (0.26)
rho			-0.82*** (0.11)	-0.81*** (0.13)
Log likelihood[a] (df.)	-328.71*** (14)	-326.80*** (15)	-547.90*** (30)	-544.26*** (32)
Likelihood ratio test against competing models[b] (df.)		3.83† (1)		7.28* (2)
Observations	918	918	136	136

† $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Standardized coefficients are reported. Standard errors are in parentheses (S.E.). **a** Significance refers to the results of a likelihood ratio test of model fit against the null model. **b** For the OLS regression, the Wald test was used (F-test statistic), and the logistic regression applied a likelihood ratio test ($\chi 2$ test statistic).

independent variable and the inverse Mills ratio was lower than 0.30 in absolute terms ($r = -0.24$, $p < 0.001$), indicating sufficient strength for our exclusion restrictions (Certo et al., 2016). Last, a likelihood ratio test ($\chi^2 = 52.52$, *df.* = 2, $p < 0.001$) between the over-identified model (i.e., using our full model specification; log likelihood = −544.26) and the just-identified model (i.e., model without exclusion restrictions; log likelihood = −570.52) showed that applying our exclusion restrictions significantly improved the overall fit of the model. These results validated the adequacy of our analytical approach and the selection of exclusion restrictions.

2.4.2.2 Testing

Table III shows results of the logistic regression estimating the likelihood of venture funding. Model 1 included only control variables. As expected, ventures with more social media exposure ($\beta = 0.69$, *S.E.* = 0.12, $p < 0.001$), a larger number of tags ($\beta = 0.70$, *S.E.* = 0.30, $p = 0.02$), and that promoted more achievements ($\beta = 0.27$, *S.E.* = 0.09, $p = 0.004$) were more likely to be funded. Furthermore, the model showed that ventures that are members of an accelerator program ($\beta = 0.63$, *S.E.* = 0.24, $p = 0.009$), that were founded by serial entrepreneurs ($\beta = 0.36$, *S.E.* = 0.21, $p = 0.08$, significant at the $\alpha < 0.1$ level), and that served the healthcare ($\beta = 0.69$, *S.E.* = 0.36, $p = 0.06$) and security and safety ($\beta = 1.30$, *S.E.* = 0.33, $p < 0.001$) sectors were more likely to obtain funding than those in the 'other' category. A Wald test showed the overall effect of the sector variable to be significant ($\chi^2 = 19.39$, *df.* = 3, $p < 0.001$), while the difference between the healthcare and security and safety sectors was not significant ($\chi^2 = 2.3$, *df.* = 1, $p = 0.13$). Model 2 included the main effects of our independent variable and the control variables on the odds of receiving a first investment round. The results of Model 2 supported Hypothesis 1, stating that a disruptive vision positively predicts the likelihood of receiving funds ($\beta = 0.20$, *S.E.* = 0.10, $p = 0.048$). We found that one standard deviation increase in disruptive vision increases the odds of acquiring funding by 22 per cent.

Table III also displays results of our outcome regression equations where we estimated the level of funding received by ventures in the first round. Model 3 included control variables. Intuitively, we note that ventures with Series A funding ($\beta = 1.42$, *S.E.* = 0.31, $p < 0.001$), those from the software sector ($\beta = 0.70$, *S.E.* = 0.29, $p = 0.016$), and those with subsidiary ties ($\beta = 0.87$, *S.E.* = 0.46, $p = 0.06$, significant at the $\alpha < 0.1$ level) received significantly more capital. In addition, experienced investors were inclined to provide higher amounts of funding ($\beta = 0.24$, *S.E.* = 0.11, $p = 0.026$). Conversely, older ventures ($\beta = -0.24$, *S.E.* = 0.14, $p =$

0.078), ventures with a larger geographic scope ($\beta = -0.25$, *S.E.* = 0.14, $p = 0.069$, significant at the $\alpha < 0.1$ level), and those with released products ($\beta = -0.61$, *S.E.* = 0.27, $p = 0.027$) received lower amounts of funding.

The results in Model 4 depict the main effects of disruptive visions. Model 4 confirmed Hypothesis 2 stating that disruptive vision has a negative effect on the amount of funding ($\beta = -0.27$, *S.E.* = 0.11, $p = 0.017$). Quantitatively, one standard deviation increase in disruptive vision reduced the amount of funding by 24 per cent. We used the estimations of our full model to calculate the average dollar impact of one standard deviation increase in disruptive vision communication[5]. For a typical venture with a Seed type first round, a one standard deviation increase in disruptive vision communication led to an $87,000 decrease in funding received. For a typical venture with an A series first round, a one standard deviation increase in disruptive vision communication led to a $361,000 decrease in funding received.

2.4.2.3 Robustness Checks

As seen in Table Ib, the distribution of the dependent variable 'investment received' is skewed with only 14.8 per cent of ventures receiving investment. In our logistic regression models, this may have caused separation (Heinze & Schemper, 2002) or inconsistent parameter estimates (Donkers, Franses, & Verhoef, 2003). We saw no trace of separation in our models[6]. To assess the consistency of parameter estimates, we ran additional analyses using randomly drawn, balanced samples (see the Appendix A for details). Consistent with our main analyses, we observed a significant and positive effect of disruptive visions over 10,000 bootstraps (Odds ratio = 1.33, *95% CI* = [1.10, 1.69], $p = 0.005$).

The fourth item of the disruptive vision measurement yielded a low Cohen's Kappa of 0.21. Therefore, we excluded the item from the measure of disruptive

[5] We used our model estimations to predict values for typical ventures. We only varied disruptive vision and round type, taking the average value for all other continuous variables and the most frequent value for dummy variables. We let the disruptive vision variable vary from its lowest to its highest possible value, in one standard deviation increments. To calculate the average dollar impact, we took the average of the differences between subsequent predicted values. Since our dependent variable was log-transformed, we corrected the predicted values for the logarithmic scale in accordance with Duan (1983).

[6] In the fitting process of a logistic model, separation (or monotone likelihood) can occur if the likelihood converges while at least one parameter estimate diverges to infinity. We applied the 'detect separation' function from the 'brglm2' package in the statistical software R (Kosmidis, Pagui, & Sartori, 2017; R Core Team, 2017).

visions in our main analysis. Nevertheless, the item is relevant for theoretical reasons: Central to a new venture's disruptive vision is an innovation (i.e., any novel approach, technology, or business model) allowing it to pursue disruption. When including the focal item in our measure for disruptive vision, the results remained qualitatively similar for both the likelihood of receiving first-round funding (Model 2, Table III: $\beta_{excluding\ item} = 0.20$, *S.E.* = 0.10, $p = 0.048$; $\beta_{including\ item} = 0.24$, *S.E.* = 0.10, $p = 0.019$) and the amount of funding (Model 4, Table III: $\beta_{excluding\ item} = -0.27$, *S.E.* = 0.11, $p = 0.017$; $\beta_{including\ item} = -0.34$, *S.E.* = 0.11, $p = 0.003$).

2.4.3 Discussion

Study 1 found that a disruptive vision increased the likelihood of first-round funding while decreasing the amount of funding. Study 1 offered these insights from a unique and relevant empirical field setting that advises both business practitioners and researchers to consider disruptive vision communication when making investment decisions. However, the cross-sectional nature of our archival data limits claims of causality. Also, generalizing the findings requires replication in other contexts, and the lack of data on investor sensemaking did not allow us to investigate the mechanisms driving the results. To address these issues, we conducted a randomized online experiment described next.

2.5 STUDY 2: ONLINE EXPERIMENT ON DISRUPTIVE VISIONS

2.5.1 Method

2.5.1.1 Participants

Two hundred and fifty-three people were enlisted on the Prolific.ac website, a platform for surveys and experimental projects. The survey took 12 minutes on average, for which we offered compensation in accordance with Prolific.ac rules. To ensure participant quality, we prescreened according to the following specifications: first, participants had investment experience with exchange-traded commodities or funds, government bonds, stocks, unit trusts, angel (syndicate) investing, private equity funds, venture capital funds, options, or crowdfunding. This ensured a representative sample of respondent investors. Second, task acceptance rates had to exceed 90 per cent. Third, the level of education had to be undergraduate or higher. Fourth, participants had to be at least 25 years old (i.e., no students) with residence in the European Union (including the UK), US, or Australia. In both the introduction page and in the survey, we included attention

checks to filter out participants who answered carelessly. Our final sample comprised 203 participants with 50 per cent female, averaging 40.5 years old (*S.D.* = 11.19), with 27 per cent having invested in entrepreneurial ventures.

2.5.1.2 Design

We designed a 2 (low and high disruptive vision) × 2 (low and high promotion of achievements) randomized between-subjects experiment. For each condition, we created a vision statement using the same fictitious venture. The vision statement was based on a venture from our Israeli database, adapted, and edited to match our purposes (See Appendix B).

We anonymized the names of the venture and its founders. To improve the overall credibility of the experiment, we added fictitious company information to the vision statements similar to profiles presented on Start-Up Nation Finder. This information, as well as the formatting and layout of the entire vision statement, was identical across all four conditions. Fictitious profiles featured: founding date, funding stage, geographical target markets, product stage, number of employees, business model, customers, and estimated valuation.

2.5.1.3 Procedure

The participants first read an introduction page explaining the purpose: to investigate early-stage investment decisions. We also informed them that we would ask them to answer a survey about their investment decisions regarding the venture to be presented. Each participant was randomly assigned a condition and read only the venture vision statement central to that condition. After manipulation checks, participants were asked if and how much they would invest and answered questions to inform our mediator and control variables. The survey ended with a page thanking the participants, informing them of the fictitious nature of the information presented about the venture, and referring them to the Prolific.ac website for compensation.

2.5.1.4 Dependent Variables

Our two main dependent variables were whether a respondent funded the venture (*investment received*) and the *amount of funding* they offered. To mirror the Study 1 analysis, we used the log-transformed values of funding amount in our models. For the investment decision questions, we introduced the following vignette:

> ‘Imagine that you are an investor working for an investment company (e.g., a venture capitalist firm). You have to decide how to invest the $500,000 funds

you are managing. You are expected to earn a minimum of 15% return per year on the fund over the next 5 years.

ProSearch is one of several investment opportunities. ProSearch is looking for a $100,000 investment, offering 20% equity ownership (valuing the venture at $500,000).'

We next posed the following question to log a participant's investment decision:

'Would you… (1) leave the money in the bank, earning a steady 5% yearly interest rate, and wait for the next investment opportunity or (2) Invest (part of) the money in ProSearch?'

To measure the investment amount, we asked (on the next page):

'Regardless of your answer on the previous question, if you were to invest in ProSearch, how much would you invest in exchange for 20% equity ownership in ProSearch?'

Participants answered this question on a slider ranging from $1 to $100,000.

2.5.1.5 Independent Variables

Our manipulation of *disruptive vision* is detailed in the Appendix B. We incorporated it as a dummy variable in our analyses[7]. For this variable, zero (0) meant survey participants were exposed to low disruptive vision conditions, and one (1) indicated participation in high disruptive vision conditions.

We measured *expectation of extraordinary returns* using four items adapted from Huang and Pearce (2015). We asked using a five-point Likert scale (1: Very unlikely, 5: Very likely): "What do you think is the likelihood ProSearch will achieve one of the following successes?" The outcomes included: 'Being acquired by another firm at a high price', 'Having a successful Initial Public Offering (IPO)', 'Yielding tenfold returns to investors', and 'Becoming a market leader' (Cronbach's Alpha = 0.79).

2.5.1.6 Control Variables

[7] Since our experimental manipulations used a 2×2 disruptive vision–promotion of achievements design, we included the interaction term in our models as a robustness check. By doing so, we aimed to rule out the 'high disruptive vision–high promotion of achievements' condition as driving the observed effects. In none of our models did we find strong evidence of an interaction effect (lowest p-value = 0.09; interaction added to Model 8, Table V).

Distinct from Study 1, our data for Study 2 posed no variation in venture characteristics. Control variables in Study 2 thus pertained only to elements of the manipulation and to investors. Via experimental design, we controlled for *promotion of achievements*. Similar to our disruptive vision variable, we treated the promotion of achievements as a dummy variable in our analyses. Additionally, we controlled for participants having *investment experience* in nascent ventures. Experience with early-stage ventures may shift a participant's perception of the attractiveness of the investment opportunity. Since *risk preference* shapes how willing one is to invest in risky efforts, such as young ventures, we included risk preference as a control variable. Following Koudstaal et al. (2015), we asked the participants to rate on a five-point Likert scale 'How much do you describe yourself as willing to take risks?' We also included participant *age* and *gender* as controls. Lastly, to avoid sample-selection bias (that was remedied statistically in Study 1), we included investors declining first-round investment into our regressions on amount. This possibility emerged since we asked respondents to select an amount even when refusing to invest at all. To control for potential variance in the amounts chosen among 'yes' and 'no' investors, we included the *investment made* variable in our regressions on the amount of funding chosen.

Table IV displays the Pearson correlations among the variables in Study 2.

2.5.1.7 Analysis

We applied logistic regression to estimate likelihood of funding. Ordinary least squares (OLS) regression was used to estimate the effect of disruptive vision on the expectation of extraordinary return and on the amount of funding awarded by participants. To assess mediation, we conducted causal mediation analysis using the 'mediation' package in the statistical software R (R Core Team, 2017; Tingley et al., 2014).

Our analysis involved inconsistent mediation, expressed when the sign of the independent variable's effect on the dependent variable negates due to opposing underlying effects (MacKinnon et al., 2007). A common example of this model is the relationship between intelligence and production mistakes as mediated by boredom. In McFatter's (1979) hypothetical example of an assembly-line, intelligent workers easily got bored and made more production mistakes even though smart people tend to be better at preventing production mistakes. As a contradiction, the overall relationship between intelligence and production mistakes

Table V. Pearson correlations of Study 2.

		1	***2***	***3***	***4***	***5***	***6***	***7***	***8***
1	Investment received (1 = Yes)								
2	Amount of funding	0.45***							
3	Disruptive vision (dummy)	0.14†	-0.08						
4	Expectation of extraordinary return	0.48***	0.41***	0.13†					
5	Promotion of achievements (dummy)	0.18**	0.16*	-0.01	0.21**				
6	Investment experience (1 = Yes)	-0.02	0.00	-0.08	0.15*	0.03			
7	Risk preference	0.13†	0.03	-0.07	0.14*	-0.01	0.16*		
8	Age	-0.15*	0.00	0.06	-0.07	0.01	0.02	-0.14*	
9	Gender (Male =1)	-0.03	-0.09	-0.01	-0.20**	0.00	0.05	0.22**	-0.05

†$p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

measured zero. However, adding boredom as a mediator unveiled the otherwise hidden opposing impact of intelligence versus boredom on production mistakes.

2.5.2 Results

2.5.2.1 Manipulation Checks

To gauge the effectiveness of our manipulation, we queried the sample on several manipulation checks. To assess the disruptive vision manipulation, we asked participants to answer on a five-point Likert scale (strongly disagree / strongly agree) how much they agreed with these statements: 'ProSearch says it aims to disrupt the product search and discovery industry', and 'ProSearch has a vision about the future of product search and discovery'. One-way ANOVA showed large differences between conditions for the 'disrupt' ($F(3, 199) = 43.10$, $p < 0.001$) and 'vision' ($F(3, 199) = 2.67$, $p = 0.049$) queries. For the 'disrupt' question, post-hoc contrast analysis indicated significant mean differences between all conditions involving 'high disruptive vision' and those invoking 'low disruptive vision' (mean diff. = 3.60, *S.E.* = 0.32, $p < 0.001$; Bonferroni adjusted). For the 'vision' question, a post-hoc contrast analysis of the two conditions involving 'high disruptive vision' showed participants viewing the 'high disruptive vision' conditions as more visionary than those of the 'low disruptive vision' (mean diff. = 0.49, *S.E.* = 0.18, $p = 0.01$; Bonferroni adjusted).

To assess the effectiveness of our 'promotion of achievements' manipulation, we asked participants to answer on a five-point Likert scale (strongly disagree / strongly agree) how much they agreed with the statement: 'ProSearch and its founders communicate their accomplishments'. One-way ANOVA showed significant differences between conditions on this question ($F(3, 199) = 35.31$, $p < 0.001$). Post-hoc contrast analysis indicated significant mean differences between all conditions involving "high promotion of achievements" versus "low promotion of achievements" (mean diff. = 2.51, *S.E.* = 0.25, $p < 0.001$; Bonferroni adjusted).

2.5.2.2 Testing

Table V provides the results of our analyses. Model 4 replicated our findings from Study 1 and offered evidence favouring Hypothesis 1. Again, we find that ventures conveying a more disruptive vision are more likely to acquire first-round investment ($\beta = 0.74$, *S.E.* = 0.33, $p = 0.023$). In our experiment, using a highly disruptive vision (vs. no disruptive vision) increased the odds of receiving funds by 110 per cent. Hypothesis 3 posited that an expectation of extraordinary returns mediates the

Table V. Study 2 regression results.

	Expectation of extraordinary returns *(OLS)*		Investment received *(logistic regression)*			Amount of funding *(log-linear regression)*		
	Model 1 Estimate (Std .Error)	**Model 2** Estimate (Std .Error)	**Model 3** Estimate (Std .Error)	**Model 4** Estimate (Std .Error)	**Model 5** Estimate (Std .Error)	**Model 6** Estimate (Std .Error)	**Model 7** Estimate (Std .Error)	**Model 8** Estimate (Std .Error)
Intercept	-0.04 (0.12)	-0.23 (0.14)	0.64* (0.28)	0.22 (0.34)	0.61 (0.39)	3.04*** (0.12)	3.16*** (0.13)	3.33*** (0.14)
Disruptive vision		0.31* (0.13)		0.74* (0.33)	0.53 (0.37)		-0.25* (0.11)	-0.29** (0.11)
Expectation of Extraordinary returns					1.48*** (0.27)			0.22*** (0.06)
Promotion of achievements	0.42** (0.13)	0.42** (0.13)	0.87** (0.32)	0.91** (0.33)	0.54 (0.37)	0.13 (0.11)	0.12 (0.11)	0.06 (0.10)
Investment experience	0.30† (0.15)	0.32* (0.15)	-0.24 (0.36)	-0.20 (0.36)	-0.73† (0.43)	0.01 (0.12)	-0.01 (0.12)	-0.09 (0.12)
Risk preference	0.17* (0.07)	0.18** (0.07)	0.31† (0.17)	0.34* (0.17)	0.21 (0.20)	0.00 (0.06)	-0.01 (0.06)	-0.04 (0.05)
Age	-0.06 (0.07)	-0.07 (0.07)	-0.31* (0.16)	-0.34* (0.16)	-0.31† (0.18)	0.05 (0.05)	0.06 (0.05)	0.06 (0.05)
Gender	-0.49*** (0.13)	-0.5*** (0.13)	-0.29 (0.33)	-0.32 (0.33)	0.38 (0.40)	-0.13 (0.11)	-0.12 (0.11)	-0.02 (0.11)
Investment made						0.81*** (0.12)	0.85*** (0.12)	0.65*** (0.13)
R- squared	0.14	0.17				0.22	0.24	0.29
F-statistic (df1/df2) & Log likelihood[a] (df.)	6.64*** (5/197)	6.57*** (6/196)	-117.94** (6)	-115.30** (7)	-92.34*** (8)	9.26*** (6/196)	8.9*** (7/195)	9.86*** (8/194)
Test against competing models[b] (df.)		5.49* (1)		5.28* (1)	45.92*** (1)		5.45* (1)	12.81*** (1)
AIC			247.89	244.60	200.68			

†$p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Standardized coefficients are reported for continuous variables: expectation of extraordinary returns, risk preference, and age. **a** Significance refers to the results of a likelihood ratio test of model fit against the null model. **b** For the OLS regression, the Wald test was used (F-test statistic), and the logistic regression applied a likelihood ratio test ($\chi 2$ test statistic).

relationship between the venture's use of a disruptive vision and an investor's investment decision. Model 2 indicated that communicating a highly disruptive vision prompted the expectation of extraordinary returns ($\beta = 0.31$, *S.E.* = 0.13, $p = 0.02$). Model 5 next showed that an expectation of extraordinary returns significantly increased the likelihood of an investor opting to fund the venture ($\beta = 1.48$, *S.E.* = 0.27, $p < 0.001$). In our experiment, one standard deviation increase in the expectation of extraordinary returns boosted odds of acquiring an investment 4.41 times. Subsequently, we conducted mediation analysis and detected for the mediating effect of expectation of extraordinary returns ($\beta = 0.08$, *95% CI* = [0.02, 0.15], $p = 0.016$, 10 000 bootstraps[8]), thus supporting Hypothesis 3.

Models 6 to 8 in Table V show our test of Hypothesis 2 (i.e., communication of a more disruptive vision negatively affects the amount of funding). Model 7 offered initial support for Hypothesis 2, showing significant negative effect of a disruptive vision on the amount of funding ($\beta = -0.25$, *S.E.* = 0.11, $p = 0.021$). Model 8 clearly showed that the effect of a disruptive vision sharpens when controlling for expectation of extraordinary returns, implying that inconsistent mediation is present.

We tested the inconsistent mediating effect of extraordinary returns and found evidence for both Hypothesis 2 and Hypothesis 4 in Model 8. Specifically, expectation of extraordinary returns positively mediated the relationship between the disruptive vision and the amount of funding ($\beta = 0.07$, *95% CI* = [0.2, 0.17], $p = 0.015$, 10,000 bootstraps), while a disruptive vision had a significant negative direct effect on the amount of funding ($\beta = -0.29$, *95% CI* = [−0.49, −0.07], $p = 0.006$, 10,000 bootstraps). Specifically, touting a highly disruptive vision lowered the amount of funding by 25 per cent when controlling for its positive indirect effect on the amount of funding through an expectation of extraordinary returns.

2.5.2.3 Robustness Analysis

In Study 2, we asked participants to state the amount of money they would invest in the venture, regardless of whether they decided not to invest initially. Thereby, our analysis of the amount of funding in Study 2 includes potential investors that decided not to invest initially. By doing so, our experiment avoids sample-selection bias by design, rather than statistically correcting for it afterwards. We conducted a subset-analysis for our regression models on amount, excluding people who initially

[8] We used non-parametric bootstrapping with bias-corrected and accelerated (BCa) confidence intervals (DiCiccio and Efron, 1996).

decided not to invest in the venture. Results remained consistent with our main analysis: In comparison to Model 8 in Table V, we again observed a significant effect of disruptive vision on the amount of funds allocated by investors ($\beta_{disruptive\ vision} = -0.24$, *S.E.* = 0.10, $p = 0.022$; $\beta_{extraordinary\ return} = 0.24$, *S.E.* = 0.06, $p < 0.001$).

2.5.3 Discussion

Results of Study 2 indicated that a more disruptive vision boosted the likelihood of receiving investment since it creates an expectation of extraordinary return in the investors. Yet, when controlling for this effect on the amounts of funding awarded, we observed that communicating a disruptive vision negatively impacted the amount of funding. Study 2 complemented Study 1 in two very important ways. First, Study 2 replicated findings for Hypotheses 1 and 2 in a randomized controlled setting to uphold the generalizability and the causality of results beyond the cross-sectional nature of the Israeli data. Second, it allowed the discovery of expectation of extraordinary returns as a key mechanism shaping our results from testing Hypotheses 3 and 4.

2.6 GENERAL DISCUSSION

2.6.1 Theoretical Implications

First, our findings demonstrate the importance of disruptive vision as a new form of thematic vision content used by entrepreneurs to promote their innovations. This new form of vision content enriches research on disruptive innovation and the disruption process, which has thus far focused on the process of disruption where underperforming performance attributes gradually satisfy customer needs (Christensen, 1997; Christensen and Raynor, 2003). However, prior research has also documented that not all potentially disruptive innovations 'disrupt' (Sood and Tellis, 2011). This variation signals the existence of factors that have been overlooked in examining what drives the disruption process (King and Baatartogtokh, 2015; Tellis, 2006). We argue that one of these omitted factors is an entrepreneur's vision communication. Recent research has suggested that the process of disruption is best understood from the viewpoint of 'disruptors' and how they frame their ventures (Ansari et al., 2016). Our results show that disruptive visions are more likely to convince investors to get on board – albeit with a smaller amount than for less disruptive narratives. We thereby contribute to recent research on disruptive innovations regarding the ways in which firms can manage their

ecosystems through communication and framing (e.g., Ansari et al., 2016; Gurses and Ozcan, 2015).

Second, we explore how a particular way of framing an entrepreneurial venture can affect investors' sensemaking of the venture as an investment opportunity. In that light, we contribute to burgeoning research on entrepreneurs' efforts in managing the impressions of stakeholders (e.g., Fisher et al., 2017; Martens et al., 2007; Navis and Glynn, 2011; van Werven et al., 2015; Zott and Huy, 2007). Impression management research has recognized the importance of future-oriented communications (Garud et al., 2014), but has not yet studied the impact of such communications on venture-level outcomes. To address this oversight, we highlight the importance of investigating vision communication as part of impression management efforts.

Vision communication is a category of impression management (see Zott and Huy, 2007, p. 72). In contrast to other forms of impression management, visions showcase the future – that is, what the venture/entrepreneur will do and become. As such, the aim of entrepreneurial vision communication is to affect audiences' perceptions of the intrinsic or substantive value of what the venture aims to achieve. While prior research has empirically investigated how ventures legitimize identity claims, it has focused predominantly on backward-looking communication. However, 'track record touting' alone does not explain how entrepreneurs build trust toward their ventures' proposed activities. With our investigation of entrepreneurial visions, we address this caveat and help scholars to understand how future-oriented communications and their contents shape investor sensemaking. In particular, we not only debut and affirm the gravity of disruptive visions (i.e., increasing the probability of acquiring funding from investors), but also uncover a potential downside to such communications (i.e., attracting lower amounts of funding from investors).

In addition, our findings enhance the understanding of entrepreneurs' impression management approaches in their quest for acquiring investments. Past research has elaborated on various aspects of entrepreneurial communications that affect investment acquisition through the establishment of optimal distinctiveness. For example, researchers have noted that elements such as aggressiveness, assertiveness, competitiveness, and blasting are powerful tools entrepreneurs may use to distinguish themselves in the eyes of investors (Parhankangas and Ehrlich, 2014). Similarly entrepreneurs may use the communication of accomplishments and accrued resources to legitimize their identity claims (e.g., Bernstein et al., 2017;

Burton et al., 2002; Hallen, 2008; Martens et al., 2007; Navis and Glynn, 2011; Zott and Huy, 2007). Many of these impression management tactics and symbolic aspects yield synergistic effects that strengthen a distinct, collective perception about ventures and entrepreneurs (e.g., a high growth venture, Baum et al., 1998; an aspiring market leader, Martens et al., 2007; a collaborator or competitor, Ansari et al., 2016). Articulation of integrative themes may serve special purposes for entrepreneurs. For example, research by Hallen (2008) has suggested that communication of prior accomplishments helps young ventures to form notable ties with key ecosystem members. By conceptualizing disruptive visions, we promote valuable understanding of integrative themes in entrepreneurial communications; this opens the door for future research to further investigate how particular content in an entrepreneurial communication may influence audience sensemaking and venture outcomes.

Third, we provide new insights regarding both real options and impression management theories to explain investment decisions under uncertainty. On the one hand, the main underlying rationale in impression management theory is that the ambiguity and uncertainty surrounding entrepreneurial activities make it hard for investors to assess the quality of a venture's value proposition. This is why investors rely on cues communicated through entrepreneur's impression management efforts. Still, it is important to note that impression management research alone does not fully explain our findings. Indeed, this stream of research would predict a positive effect of disruptive vision on amounts of funding, since the use of disruptive visions has become increasingly popular (Christensen et al., 2015), and entrepreneurs derive legitimacy for their touted identities from innovation, novelty, and publicized change (Navis and Glynn, 2011). On the other hand, real options theory builds its arguments on the intricate balance between upside potential and risk that motivates real options logic in investors. However, this stream of research cannot explain how communicating a disruptive vision would affect investor real option decision making when it has thus far overlooked the role of impression management (see Trigeorgis and Reuer, 2017). We combine both streams of research to explain how disruptive visions affect investment decisions. Here, our work shows that impression management efforts, such as disruptive visions, may have variant effects on how investors select ventures as real options and how they allocate funds to them. In so doing, we not only draw from these research streams, but also significantly advance them and motivate researchers in both fields to integrate the two in understanding investor decision making.

Fourth, our results challenge prior research that has highlighted unilateral positive returns from strong vision communication (Baum and Locke, 2004; Baum et al., 1998; Van Knippenberg and Stam, 2014). We engage the calls for research into vision content (for a recent review, see Van Knippenberg and Stam, 2014) and propose the framing of vision content with a focus on disruption. Specifically, prior vision research has centered strongly on how visions are communicated (style) rather than on what is communicated (content). For example, scholars have focused on the effectiveness of repetition, rhythm, balance, contrasts, lists, puzzles, alliteration, imagery, analogies and metaphors, classification, generalization, and authority (Carton et al., 2014; Conger, 1991; Den Hartog & Verburg, 1998; Hill & Levenhagen, 1995; van Werven et al., 2015). Yet, these investigations omit the influence of vision content. Our emphasis on vision content allows a more in-depth understanding of the vision content–vision pursuit relationship (Stam et al., 2014), reminding scholars that the framing of visions is an essential part of an entrepreneur's communications, but may have downsides that should be duly investigated.

2.6.2 Managerial Implications

Our findings have strong implications for entrepreneurs. Entrepreneurs must be made aware that the content of their vision communication affects investors' perceptions of their venture. The vision statement plays a critical role in communicating the goal and purpose of the organization and must be crafted with care. In particular, despite the popularity of disruptive visions in practice, our study suggests that entrepreneurs should use them judiciously. While communicating a highly disruptive vision increases the likelihood of receiving an investment, it subsequently reduces the amount of funds endowed in that investment. Furthermore, our operationalization of disruptive vision provides entrepreneurs with a template for the key characteristics of a specific form of vision content, allowing them to craft vision statements in ways that exploit or avoid communicating a disruptive vision. Expanding beyond prior vision communication research, our study specifically enables entrepreneurs to purposefully evaluate the content of their vision statements based on a pre-defined set of items, granting them greater control over their impression management efforts.

2.6.3 Limitations and Directions for Future Research

Investors' funding decisions are more complex than we explain in our study, since the investment process is inherently multistage and involves communications at

each stage (Eckhardt, Shane, & Delmar, 2006; Gompers, Gornall, Kaplan, & Strebulaev, 2016). While we show that entrepreneurial visions matter at the first stage in the investor selection process, future research should assess the consequences of entrepreneurial vision communication at later stages in the funding process, such as when moving toward an IPO.

Since visions of entrepreneurs regarding their ventures are not static, neither are disruptive visions. Entrepreneurs may revise their visions over time as they acquire new information or experience. Rapid achievements may trigger the creation of grander visions, and failures could serve as reality checks that, instead, moderate visions. Recent research has advised that ventures presenting disruptive frames may go on to alter their communications to be more respectful of competitive pressures (Ansari et al., 2016; Gurses and Ozcan, 2015). Since refinements are rare in the early stages of venture funding (e.g., the first funding rounds), we do not expect this factor to affect our results. Future research can examine changes in vision content over time.

Finally, we acknowledge that firms can also promote themselves as disruptors or as having achieved disruption. Thus, disruption can also form an integral part of how ventures craft their identities in their communications about the past. However, our current operationalization of promotion of achievements did not consider this, since it is unlikely that younger ventures can legitimately claim much history of successful disruption. Future research can investigate whether older, more established ventures may also frame their identities around disruption and if this helps them in acquiring funds during later rounds.

APPENDIX A. BALANCED SAMPLE BOOTSTRAP ANALYSIS

To assess the robustness of our parameter estimates in Study 1, where data showed imbalance in the dependent variable of our logistic regression, we ran a balanced sample non-parametric bootstrap analysis (as suggested by Donkers et al., 2003). For each bootstrap iteration, we randomly drew (with replacement) a subsample of ventures in which no investment was made, equal in size to the subsample of ventures that did obtain investment. Since we observed 116 ventures receiving first-round investment, we randomly drew 116 ventures that did not. Each bootstrap thus features a sample size of N = 232.

Since each logistic regression was estimated on its own log scale, we may compare only standardized effects, even when model specifications remain identical for subsequent analyses. Therefore, we used the odds ratio for each bootstrap coefficient to compute mean bootstrapped effects for each variable. Additionally, we report bias-corrected and accelerated confidence intervals below (DiCiccio & Efron, 1996), as well as *p*-values that correspond to the proportion of coefficients opposing the reported effects (Tingley et al., 2014). To clarify, a *p*-value of 0.01 signifies a 1 per cent chance that (given our bootstrapped analysis) the odds ratio is actually 1.

Table A1. Balanced sample bootstrap results.

	Odds Ratio	**Lower CI**	**Upper CI**	***p*-value**
Intercept	0.09	0.03	0.56	>0.001
Disruptive vision	1.33	1.10	1.69	0.005
Promotion of achievements	1.35	1.07	1.78	0.016
Imagery	1.00	0.84	1.22	0.914
Social media exposure	2.05	1.61	2.71	>0.001
Venture age	1.14	0.91	1.42	0.285
Subsidiary	1.46	0.76	5.22	0.564
Member of program	1.96	1.21	4.11	0.023
Number of tags (log)	2.48	1.37	5.12	0.010
Sector dummies		*Included*		
Serial entrepreneur	1.47	0.99	2.34	0.098
Geographic scope	0.98	0.80	1.37	0.751

Released products	1.34	0.86	2.22	0.267

We used 10 000 bootstraps with bias-corrected and accelerated (BCa) confidence intervals.

APPENDIX B. ONLINE EXPERIMENT VISION STATEMENT MANIPULATIONS

Experimental Condition 1: High disruptive vision – high promotion of achievements

ProSearch
A Search Engine for E-commerce
ProSearch is revolutionizing Product Search & Discovery: we provide a groundbreaking data infrastructure for matching products to user intent with an unprecedented degree of accuracy, nuance, and coverage.

Our product
Most e-commerce companies are still relying on keyword matching and behavioral data to power their search. Our technology is a natural language processing and artificial intelligence layer that helps retailers really understand what their customers want and present them with the best search results. We only take a small percentage of each sale made with our system.

Our vision
ProSearch will change the way in which people search and discover new products. We have envisioned a disruptive product search technology tailored to the highly competitive e-commerce industry. With our new cutting-edge approach to cleaning and structuring data, we enable a search experience that revolutionizes the capabilities of major search and e-commerce companies in understanding their users' needs and providing qualified, relevant results. This inevitably boosts relevancy and conversion rates, leading to greater profitability. We will disrupt the world of e-commerce and become the global leader in product search and discovery!

Where we are today
By partnering with leading scientific institutions in the field of data science, we have created a patented unique approach that significantly outperforms existing product search technologies, including those of major retailers and search engines. We make products and product-related information easily accessible and extremely useful to users, ultimately removing barriers in, and redefining ways of dealing with product selection and purchase decisions. We have recently attracted large corporate customers from the United States, thereby expanding our operational scope. ProSearch was finalist in the 2016 International Trade Fair for Ideas, Inventions, and New Products, and took home a cash prize of $500.
The team
ProSearch employs a visionary team of data scientists and engineers —ex-Google, IBM, BCG, Harvard, Stanford, Princeton, and Duke, with over 30 US patents in search-related

fields between them. The company is led by Jeff Martin (CEO and co-founder) and Darryl Walker (CTO and co-founder), two ex-Google
PhDs with accomplished track records in start-ups and multinationals in the fields of search and e-commerce. They envision a future where consumers find products effortlessly and instantly.

Additional information
Founded: *02/2017*
Funding stage: *Seed*
Geographical markets: *USA, Europe, Middle East, Asia.*
Product stage: *Released*
Employees: *10*
Business model: *Business to business*
Customers: *9*

Estimated valuation (based on similar companies): *$500,000*

Experimental Condition 2: High disruptive vision – low promotion of achievements

ProSearch
A Search Engine for E-commerce
ProSearch is revolutionizing Product Search & Discovery: we provide a groundbreaking data infrastructure for matching products to user intent with an unprecedented degree of accuracy, nuance, and coverage.

Our product
Most e-commerce companies are still relying on keyword matching and behavioral data to power their search. Our technology is a natural language processing and artificial intelligence layer that helps retailers really understand what their customers want and present them with the best search results. We only take a
small percentage of each sale made with our system.

Our vision
ProSearch will change the way in which people search and discovery new products. We have envisioned a disruptive product search technology tailored to the highly competitive e-commerce industry. With our new approach to cleaning and structuring data, we enable a search experience that revolutionizes the capabilities of major search and e-commerce companies in understanding their users' needs and providing qualified, relevant results. This inevitably boosts relevancy and conversion rates, leading to greater profitability. We will disrupt the world of e-commerce and become the global leader in product search and discovery!

Where we are today
We have created a unique approach that significantly outperforms existing search technologies, including those of major retailers and search engines. We make products and product-related information easily accessible and extremely useful to users, ultimately removing barriers in, and redefining ways of dealing with product selection and purchase

decisions. ProSearch presented their idea at the 2017 International Trade Fair for Ideas, Inventions, and New Products.

The team
ProSearch employs a visionary team of data scientists and engineers. The company is led by Jeff Martin (CEO and co-founder) and Darryl Walker (CTO and co-founder). They envision a future where consumers find products effortlessly and instantly.

Additional information
Founded: *02/2017*
Funding stage: *Seed*
Geographical markets: *USA, Europe, Middle-East, Asia.*
Product stage: *Released*
Employees: *10*
Business model: *Business to business*
Customers: *9*

Estimated valuation (based on similar companies): *$500,000*

Experimental Condition 3: Low disruptive vision – high promotion of achievements

ProSearch
A Search Engine for E-commerce
ProSearch has developed a Product Search & Discovery solution: we provide a data infrastructure for matching products to user intent with a high degree of accuracy, nuance, and coverage.

Our product
Our technology is a natural language processing and artificial intelligence layer that helps retailers understand what their customers want and present them with the best search results. We only take a small percentage of each sale made with our system.

Our goal
ProSearch delivers a superior search and discovery technology for products. Our product search solution is tailored to the highly competitive e-commerce industry. With our cutting-edge approach to cleaning and structuring data, we enable a search experience that helps major search and e-commerce companies to understand their users' needs and provide qualified, relevant results. This increases relevancy and conversion rates, leading to greater profitability.

Where we are today
By partnering with leading scientific institutions in the field of data science, we have created a patented approach that outperforms existing product search technologies. Tests show that 90 per cent of users recommended our solution over existing solutions. We make products and product-related information easily accessible and useful to users, facilitating product selection and purchase decisions. We recently attracted large corporate customers from the United States, expanding our operational scope. ProSearch was also finalist in the

2017 International Trade Fair for Ideas, Inventions, and New Products, and took home a cash prize of $500.

The team
ProSearch employs an elite team of data scientists and engineers—ex-Google, BM, BCG, Harvard, Stanford, Princeton, and Duke, with over 30 US patents in search-related fields between them. The company is led by Jeff Martin (CEO and co-founder) and Darryl Walker (CTO and co-founder), two ex-Google PhDs with accomplished track records in start-ups and multinationals in the fields of search and e-commerce.

Additional information
Founded: *02/2017*
Funding stage: *Seed*
Geographical markets: *USA, Europe, Middle-East, Asia.*
Product stage: *Released*
Employees: *10*
Business model: *Business to business*
B2B customers: *9*
Estimated valuation (based on similar companies): *$500,000*

Experimental Condition 4: Low disruptive vision – low promotion of achievements

ProSearch
A Search Engine for E-commerce
ProSearch has developed a Product Search & Discovery solution: we provide a data infrastructure for matching products to user intent with accuracy, nuance, and coverage.

Our product
Our technology is a natural language processing and artificial intelligence layer that helps retailers understand what their customers want and present them with the best search results. We only take a small percentage of each sale made with our system.

Our goal
ProSearch delivers a superior search and discovery technology for products. Our product search solution is tailored to the highly competitive e-commerce industry. With our approach to cleaning and structuring data, we enable a search experience that helps major search and e-commerce companies to understand their users' needs and provide qualified, relevant results. This increases relevancy and conversion rates, leading to greater profitability.

Where we are today
We have created an approach that outperforms existing product search technologies. We make products and product-related information easily accessible and useful to users, facilitating product selection and purchase decisions. ProSearch presented their idea at the 2017 International Trade Fair for Ideas, Inventions, and New Products.

The team

ProSearch employs a team of data scientists and engineers. The company is led by Jeff Martin (CEO and co-founder) and Darryl Walker (CTO and co-founder).

Additional information
Founded: *02/2017*
Funding stage: *Seed*
Geographical markets: *USA, Europe, Middle-East, Asia.*
Product stage: *Released*
Employees: *10*
Business model: *Business to business*
B2B customers: *9*

Estimated valuation (based on similar companies): *$500,000*

Table AII. Examples of disruptive vision and promotion of achievements.

	***Disruptive Vision*[a]**				***Promotion of achievements*[b]**		
Venture and vision statement	**Fundamental change**	**Contrasts status quo**	**Different manner**	**New function[c]**	**People**	**Venture**	**Resources**
Twiggle: "Twiggle is setting the standard for a new paradigm of Product Search & Discovery: providing a robust data infrastructure for matching products to user intent with an unprecedented degree of accuracy, nuance, and coverage. We understood that, with our approach to cleaning and structuring data, we could enable a search experience that would revolutionize the capabilities of major search and e-commerce companies to understand their users' needs. Today, our unique approach to classifying, recommending, and displaying products significantly outperforms existing search technologies, including those of major retailers and search engines. Using our expertise in search and data science, we make products and product-related information easily accessible and incredibly useful to users, which ultimately removes barriers in dealing with product selection and purchase decisions. Team Twiggle is made up of an elite team of data scientists and engineers – ex-Google, IBM, BCG, Harvard, Stanford, Princeton, and Duke, from top intelligence units of the Israeli Army, with over 30 US patents in search-related fields between them. The company is led by Amir Konigsberg (CEO & Co-founder) and Adi Avidor (CTO & Co-founder), two ex-Google PhDs with an accomplished track record in start-ups and multinationals in the fields of search and e-commerce."	Yes	Yes	Yes	No	Yes	Yes	Yes

Collage Medical Imaging: "The company's patented technology integrates very high resolution, short range, Optical Coherence Tomography technology with Spatial Localization Technology in a patent pending unique combination that enables, for the first time, reliable virtual tissue reconstruction of human organs at the microscopic level. The company's breakthrough system makes possible real time diagnosis, and provides unparalleled detailed microscopic mapping of the cancerous tissue within body organs. The end result is a micron level resolution virtual tissue reconstruction of the entire organ which is far superior to the resolution obtainable by known modalities such as MRI, CT, and Ultrasound. The company's mission is to provide a technology having the potential of complimenting and ultimately replacing traditional cancer diagnostics. Collage Medical Imaging was founded in 2014 as an Incubit Ventures company."	Yes	Yes	Yes	Yes	No	Yes	Yes
JAGO: "JAGO's PlayDate platform empowers parents to schedule, manage, and track their kids' social lives in a single intuitive app. Our vision is to transform the way parents manage their kids' social lives, changing the paradigm from on-the-fly arrangements to seamless scheduling and management. We anticipate a time where family event planning will be as organized and controlled as a workplace calendar. The system's ability to manage the digital relationships between children, their friends, parents, additional caregivers, and parents of friends is the essence of the application. Our technological vision is to capture, manage, and enhance those relationships."	Yes	Yes	Yes	Yes	No	No	No
Fone.do: "Fone.do is developing a revolutionary simple to use, low cost intelligent business phone system you can set up yourself in a few minutes. We do things differently. Fone.do is a complete phone system for small business. You can use it from your web browser, mobile, and desk phones. One number that receives calls everywhere, anytime. We are proud that the Fone.do team is made up of creative people from diverse backgrounds. Together we are changing the way small businesses communicate."	Yes	No	Yes	No	Yes	No	No
AppInsight: "AppInsight generates security vulnerability reports for any app, along with detailed remediation guidelines, automatically and without any integration to the development process. We continuously scan your apps for the latest known vulnerabilities and proactively alert you when new threats to your app are detected, prioritized according to severity level. AppInsight	No	No	No	Yes	Yes	No	Yes

ranks the security posture of your apps, compared to millions of apps that have already been analyzed. By doing so, we have built a huge database of mobile apps. Our group of top notch security experts from the IDF elite intelligence corps leverages their extensive experience and best practices to help you rectify every detected vulnerability and threat. Our vision is to create the industry standard for mobile application security."							
Singular: "Singular is a SaaS platform that unifies the fragmented digital marketing space. Singular has built a much differentiated technology that enables marketers to seamlessly integrate all of their different marketing systems into a singular platform, without requiring an SDK integration or dedicated engineering resources. Their unique solution and technology has enabled them to grow incredibly fast in the past two years, and today they are working with some of the largest and most sophisticated digital marketers in the world: Twitter, Facebook, Match.com, Tinder, Supercell, Glassdoor, Glu, Kabam, Wallapop, Poshmark, GrabTaxi, and many others."	No	No	Yes	No	No	Yes	Yes
BigaBid: "BigaBid is a data driven, data science focused solution designed for performance marketing in the mobile advertising industry. Through real time optimization and user profiling, BigaBid leverages unrefined user data and aggregates it into actionable audience profiles based on key behavior, location, and content trends. The data above is obtained by us through both our ongoing media acquisition activities, as well as through studying the advertiser's historical data. We zoom in on the most relevant, highly actionable users and build profiles based on them. These profiles, when coupled with multiple layers of mobile-specific data, and with the scale and reach of programmatic media buying, allow us to hit your KPIs on every single ad campaign, eliminate wastage and improve our predictive abilities toward your next campaign with us."	No	No	No	No	No	No	No
CoolaData: "CoolaData is a cloud-based solution which covers all big data infrastructure components for data tracking, warehousing, ETL, data enrichment – all the way to the visualization layer. It's an open data service that is not limited to proprietary tools. Connect to your data, to all your data points – It unifies data from a multitude of external and internal sources, inspects it as one unit, and visualizes the most comprehensive business insights from a richer analytical framework. CoolaData helps to analyze, visualize, predict, and act on big data,	No	No	No	No	No	No	No

without dedicated resources. With CoolaData you boost your BI agility and time-to-insight becomes immediate."

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a. The disruptive vision items are (left to right): "The vision statement…" "promotes drastic change in the future: it makes a claim of pursuing dramatic change at a market or larger level, with implicit consequences for multiple stakeholders," "features a future that contrasts with the status quo: it delineates deficiencies in the current market situation and promises a substantial improvement," "includes ideas, plans or other evidence of achieving the conventional market objective in a completely different manner" and "promotes the venture's innovation or activities as enabling a completely new function."

b. People includes the item "features evidence of past performance/experience of entrepreneurs and employees."
Venture comprises the item "presents evidence of past and current successes of venture in the market, including customers, locations, market leadership, and awards and prizes"
Resources matches the item "features claims of accrued resources, such as latest/proprietary technology, partnerships/networks/affiliations, and patents/prototypes."

c. The 'new function' item was not included in the empirical measure of disruptive vision due to low Cohen's Kappa reliability.

CHAPTER 3

MAKING THE WORLD A BETTER PLACE WITH YOU?

Attracting Talent through Entrepreneurs' Social Vision Communication

3.1 INTRODUCTION

Early stage ventures' success depends on the entrepreneurs' ability to build a team of talented and dedicated people around them who help grow their businesses (Rauch, Frese, & Utsch, 2005; Sauermann, 2017). However, attracting talent (i.e. young highly educated professionals) is challenging for start-ups because they are often unknown to job seekers, expect demanding work, and have limited resources available for competitive salaries (Barber et al., 1999; Burton et al., 2018; Cardon & Stevens, 2004). Entrepreneurs' communications play a key role in convincing potential recruits. In particular, recent research suggests that vision communication—the communications about the intrinsic or substantive value of what the venture aims to become and attain in the future (Baum & Locke, 2004; van Balen, Tarakci, & Sood, 2019)—is an important tool for entrepreneurs in influencing stakeholders' perceptions (Garud et al., 2014; van Balen et al., 2019), because vision communication helps set the start-ups apart from other ventures (cf. Glynn & Navis, 2013; van Werven et al., 2015). In that light, we observe the increasing popularity of social vision communication in entrepreneurship practice and research (e.g., Branzei, Parker, Moroz, & Gamble, 2018; Bruton, Jr, & Ireland, 2013; Lee & Huang, 2018; Markman et al., 2016). Social vision communication refers to the conveying of an image of the future where current issues revolving around nature and/or societal welfare (e.g., disadvantaged groups) are being addressed by the venture's activities (Dacin, Dacin, & Tracey, 2011; Grant, 2008; Grant, 2012; Wry & York, 2017).

Although entrepreneurship research has yet to investigate the efficacy of social vision communication for recruiting talent, human resource management literature has been unanimously advocating the benefits of socially-oriented communications in attracting job seekers to organizations (Backhaus, Stone, & Heiner, 2002; Burbano, 2016; Evans & Davis, 2011; Greening & Turban, 2000). Job seekers generally value the well-being of others (de Dreu & Nauta, 2009; Schwartz & Bardi, 2001), and therefore distill more pride and meaning from organizations that signal care for others (Bhattacharya, Sen, & Korschun, 2008; Burbano, 2016; Highhouse, Thornbury, & Little, 2007; Jones, Willness, & Madey, 2014). However, these findings have been obtained from investigations of large established firms. Hence, their applicability to entrepreneurial contexts remain questionable, since ventures differ considerably from established organizations in terms of the recruitment offering that drives talent attraction (cf. Cardon & Stevens, 2004; Katz, Aldrich, Welbourne, & Williams, 2000). Whereas established organizations differentiate themselves in the eyes of job seekers through communicating a social impact *in addition* to clear remuneration as well as advancement opportunities (Burbano, 2016; Jones et al., 2014; O'reilly & Caldwell, 1980; Sauermann, 2017; Wiley, 1997), ventures employ social vision communication to *substitute* their disadvantageous offering in terms of higher job uncertainty, working conditions, and lower salary, with having a broader impact on nature and society. Consequently, our knowledge of the effectiveness as well as the underlying mechanisms of how ventures' social vision communication impact their recruitment remains incomplete. This is important since social visions and talent attraction are important pillars of entrepreneurship theory and practice.

Contrary to the prior human resource research in large established organizations, we hypothesize that a job seeker is less likely to apply to and will demand higher salaries from a venture communicating a social vision than a venture not communicating a social vision. Job seekers perceive the venture communicating with a social vision as limiting to personal strivings and as having lower business viability. Because job seekers do not perceive the focal venture as an opportunity for achievement, the commonly expected non-pecuniary opportunities that offset the risks (i.e. heightened job uncertainty) of the early stage venture setting are considered to be no longer available.

We tested and found empirical support for our hypotheses through a field experiment with 102 graduate students seeking jobs. We presented them with a real vacancy in a start-up, of which we manipulated the vision communication. We found that job seekers had 72 per cent lower odds of either providing their contact

information or applying for the job in the social vision condition. Additionally, we find that job seekers set a premium of 252 euros on the minimum required gross monthly salary (equivalent to 16 percent of the Dutch minimum salary) for considering employment at the venture. Lastly, we ascertained job seekers' perceived opportunity for achievement as the underlying mechanism.

We contribute to the entrepreneurship and organizational behavior literatures in four ways. First, we contribute to the literature on social for-profit ventures by addressing one of the pressing issues, namely struggles in hiring talent (Battilana & Dorado, 2010; Smith & Besharov, 2017). We promote a deeper understanding of the challenges that social for-profit ventures need to overcome (McMullen, 2018; Wry & Haugh, 2018), and point toward a specific downside of promoting their social aims to potential employees. Our work shows that social visions limit job seekers' ability to perceive a career at the start-up as an opportunity for achievement. Hence, we contribute to the view that the popularity of the social for-profit venture among entrepreneurs is not without contention. Second, we expand scholarly work on the downsides of effective vision communication (e.g., Ateş et al., 2018; Berson, Halevy, Shamir, & Erez, 2015; Carton et al., 2014; Conger, 1991; van Balen et al., 2019). Our study shows that social visions can have a negative effect on a start-up's ability to attract job seekers. Furthermore, we affirm the necessity of investigating stakeholders' interpretations of vision content (cf. Van Knippenberg & Stam, 2014) and motivate research to consider the potential negative effects of vision communication on the individuals' perceptions. Third, our study of social visions sheds further light on entrepreneurial visions as a form of future-oriented impression management of early stage ventures (Garud et al., 2014; van Balen et al., 2019; Zott & Huy, 2007), and establishes social visions as a specific thematic form. In doing so, we broaden scholars' understanding of how key resource holder, such as potential recruits, respond to entrepreneurs' communications. Fourth, we contribute to literature on person-organization fit by showing that above and beyond value congruence, employment decision are driven by job seekers' ability to perceive a future career as an opportunity for achievement (cf. Cable & Edwards, 2004). Moreover, we find that vision content also plays a considerable role in minimum salary demanded by job seekers. Last, our work provides strong practical implications for entrepreneurs looking to attract talent to their team.

3.2 THEORETICAL BACKGROUND

3.2.1 Entrepreneurs' Communications in Attracting Talent

Acquiring human capital is a key source of competitive advantage, growth and innovation for start-ups (Rauch et al., 2005; Sauermann, 2017). Yet, attracting talent to a venture team is challenging. First, start-ups are relatively unknown to wider audiences (Stinchcombe, 2000). Whereas job seekers may have knowledge and image attribution of existing large organizations (e.g. 'best places to work'-rankings released by glassdoor.com), they lack such information about new ventures. Second, start-ups lack size and resources to offer the same job benefits as established firms (Barber et al., 1999; Burton et al., 2018; Cardon & Stevens, 2004). Third, to help the venture grow and become successful potential start-up employees are expected to go outside their formal role descriptions (if these even exist) and work long hours (Cardon & Stevens, 2004).

Against these downsides, entrepreneurs' communications play a key role in convincing job seekers to join a start-up (e.g., Backhaus & Tikoo, 2004; Braddy, Meade, & Kroustalis, 2006; Burbano, 2016; Highhouse et al., 2007; Rynes, Jr, & Gerhart, 1991). Communications toward potential employees affect organization-related beliefs (Cable & Graham, 2000)—for example, whether the potential recruits perceive the organization as socially relevant, highly successful, genuine or boring (Chapman et al., 2005; Walker et al., 2011). In turn, such beliefs affect job seekers perceived fit with and, hence, their attraction and intentions toward a job at the organization (Adkins, Russell, & Werbel, 1994; Backhaus, 2003; Backhaus & Tikoo, 2004; Chapman et al., 2005; Hauswald, Hack, Kellermanns, & Patzelt, 2016; Kristof-Brown, Zimmerman, & Johnson, 2005; Kristof, 1996; Swider, Zimmerman, & Barrick, 2015).

Particularly in the entrepreneurship literature, vision communication has been pointed out as an important tool for entrepreneurs in influencing stakeholders' perceptions (Garud et al., 2014; van Balen et al., 2019). Vision communication involves the conveying of images of the future of a collective (e.g., technology, employees, customers, ecosystems) (Berson et al., 2015; House & Shamir, 1993; Van Knippenberg & Stam, 2014). The content of an entrepreneur's vision communication informs stakeholders of the intrinsic or substantive value of what the venture aims to become and attain in the future (Baum et al., 1998; Baum & Locke, 2004; van Balen et al., 2019). Vision communication influences what people think is desirable or possible for the venture and the ecosystem (Stam et al., 2014; Wry et al., 2011), and allows entrepreneurs to set their ventures apart from other ventures (cf. Glynn & Navis, 2013; van Werven et al., 2015). For example, recent work by Van Balen et al. (2019) shows that Israeli start-ups' communication of a

vision articulating a fundamental change in markets and ways of doing business has a substantial effect on investors' decision to provide financial capital to the start-up.

3.2.2 Social Vision Communication and Talent Attraction

A common form of vision content that entrepreneurs increasingly use to set their ventures apart, and that has been receiving a substantial interest in entrepreneurship research, is communication of a social vision (e.g., Branzei et al., 2018; Bruton et al., 2013; Dacin et al., 2011; Lee & Huang, 2018; Markman et al., 2016). Popularized by the adage, 'making the world a better place', social vision communication refers to the conveying of an image of the future where current issues revolving around nature and/or societal welfare (e.g., disadvantaged groups) are being addressed by the venture's activities (Dacin et al., 2011; Grant, 2008; Grant, 2012; Wry & York, 2017). Consider Dutch start-up 'The Ocean Cleanup', which communicates a vision where they aim at eradicating "the world's oceans of plastic", while retaining a financial profit from the cleanup. As of October 2018 the start-up had 13 open positions on their website (https://www.theoceancleanup.com/careers/).

Prior research has so far unanimously advocated the benefits of socially-oriented communications in attracting job seekers to the organization (e.g., Aguinis & Glavas, 2012; Backhaus et al., 2002; Bhattacharya et al., 2008; Burbano, 2016; Evans & Davis, 2011; Greening & Turban, 2000). For example, Jones et al. (2014) find that the communication of a firm's community involvement and environmental practices positively influences job seekers' intentions, because of increased feelings of anticipated pride and perceived value fit with the respective organization. Research supports this finding by pointing out that people often value the well-being of others (de Dreu & Nauta, 2009; Schwartz & Bardi, 2001) and that organizations that care about others are more attractive to job seekers (Cable & Turban, 2003; Highhouse et al., 2007; Sen, Bhattacharya, & Korschun, 2006; Turban & Greening, 1997).

However, these findings have often been obtained from large established firms. We challenge this positive stance toward social visions found in large established organizations, and argue that the effect of social visions may be different in entrepreneurial ventures (cf. Cardon & Stevens, 2004), because established organizations and ventures differ in how they use social visions. Established organizations use social communications to complement the existing perceptions job seekers may have about the organization (Burke, 2005; Du, Bhattacharya, &

Sen, 2010). For example, with larger organizations job seekers tend expect job security, competitive salaries, training and career-trajectory support (O'reilly & Caldwell, 1980; Rynes, Schwab, & Heneman III, 1983; Sauermann, 2017; Wiley, 1997). Hence, these organizations differentiate themselves in the eyes of job seekers through communicating a social impact in addition to the existing benefits (e.g., Burbano, 2016; Henderson & Van den Steen, 2015; Jones et al., 2014). In contrast, the venture's social vision communication substitutes their aforementioned disadvantageous offering in terms of higher uncertainty, limited fringe benefits, and lower salary, with having a broader impact on nature and society.

In order to understand how social vision communication affects ventures' ability to attract talent, we need more in-depth investigation of how job seekers interpret the vision communications of start-ups, and which mechanisms underlie the effects of vision content on job pursuit intentions In the following section, we draw from the literature on sensemaking to develop hypotheses about the relationship between venture's social visions, talent attraction, and salary demands.

3.3 HYPOTHESIS DEVELOPMENT

3.3.1 Job Seekers' Sensemaking of Social Visions

The majority of young highly educated job seekers are drawn to a venture depending on the start-up's perceived risks (e.g., limits to job security and conventional fringe benefits, such as pension and health-care) and opportunities (e.g., equity, autonomy and intellectual challenge) (Cardon & Stevens, 2004; Roach & Sauermann, 2015; Sauermann, 2017). In particular, potential recruits are attracted to a venture when they believe and expect that the inherent risks of early stage venturing are offset by the availability of the particular opportunities (Roach & Sauermann, 2015; Wanous et al., 1983; Wanous, Poland, Premack, & Davis, 1992). In that light, a venture's vision communication allows talent to build beliefs from the future oriented images of the vision about what their hypothetical career at the start-up may be like (cf. Beach, 1993; Markus & Nurius, 1986; Stam et al., 2014). Hence, we draw on sensemaking theory to understand how social visions affect job seekers beliefs about the opportunities at the focal venture. Sensemaking refers to the process by which job seekers interpret what the venture is doing and give meaning to its assessment as a career opportunity (cf. Grant, 2008; Weick et al., 2005). We hypothesize how job seekers interpret the group-level (or collective) outcomes of joining the venture as communicated by the vision, in relation to their assessment of the personal opportunities of joining the venture.

We argue that the communication of a social vision decreases job seekers' attraction to the venture, because it limits the perception that the venture offers the opportunities that offset the risks of joining a start-up. A social vision explicitly highlights the entrepreneurs' social orientation, promoting the helping of the environment and/or others as the raison d'être of the start-up. A social vision calls for transcending one's own personal needs and needs of the people in the venture group, in favor of the needs of others outside of this group. People may associate this message with more altruistic motivations (Roberts & Woods, 2005; Tan, Williams, & Tan, 2005), meaning that effort and resources are allocated in achieving the vision with less regard for personal or economic returns to the venture and its employees.

This association has two consequences. First, it creates the perception with job seekers that a particular level of self-sacrifice is required to achieve the venture's vision, as the necessities of the individual within the venture appear to be receiving less weight. Moreover, while self-sacrifice can be seen as a virtue, particularly in religious contexts (Lips-Wiersma, 2002), it limits the perceptions that the venture will allow personal strivings (e.g., pursuit of ambitions, development or financial growth). While people may vary in their need for personal strivings, the overall utility of the start-up context as a vehicle for individual advancement is likely to be mitigated by the communication of a social vision (cf. Stern, 2004). Therefore, job seekers perceive the opportunities that commonly sooth the risks associated with the heightened uncertainty and pecuniary limitations of the start-up context to be no longer available.

Second, typically altruism as emphasized in social visions is often linked to lower for-profit business viability of the venture (Moizer & Tracey, 2010). Specifically, the social aims underlying the vision often require a longer term perspective (Bacq & Lumpkin, 2014). The entrepreneurs' may appear to be unwilling to compromise longer term social goals in favor of shorter term business goals and financial necessities (Bacq, Hartog, & Hoogendoorn, 2016), because of their seeming compassion and motivation (Bacq & Alt, 2018; Miller, Grimes, McMullen, & Vogus, 2012). Not only does this perception further question the possibilities for a job seeker's opportunities and growth in the future, it increases the risks associated with a career at the start-up.

Consequently a venture's social vision communication is interpreted to offer less opportunities. Therefore, the likelihood that a job seeker is attracted to and pursues

a job vacancy at a start-up that communicates with a social vision is lower. We hypothesize that:

> **Hypothesis 1:** A job seeker is less likely to apply to a venture communicating a social vision than a venture not communicating a social vision.

3.3.2 Salary Demands and Employment Decisions

Resource constraints limit start-ups to offer competitive salaries. Thus, investigating salary requirements is important because it allows entrepreneurs' to understand what they need to offer to get talent on board. Specifically, the perceived risks and opportunities in a particular vacancy, and thus utility they derive from it, may drive job seekers to set premiums or discounts to the minimum required salary they need to seriously consider applying for the job (Cable & Turban, 2003; Kim, 2018; Stern, 2004). These premiums or discounts reflect recruits' attraction to, as well as their general attitude towards, work at the venture (Larkin, Pierce, & Gino, 2012).

Prior research argues that job seekers set discounts to the minimum required salary when the organization communicates social aims, because they derive utility from expected positive treatment by the potential employer and perceive more intrinsic benefits (Burbano, 2016; Jones et al., 2014). However, Burbano's (2016) experimental set-up promoted the social impact in addition to the potential employee's and organization's regular activities. Thus, the communication of social aims garners utility complementary to the job offering of that of a large organization, in terms of job security and other fringe rewards. As we outlined before, with the start-up communicating a social vision, the potential utility of social impact is supplementary to the non-pecuniary activities.

We argue that social visions are perceived by job seekers as detrimental to the utility derived from the balance between risks and personal opportunities to the job seekers. Potential recruits perceive a venture communicating with a social vision as not providing the opportunities that commonly balance the risks associated with the heightened uncertainty and pecuniary limitations of the start-up context. Furthermore, the association of social visions with lower business viability make job seekers further question the opportunities and potential for growth in the future, and increases the perceived risks associated with a career at the start-up. Thus, we expect social vision communication to decrease the utility job seekers derive from

a potential career at the start-up, and argue that they will set a premium on pecuniary rewards to compensate the perceived limitations to non-pecuniary opportunities.

> **Hypothesis 2:** A job seeker demands higher salary from a venture communicating a social vision than a venture not communicating a social vision

3.3.3 Underlying Mechanism: Opportunity for Achievement

People innately desire to develop themselves and grow towards their fullest potential (Deci et al., 2017). For example, the equity opportunities of the start-up context may result in considerable financial returns when the venture becomes successful, and the autonomy and learning opportunities may eventually result in personal excellence and distinction. Hence, we argue that job seekers decision to work at a venture includes an achievement orientation (Harackiewicz et al., 1987; Senko & Harackiewicz, 2005). That is, opportunity for personal advancement, influence, distinction and excellence (e.g., Honeycutt & Rosen, 1997; Jarvenpaa & Staples, 2001). In line with the expectancy model (Wanous et al., 1983), we argue that talent is attracted to a start-up when they believe the work at the venture to be an opportunity for achievement. Furthermore, as job seekers derive utility from the opportunity for achievement they set a salary discount on working in the start-up (cf. Eisenberger, Rhoades, & Cameron, 1999; Ertug & Castellucci, 2013).

We argue that social vision communication negatively impacts potential recruits' perception that working in the start-up offers an opportunity for achievement. A social vision specifically highlights the entrepreneurs' efforts and allocation of resources to the advancement of others, outside of the venture-group. The necessities of the individual within the venture appear to be receiving less weight, and therefore the pursuit of diverging personal aims may not appear to be supported. As a results, job seekers may interpret the entrepreneurs' as not supportive of individuals' efforts towards personal advancement and the accrual of individual distinction in achieving venture outcomes. Moreover, the apparent association between social visions and lower business viability, creates a questionable outlook for talent on future returns on their personal investment (in terms of putting the same amount of work for lower salary and heightened job uncertainty). Thus, when the business is not particularly successful, talent can perceive limitations to anticipated prestige (e.g., status derived from the venture's acquired reputation) as well as

anticipated financial returns (e.g., through salary growth or equity stakes). Therefore, we argue:

> **Hypothesis 3a:** Perceived opportunity for achievement mediates the negative relationship between social vision communication and the attraction of job seekers.

> **Hypothesis 3b:** Perceived opportunity for achievement mediates the positive relationship between social vision communication and job seekers' minimum salary requirements.

Prior entrepreneurship literature suggests that job seekers' perceived limitations to business viability associated with the communication of social visions can be actively balanced by specifically highlighting for-profit aims (e.g., Dacin et al., 2011; Wilson & Post, 2013). In particular, we argue that these for-profit aims should emphasize extraordinary returns that offset the increased risks associated with a social vision. In the eyes of job seekers, limitations to pursuing personal aims may become acceptable if potential extreme financial returns and gains on prestige offset it. Therefore, we focus on disruptive visions (Kanze & Iyengar, 2017; van Balen et al., 2019). These visions highlight a venture's aim to fundamentally change the market and ways of doing business. Because disruptive visions stress the overthrowing of incumbent businesses, with the focal venture holding the dominant design, it raises the expectation that the venture may become highly successful in the future and will provide extraordinary returns for any stakeholder involved (van Balen et al., 2019). Thus, we argue that explicitly combining the social vision with the disruptive vision mitigates the negative effect of social visions on talent attraction, because the anticipated extraordinary returns associated with the disruptive vision offset the increased risks associated with the social vision.

> **Hypothesis 4:** Disruptive vision communication positively moderates the relationship between social vision communication and perceived opportunity for achievement such that social vision communication reduces job seekers' likelihood of applying and increases their salary demands only when disruptive vision communication is low.

3.4 METHODS

3.4.1 Participants

The focal unit of this research is the young highly educated potential recruit of start-ups (in other words, talent). We recruited 212 graduate students from three Master of Science (MSc) programs at a Dutch university. These students were all in their final years of education and were in the process of finishing their degrees. Importantly, of the initial respondents we selected 123 individuals who were currently looking for a job and were considering staying in the Netherlands. We presented the students with a real job vacancy (see details at Design) followed by an online questionnaire. Students could provide their contact details and/or apply to the job at the end of the survey by uploading their résumé to a secured drive. In addition, we attempted to further motivate students' participation by offering an overview of their job preferences and interests as they filled them in the survey.

After eliminating participants that did not fully complete the survey, and after filtering out participants who answered carelessly on the attention checks we included in the survey, our final sample comprised 102 participants who were 57 percent male, were on average 23.62 years old (*S.D.* = 1.59), with 53% being of Dutch nationality, 25% from other European countries and 22% outside of Europe. We checked differences on these demographic variables between the removed group and the final sample. We found no significant differences (largest difference was in age: *mean difference* = 0.24; t = -0.64, df. = 121, p = 0.53).

3.4.2 Design

We recruited a start-up through the university's entrepreneurship program to supply a real vacancy for a starter position in business consulting, analytics, and operations research. We selected this venture because students from the selected master programs tend to have the skills and interests that match with such a position. Subsequently, we designed a 2 (low and high social vision) x 2 (low and high disruptive vision) randomized between-subjects experiment. Each condition was based on the same job posting, also keeping the job description and requirements as similar as possible to the original advertisement. However, we manipulated the venture's vision statement over the conditions. The original vision statement was taken from the venture's website and edited to match our purposes (see the Appendix). Last, we anonymized the name of the venture to avoid having

participants search for the company online during their participation in the experiment.

3.4.3 Procedure

We obtained the names and contact details of graduating MSc students from program administration. Each of the 619 students in the list was sent an introductory email on their university email address, inviting them to take part in our research on student job decisions and placement options. In the email we offered, in return for their participation, the opportunity to apply for a unique and real job opportunity (presented in the survey), and a comparison of their job preferences and interests with participant averages. Next, 212 students proceeded to click the link to an introductory page further explaining the details of the survey, where we informed participants that we would ask them about their job preferences and status, and an employment decision about the venture to be presented. Subsequently, students filled in questions about their job preferences and status. Here, we discarded those subjects who indicated they were not looking for a job or were not planning to stay in the Netherlands. Hence, we randomly assigned 123 job seeking students to one of our conditions. After filling in manipulation checks, they indicated their interest and attraction to the presented vacancy, where we provided the option to leave their contact details. Next, they answered questions about our mediator and control variables, and answered questions about salary. The survey ended with a page thanking the participants and asking them whether they would want to apply to the presented position by uploading their résumé to a secured drive. Last, they were informed that their résumé would only be shared with the company after closing the survey's participation window. We positioned this question at the end of the experiment, because initial pilot testing indicated that the question may be disruptive to the flow of the questionnaire if it was placed right after the vacancy description.

3.4.4 Measures

3.4.4.1 Dependent Variables

Our main dependent constructs involve the attraction of job seekers to the venture's vision and minimum salary requirements. We proxy participant's attraction to the presented vacancy with two behavioral measures. First, we noted whether the students provided their contact details. Second, we recorded whether participants applied for the vacancy by uploading their résumé at the end of the survey. We

included t*alent attraction* as a dummy variable in our models, where 1 indicates that students submitted their email address and/or uploaded their résumé, and 0 if they did not.

Job seekers' minimum salary requirements were operationalized by asking participants to indicate the *minimum required salary* (gross per month in Euro's) that the venture would have to offer for them to seriously consider joining the venture (e.g., Burbano, 2016; Cable & Turban, 2003). This question was answered on a slider scale ranging from 1578 euro's (Dutch legal minimum salary) to 10 000 euro's.

3.4.4.2 Independent Variables

Our manipulations of *social vision* and *disruptive vision* are listed in the Appendix. We include both as dummy variables in our analyses. For the social (disruptive) vision variable, 1 meant survey participants were exposed to high social (disruptive) vision condition, 0 otherwise. We measured perceived *opportunity for achievement* with four items adapted from Jarvenpaa & Staples (2001). Respondents were asked to indicate to what extent they agreed with the following four items on a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree): "The job at this venture provides opportunity for my advancement and achievement", "This venture is a prestigious organization to work for", "In the job at the venture, my individual search for excellence has a top priority", and "My pursuit of individual power is acceptable in the job at the venture" (Cronbach's Alpha = 0.69).

3.4.4.3 Control Variables

We controlled for various characteristics of the participants and their perception of the presented start-up. First, we controlled for perceived *value fit* of the participants with the presented start-up. Prior literature has established value fit as a core explanatory variable of employment decisions (Adkins et al., 1994; Swider et al., 2015). This is particularly true for social visions (Jones et al., 2014). Since these visions are often strongly value-laden, value fit may have a considerable effect on attraction, salary requirements, and perceived opportunities. Hence, by controlling for it we can establish that the observed effects are not driven by the establishment of value fit alone. We measured value fit with three items adapted from Cable and DeReu (2002) on a 5-point Likert-scale (1 = strongly disagree – 5= strongly agree): "The venture's values and goals provide a good fit with the things that I value in life", "The things that I value in life are very similar to the things that the venture

values", and "My personal values match the venture's values and goals" (Cronbach's Alpha = 0.92).

Since distance to the company may influence the feasibility of the vacancy as a job option, it can influence the likelihood of applying. Therefore, we control for whether respondents *live near* the *company.* We measured this by asking whether or not participants lived within 5 km radius of the city center (which is where the company was located) and included it as a dummy variable (0 = 5 km. or further, 1 = within 5 km. radius). Our participants were recruited from three related, but distinct, Master of Science programs. Students from these master programs may have varying affinity and perception of skill-fit with the presented vacancy and venture. Furthermore, students from these programs may have different expectations about salaries in their subsequent jobs. The programs involved Business Information Management (BIM), Supply Chain Management (SCM), and Management of Innovation (MI). Therefore, we included the MSc *program* that participants were part of. We included the variable as separate dummies for BIM and SCM. We used MI as the baseline group.

We also included respondent *gender*, *age* and *nationality* as controls. For nationality, we categorized respondents as either Dutch, other European Union (EU) countries, or non-EU. Last, in our model estimating minimum required salary, we include the subjects' expectation of the salary the venture will pay for the job as a control variable called e*xpected salary venture*. The measurement scale was identical to minimum required salary.

Table 1 displays the Pearson correlations among all variables.

3.5 RESULTS

3.5.1 Descriptive Statistics

Fifty five per cent of the respondents provided their contact information or applied for the vacancy. Furthermore, on average participants said that for 2876.28 euro's (*S.D.* = 607.59) minimum gross monthly salary they would seriously consider the vacancy and expected the venture to pay 2669.55 euro's (*S.D.* = 442.52) gross monthly on average.

Table 1. Pearson correlations.

	1	*2*	*3*	*4*	*5*	*6*	*7*
1. Attraction (1 = Yes)							
2. Minimum required salary	-0.21*						
3. Social vision (dummy)	-0.22*	0.13					
4. Disruptive vision (dummy)	-0.04	-0.16	0.07				
5.Opportunity for achievement	0.38***	-0.33***	-0.08	0.13			
6. Value fit	0.37***	-0.12	0.21*	0.06	0.38***		
7. Expected salary venture	0.00	0.51***	0.07	-0.01	0.08	0.16	
8. Live near company	0.06	0.03	0.14	0.11	-0.07	0.14	0.02
9. Program MI	-0.07	-0.07	0.12	0.15	0.01	-0.06	-0.16
10. Program SCM	0.09	0.00	0.04	-0.01	0.19^{+}	0.19^{+}	0.28**
11. Program BIM	-0.03	0.05	-0.13	-0.10	-0.20*	-0.14	-0.16
12. Age	0.33***	0.15	-0.18^{+}	-0.10	-0.04	0.09	0.10
13. Gender (1 = Male)	0.05	0.06	-0.10	0.01	-0.15	-0.15	-0.18^{+}
14. Nationality Dutch	-0.38***	-0.01	0.03	-0.12	-0.07	-0.34***	-0.18^{+}
15. Nationality Europe	0.30**	0.02	-0.14	0.07	-0.03	0.24*	-0.02
16. Nationality World	0.14	-0.01	0.11	0.07	0.11	0.16	0.24*

$^{+}p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 1. Pearson correlations (cont.).

	8	***9***	***10***	***11***	***12***	***13***
1. Attraction (1 = Yes)						
2. Minimum required salary						
3. Social vision (dummy)						
4. Disruptive vision (dummy)						
5.Opportunity for achievement						
6. Value fit						
7. Expected salary venture						
8. Live near company						
9. Program MI	-0.02					
10. Program SCM	0.02					
11. Program BIM	0.00					
12. Age	-0.08	-0.07	0.05	0.01		
13. Gender (1 = Male)	-0.23*	0.12	-0.15	0.05	0.03	
14. Nationality Dutch	-0.14	-0.11	-0.17^{+}	0.24*	-0.30**	0.09
15. Nationality Europe	0.11	0.16	-0.08	-0.04	0.06	0.15
16. Nationality World	0.06	-0.04	0.29**	-0.25*	0.31**	-0.27**

$^{+}p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

3.5.2 Manipulation Checks

To assess the social vision manipulation, we asked subjects to answer on a five-point Likert scale (strongly disagree—strongly agree) how much they agreed with the following statement: "In the job advertisement, the venture expresses concern for the natural environment, societal issues and human well-being." One-way ANOVA showed strong significant differences between conditions ($F(3, 98) = 44.70$, $p < 0.001$). Post-hoc contrast analysis revealed significant mean differences between all conditions involving a social vision versus those conditions that did not involve a social vision. The lowest significant mean difference reported was between the 'social' and 'no vision' conditions (*mean diff.* = 1.71, *S.E.* = 0.24, $p < 0.001$; Tukey adjusted).

To assess the effectiveness of our disruptive vision manipulation, we asked participants to answer on a five-point Likert scale (strongly disagree—strongly agree) how much they agreed with the statement: "In the job advertisement, the venture claims it aims to disrupt the market of supply chain analytics". One-way ANOVA showed strong significant differences between conditions on this query ($F(3, 98) = 7.50$, $p < 0.001$). Post-hoc contrast analysis indicated significant mean differences between all conditions involving a disruptive vision versus those conditions that did not involve a disruptive vision. The lowest significant mean difference reported was between the 'social' and 'social x disruptive' conditions (*mean diff.* = -0.89, *S.E.* = 0.27, $p = 0.007$; Tukey adjusted).

3.5.3 Testing

Table 2 shows the results of our analyses. Model 4 displays the regression of attraction of talent on our control variables. In line with prior research (Cable & Judge, 1996; Jones et al., 2014), job seekers who perceived value fit with the venture ($\beta = 1.27$, *S.E.* = 0.43, $p = 0.002$) were more likely to either provide their contact details or submit their CV. Additionally, we observe that older job seekers ($\beta = 0.58$, *S.E.* = 0.21, $p = 0.006$) and those from other EU-countries were more likely to be attracted to the job ($\beta = 1.49$, *S.E.* = 0.67, $p = 0.03$). We conducted a Wald test to assess the overall effect of the nationality variable and found it to be (marginally) significant at $\alpha < 0.1$ ($\chi^2 = 5.20$, *df.* = 2, $p = 0.08$). The difference between the job seekers from EU-countries and non-EU countries in terms of attraction was insignificant ($\chi^2 = 1.1$, *df.* = 1, $p = 0.31$).

Table 2. Regression results of models on job attraction.

	Opportunity for achievement (OLS)		
	Model 1 Estimate (Std .Error)	**Model 2** Estimate (Std .Error)	**Model 3** Estimate (Std .Error)
Intercept	3.14** (1.00)	3.60*** (0.99)	3.37** (1.00)
Social vision		-0.30* (0.13)	-0.45** (0.17)
Disruptive vision			-0.04 (0.18)
Social vision x Disruptive vision			0.34 (0.25)
Opportunity for achievement			
Value fit	0.33*** (0.08)	0.38*** (0.08)	0.39*** (0.08)
Expected salary venture			
Live near company	-0.21 (0.14)	-0.17 (0.14)	-0.21 (0.14)
Program SCM	0.01 (0.18)	-0.05 (0.18)	0.01 (0.18)
Program BIM	-0.18 (0.18)	-0.25 (0.17)	-0.19 (0.18)
Gender	-0.13 (0.13)	-0.14 (0.13)	-0.14 (0.13)
Age	-0.03 (0.04)	-0.05 (0.04)	-0.04 (0.04)
Nationality Europe	-0.15 (0.16)	-0.22 (0.16)	-0.24 (0.16)
Nationality World	-0.02 (0.18)	-0.01 (0.18)	-0.07 (0.18)
R- squared	0.21	0.25	0.28
F-statistic (df1/df2) & Log likelihood (df.)	3.06** (8/93)	3.43** (9/92)	3.17** (11/90)
Test[a] against competing models		5.30* (1)	1.73 (2)
AIC			

[a]For the OLS regression, the Wald test was used (F-test statistic), and the logistic regression applied a likelihood ratio test ($\chi 2$ test statistic).† $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Standard errors are in parentheses (S.E.).

Table 2. Regression results of models on job attraction (cont.).

	Talent attraction (logistic regression)			
	Model 4 Estimate (Std .Error)	**Model 5** Estimate (Std .Error)	**Model 6** Estimate (Std .Error)	**Model 7** Estimate (Std .Error)
Intercept	-19.75*** (5.69)	-17.81** (5.82)	-17.14** (5.88)	-29.61*** (7.96)
Social vision		-1.29* (0.58)	-1.49† (0.81)	-0.98 (0.93)
Disruptive vision			-0.48 (0.87)	-0.61 (0.99)
Social vision x Disruptive vision			0.39 (1.11)	0.05 (1.23)
Opportunity for achievement				2.46*** (0.71)
Value fit	1.27** (0.43)	1.47*** (0.44)	1.47*** (0.44)	1.07* (0.51)
Expected salary venture				
Live near company	0.27 (0.59)	0.39 (0.61)	0.36 (0.63)	1.08 (0.72)
Program SCM	0.85 (0.72)	0.57 (0.75)	0.55 (0.75)	0.70 (0.82)
Program BIM	0.80 (0.71)	0.49 (0.73)	0.46 (0.74)	1.27 (0.86)
Gender	0.77 (0.55)	0.75 (0.57)	0.74 (0.57)	1.04 (0.65)
Age	0.58** (0.21)	0.51* (0.22)	0.49* (0.22)	0.68** (0.25)
Nationality Europe	1.49* (0.67)	1.32* (0.67)	1.32† (0.68)	2.28** (0.88)
Nationality World	0.68 (0.66)	0.85 (0.70)	0.86 (0.72)	1.21 (0.83)
R- squared				
F-statistic (df1/df2) & Log likelihood (df.)	-51.49*** (9)	-48.83*** (10)	-48.67*** (12)	-39.87*** (13)
Test[a] against competing models		5.33* (1)	0.32 (2)	17.60*** (1)
AIC	120.99	117.66	121.34	105.74

† $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Standard errors are in parentheses (S.E.).[a] For the OLS regression, the Wald test was used (F-test statistic), and the logistic regression applied a likelihood ratio test ($\chi 2$ test statistic).

Table 2. Regression results of models on job attraction (cont.).

	Minimum required salary (OLS)			
	Model 8 Estimate (Std .Error)	**Model 9** Estimate (Std .Error)	**Model 10** Estimate (Std .Error)	**Model 11** Estimate (Std .Error)
Intercept	-216.41 (881.55)	-569.77 (874.95)	-339.89 (882.99)	489.67 (897.64)
Social vision		251.48* (108.85)	299.70* (143.58)	188.67 (143.48)
Disruptive vision			-102.68 (154.19)	-113.59 (148.38)
Social vision x Disruptive vision			-104.30 (208.05)	-20.22 (202.30)
Opportunity for achievement				-244.97** (85.70)
Value fit	-145.52* (70.56)	-185.36* (71.08)	-185.69* (71.23)	-91.02 (76.11)
Expected salary venture	0.82*** (0.12)	0.80*** (0.12)	0.80*** (0.12)	0.80*** (0.12)
Live near company	118.00 (118.38)	86.43 (116.49)	109.06 (117.19)	57.56 (114.17)
Program SCM	-68.48 (157.54)	-16.20 (155.60)	-55.47 (157.73)	-52.32 (151.74)
Program BIM	59.48 (148.85)	115.44 (147.47)	77.07 (149.22)	30.33 (144.48)
Gender	139.6 (111.12)	139.65 (108.59)	144.79 (108.29)	111.35 (104.83)
Age	54.79 (34.63)	69.71* (34.45)	62.13† (34.61)	53.08 (33.44)
Nationality Europe	16.10 (133.90)	76.10 (133.40)	92.69 (133.24)	33.28 (129.85)
Nationality World	-162.33 (152.15)	-176.87 (148.82)	-137.10 (151.32)	-154.62 (145.70)
R- squared	0.36	0.40	0.41	0.46
F-statistic (df1/df2) & Log likelihood (df.)	5.77*** (9/92)	5.97*** (10/91)	5.25*** (12/89)	5.86*** (13/88)
Test[a] against competing models AIC		5.34* (1)	1.39 (2)	8.17** (1)

† $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Standard errors are in parentheses (S.E.).[a] For the OLS regression, the Wald test was used (F-test statistic), and the logistic regression applied a likelihood ratio test ($\chi 2$ test statistic).

Model 5 provides the test for Hypothesis 1 that job seekers are less attracted to a venture communicating a social vision. In support of this Hypothesis, we find that potential recruits in the social vision conditions had 72 per cent lower odds of being attracted to the venture than respondents in the control or disruptive vision conditions (β = -1.29, *S.E.* = 0.58, p = 0.026). Model 8 shows the regression of minimum demanded salary on our control variables. The results indicate that job seekers who perceive value fit provide a salary discount on their gross monthly minimum required salary (β = -145.52, *S.E.* = 70.56, p = 0.042). This finding echoes prior research (Cable & Turban, 2003). We observe that respondents' perception of the venture's level of pay[9] for the position also positively influenced their minimum required salaries for the position (β = 0.82, *S.E.* = 0.12, $p < 0.001$).

We turn to Model 9 for our test of Hypothesis 2 that job seekers will ask a salary premium for a venture communicating with a social vision. Results show that respondents in the social vision condition asked a salary premium of 252 euro's on their minimum required gross monthly salary (β = 251.48, *S.E.* = 108.85, p = 0.023). This finding provides empirical support for Hypothesis 2.

Model 1 to 3 show our regressions on the respondents' perceived opportunity for achievement. The joint evidence from Models 2, 7 and 11 provide initial support for Hypothesis 3 that the opportunity for achievement mediates the relationship between social vision and our dependent variables. Model 1 includes only the control variables. Model 2 shows that a social vision negatively influences respondents' perceived opportunity for achievement (β = -0.30, *S.E.* = 0.13, p = 0.024). Models 7 and 11 provide evidence that respondent's perceived opportunity for achievement positively affects their attraction to the venture (β = 2.46, *S.E.* = 0.71, $p < 0.001$) and drives them to set minimum required salary discounts (β = -244.97, *S.E.* = 85.70, p = 0.005).

To test the mediation proposed in Hypothesis 3, we conducted causal mediation analysis. In support of Hypothesis 3a, we find that perceived opportunity for achievement mediates the relationship between social vision and talent attraction (β = -0.09, *95% CI* = [-0.19, -0.02], p = 0.026, 10,000 bootstraps[10], β_{total} = -0.21, *95% CI* = [-0.39, -0.01], p = 0.03). In support of Hypothesis 3b, we find that perceived opportunity for achievement mediates the relationship between social vision and

[9] We found no evidence that our manipulations affected respondents' perception of the amount of pay the venture would offer for the position.

[10] We used non-parametric bootstrapping with bias-corrected and accelerated (BCa) confidence intervals (DiCiccio & Efron, 1996).

minimum required salary (β = -70.75, *95% CI* = [19.08, 271.47], p = 0.036, 10,000 bootstraps, β_{total} = 249.71, *95% CI* = [33.66, 441.45], p = 0.024).

To test Hypothesis 4, that disruptive vision moderates the effect of social vision on perceived opportunity for achievement, we included the interaction term in Model 3. The model provides no evidence for a statistically significant interaction effect between the two vision types on our mediator (β = 0.34, *S.E.* = 0.25, p = 0.17). However, moderated mediation analysis indicates that the significant mediation effect of opportunity for achievement on attraction is particularly pronounced in the social vision condition ($\beta_{indirect}$ = -0.14, *95% CI* = [-0.30, -0.04], p = 0.008, 10,000 bootstraps) and not in the social x disruptive condition (β = -0.03, *95% CI* = [-0.14, 0.06], p = 0.52, 10,000 bootstraps). Similarly, the mediation effect of opportunity for achievement on minimum salary requirements is driven by the social vision condition (β = 111.05, *95% CI* = [19.08, 271.50], p = 0.026, 10,000 bootstraps) and not by the social x disruptive condition (β = 27.16, *95% CI* = [-36.95, 158], p = 0.49, 10,000 bootstraps).

3.6 DISCUSSION

We investigate whether and how social visions help entrepreneurs attract talent. This is an important challenge for the entrepreneurs because they are in a dire need of skilled professionals who help grow their venture, but for whom the venture's limited resources fall short in matching the offer of large established organizations. While literature suggest that entrepreneurs' vision communication can turn the tide, its relationship with talent attraction at the venture level remains unexplored. In particular, a long stream of human resource research dictates that communicating social impact to potential recruits help convince to join the team, albeit in large established firms. We challenge this dominant wisdom emanating from the human resources research's findings. We hypothesize and subsequently show in a field experiment that social visions are less likely to attract applicants to the start-up and prompt higher salary demands from the applications. This is because these social visions limit job seekers' perceived opportunity for achievement of a career at the start-up. Our research has strong theoretical implications for research on social entrepreneurship, vision communication, and human resources.

3.6.1 Theoretical Implications for Entrepreneurship Research

This study responds to the recent call for more empirical research into social for-profit ventures and talent recruitment (Wry & Haugh, 2018: 568). A current set of

qualitative investigations suggest that potential recruits may struggle with the tension between the social and business missions of social for-profit ventures and that the start-ups need to actively balance these two logics in socializing them (Battilana & Dorado, 2010; Smith, Gonin, & Besharov, 2013; Smith & Besharov, 2017; Wry & York, 2017). However, the effects of communicating social aims on the initial attraction of talent as well as the underlying causal processes of talent's job decision in social ventures have not yet been considered. Our work addresses this gap through a field-experiment with job seekers. We show that, indeed, start-ups purporting to be social *and* for-profit may have problems hiring talent, because the social visions they communicate can limit job seekers self-serving expectations about their career, hampering the perception of the job at the venture as an opportunity for achievement.

In a broader sense, this contributes to a deeper understanding of the challenges that social for-profit ventures need to overcome to acquire the necessary resources (McMullen, 2018; Siqueira, Guenster, Vanacker, & Crucke, 2018; Smith, W. K. et al., 2013; Wry & Haugh, 2018), and points toward a specific downside of promoting their social aims to potential employees. Namely, ventures may limit their initial pool of applicants by communicating a social vision. Furthermore, our findings suggest that job seeking audiences may not directly perceive the often coined balancing act between social and for-profit logics during initial communication and socialization efforts in the hiring process (e.g., Battilana & Dorado, 2010; Dacin et al., 2011). In fact, we found no support for any positive effects on attraction by explicitly communicating extraordinary returns through a disruptive vision in addition to the social vision. This result highlights that the hierarchical ordering of social and economic aims is likely to persist in the eyes of an audience who have incomplete information about the entrepreneurs' intentions and the start-ups viability (e.g., Bacq et al., 2016; Dacin, Dacin, & Matear, 2010; Moizer & Tracey, 2010). Thus, simply highlighting both social and for-profit aims does not appear to solve the tension between them. Future research should examine how entrepreneurs can balance the communication of their social and business aims, in order to increase their chances of attracted talented team members.

We extend the view of entrepreneurs' vision communication as a form of future-oriented impression management that promotes what the venture will achieve and will become through their proposed activities (Clarke, Cornelissen, & Healey, 2018; Garud et al., 2014; Highhouse, Brooks, & Gregarus, 2009; Navis & Glynn, 2011). Literature acknowledges the importance of future-oriented impression management efforts, such as visions, for influencing stakeholder sensemaking about the

distinctive qualities of a new venture (Glynn & Navis, 2013; van Werven et al., 2015). However, empirical investigations into such efforts are scarce. A recent exception (van Balen et al., 2019) shows how disruptive vision communication affects investor sensemaking. In that light, our investigation of social visions contributes to the view that future-oriented communication has strong, but often differential effects on various entrepreneurial audiences. We also offer the social vision as a particular integrative theme of entrepreneurs' communications, which they may use in the pursuit of particular aims (e.g., Hallen, 2008). While we broaden scholarly understanding of how key venture stakeholders respond to the entrepreneurs' future-oriented communications and how they affect venture-level resource mobilization, we motivate future research to investigate other forms of future-oriented impression management efforts and their effects on varying audiences, such as customers and suppliers, and the mechanisms that underlie their sensemaking.

Furthermore, research into vision communication content and the processes through which it may mobilize people has been scant (Van Knippenberg & Stam, 2014). We further advance research on vision communication by espousing perceived opportunity for achievement as a mediator of the vision content–talent attraction relationship. This finding suggests that particular vision content may affect stakeholders' perceptions of the venture differently. In particular, we argue that the type of decision the stakeholders take, strongly affect how they interpret vision content. For example, whereas investors may interpret vision content in light of potentially expected financial returns (Huang & Pearce, 2015; van Balen et al., 2019), job seekers interpret it in light of potentially expected personal opportunities. By espousing such interpretative mechanisms of different stakeholders, we have also shown why particular downsides to visionary communications may exists. Thus, we expand to the limited number of works on the downsides of visionary communications (e.g., Ateş et al., 2018; Berson et al., 2015; Carton et al., 2014; Conger, 1991; van Balen et al., 2019), by showing that social visions can backfire in attracting talent to the venture team.

3.6.2 Implications for the Human Resources Research

Our investigation of job seekers' sensemaking of social vision communication as a specific form of vision content responds to the call for investigating the mechanisms underlying the communication and applicant attraction relationship (Aguinis & Glavas, 2012; Breaugh, 2013; Celani & Singh, 2011). Specifically, we espouse potential recruits' perception of the job presented in the vacancy as an opportunity

for achievement and show that their interpretation of the social vision may limit this perception. Our finding supports the notion that communication affects job seekers' expectations about the particular work environment an organization offers (Wanous et al., 1992). However, we are the first to extend this to the venture level and motivate future research to further investigate underlying mechanisms.

Last, we contribute also to the literature on person-organization (PO) fit by showing that beyond value congruence, employment decision are driven by job seekers' perception that a future career has opportunity for personal achievement. Classically, this literature distinguishes between supplementary (e.g., values, goals, norms) and complementary fit (e.g., pay, development opportunities, task type), and suggests that organizational communications primarily affect the organization-related beliefs that determine supplementary fit (Kristof-Brown et al., 2005; Kristof, 1996; Rynes & Miller, 1983). Therefore, as visions communicate high level goals (i.e. ultimate goals) and values, PO-fit theory suggests that vision communication will affect job seekers' supplementary fit in order to determine attraction. However, we found that the negative effect of social vision communication on perceived opportunity for achievement in job seekers upholds beyond value fit. Our theory stipulates that this is because social aims may question their opportunity for personal achievement. This implies that, despite the clear link between vision communication and supplementary fit, vision communications can also affect evaluations of complementary fit. We remind research of the need to further investigate how and when organizational communications have a cross-over effect between supplementary and complementary fit (e.g., Cable & Edwards, 2004). For example, research could further investigate how pay as a signaling mechanism affects job seekers' supplementary fit perceptions (cf. Cable & Judge, 1994).

3.6.3 Managerial Implications

A recent body of research documents that entrepreneurs' vision communication as an impression management technique affects stakeholders' understanding of a venture (Garud et al., 2014; van Balen et al., 2019). With visions entrepreneurs communicate how their venture's activities translate into market outcomes in the future (e.g., how they will create societal impact and technological change). While entrepreneurs' use of visions is highly recommended to communicate what the venture will attain, we advise entrepreneurs to craft the content of these visions with great care and remain attentive to the potential up- and downsides of particular forms of communication. Research points out that choosing to use specific types of language, such as figurative or assertive speech (Clarke et al., 2018; Parhankangas

& Ehrlich, 2014), including words high in imagery (Emrich et al., 2001), or the use integrative themes (e.g., focus on conveying images of growth (Baum et al., 1998; Baum & Locke, 2004), aspiring leadership (Martens et al., 2007), or disruption (van Balen et al., 2019), can have diverging effects on how stakeholders view and behave towards the venture.

We extend this advice with our investigation of social visions and recruitment. Communicating a broader impact has gained much popularity in entrepreneurial practice. However, our findings show that the presentation of social visions may damage entrepreneurs' ability to attract talent to the venture team as they communicate limited opportunity for achievement to job seekers. While further investigations should test the robustness of these finding and the conditions under which the social visions may benefit or hamper entrepreneurs, our work already shows that they should use them discreetly. With some reservation we advise that, given the implications of prior research and our findings, entrepreneurs should attempt to communicate a social vision as complementary to other (vision) communications and not in lieu of.

3.6.4 Limitations and Directions for Future Research

Additional due diligence by the job seeker and the entrepreneurs' socialization efforts in managing job seekers' expectations, may both play a major role in the eventual job decisions. However, given that start-ups are relatively unknown to wider audiences and have limited resources available for recruitment as compared to larger established companies (Barber et al., 1999; Cardon & Stevens, 2004; Stinchcombe, 2000), the role of vision communication is particularly crucial in recruits' images of the start-up used in initial selection (cf. Beach, 1993). Our investigation shows that initial behavioral intentions are affected by the entrepreneurs' communications. Future research should unearth how additional steps in this recruitment and socialization process affect job seekers intentions and behaviors towards the venture.

Although our analyses did not reveal the moderating effect of disruptive visions (i.e. emphasizing potential extraordinary financial returns), there might be contingency effects that explain when, how and for whom social visions lead to greater or lesser attraction to the vacancy. For example, future research should investigate the effects of an individual's 'other' vs 'self'-orientation on job seekers' sensemaking of a social visions (de Dreu & Nauta, 2009). Such orientations may affect how people differentially interpret specific sets of similar information.

Furthermore, while our work shows that using social aims as a substitute to the limited offering of a start-up in terms of job security, fringe benefits and pay, earlier work into communication of social aims and recruitment focused primarily on social communications as complementary to existing organizations job offerings (e.g., Aguinis & Glavas, 2012; Backhaus et al., 2002; Evans & Davis, 2011; Jones et al., 2014; Turban & Greening, 1997) and show strong positive effects of social communications. This suggests that the relationship between communication of social visions and recruitment may be contingent on how the social aims are presented. Future research should investigate whether and how social visions can be presented as complementary to other communications in the start-up context.

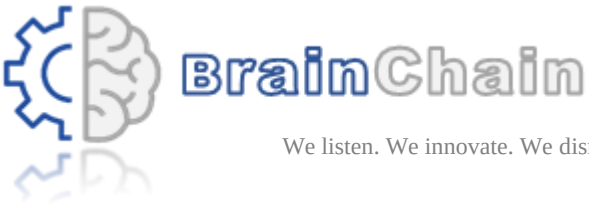
We tested our hypotheses through a field experiment with job seeking students. While our sample theoretically generalizes to the population of talent often recruited by start-ups, it was obtained from a set of students from three master programs of a particular Dutch university. Furthermore, while the number of initially attracted students was quite high, the eventual size of the sample was somewhat smaller due to the fact that many of the students had already found a job and could not be included in the analysis. Future research should attempt to overcome these contextual sampling limitations, and replicate and extend our findings beyond the current population.

3.7 CONCLUSION

In summary, we provide evidence that entrepreneurs' communication of a social vision for their start-up may hamper their ability to attract talent, because it limits recruits' perception of the venture as an opportunity for achievement. For entrepreneur scholars, our work motivates scholars to further investigate how social for-profit ventures can overcome their communicative challenges in acquiring necessary resources. Also, we affirm the gravity of researching vision communication as a particular form of impression management for entrepreneurs, of which the downsides should be carefully taken into account. For human resource research, we suggest that the overlapping effects of the different types of fit should be considered in probing job seekers' choices. Last, our work suggests that entrepreneurs should employ social visions, and any vision content for that matter, with great caution and remain aware of the many communicative aspects that may play a role in stakeholder sensemaking.

APPENDIX. FIELD EXPERIMENT VISION COMMUNICATION AND VACANCY MANIPULATIONS

Experimental Condition 1: High Social Vision—High Disruptive Vision



Our vision

Who we are

We are BrainChain: the future disruptor and sustainability leader in supply chain optimization. We were founded in 2015 on the belief that supply chain optimization and automation should help the move to a sustainable and socially responsible world and can be done in a fundamentally different and more effective way than the market currently delivers.

At every turn, we ask ourselves how we can transform the market and can help the environment and society benefit from the optimization and automation of the world's supply chains. For too long companies have optimized supply chains in a fundamentally inefficient and ineffective way and at the cost of negative human and environmental impact, relying on myopic decision making, and fragmented and outdated services. This has to change.

What we do

Our services and solutions drastically change how optimization and automation work, and are non-compromising in improving sustainability and social responsibility. We provide supply chain optimization and automation services based on advanced algorithms and artificial intelligence. We deliver a fully integrated approach of consulting and analytics with long term radical approach. Our core product is a single platform on which all world-class algorithms operate and that is easily connected with an organization's existing business processes and infrastructures.

Where we are going

We are already working with many large organizations, including national railway companies, horticulturists, and water treatment and transportation companies. Through our integrated solutions, we ensure that all organizations have access to endlessly scalable algorithms, real artificial intelligence, and exceptional analytics. As a result, we drastically improve environmental and human footprints of their supply chains and revolutionize supply chain optimization at all levels.

Making the World a Better Place with You?

We envision a future where supply chains work in a fundamentally different and more effective way, and have a positive impact on nature and society. A future where we have become the next standard in supply chain optimization and automation, and foster a sustainable world for generations to come.

Job vacancy

Business analytics / Data Science - AI & Operational Research

Job title - Operations Research Consultant – Rotterdam office

BrainChain is looking for you: a young and enthusiastic starter. As an operations research consultant at BrainChain, you fuel the paradigm shift in supply chain optimization and will help secure a future where supply chains give back to the world. Through our platform, you will provide advice, analytics and algorithms to optimize and automate organizations' operational supply chain decision making.

Join us and design, build, implement and execute groundbreaking, world-improving concepts, and be part of our green and disruptive team in the field of Industrial Internet of Things, Supply Chain Optimization, and Artificial Intelligence.

What we can offer you:

- You will learn from the best—our highly experienced people
- You will work independently and have much freedom for your own projects and personal development
- You will solve complex puzzles and hack sustainability challenges and drive our revolution
- You will work on the most innovative projects out there
- You will enjoy an honest, fun, and transparent culture

Job requirements

- Masters degree or equivalent in Business Administration, Information management, Economics, Supply Chain / Logistics / Transportation or Operations Research
- A knack for aligning stakeholders and customers to help achieve our vision of a future where supply chain optimization works in a fundamentally different and more effective way, and has a positive impact on nature and society.
- Proven track record in distilling a required solution out of a wide variety of opinions, data systems, and other sources
- A can-do attitude, enthusiasm, and initiative.
- Excellent interpersonal skills and fluent in English.
- Experience translating customer demands into market transforming and responsible solutions
- We favor data analytics skills in Python, SQL, R or Javascript. However, these are not necessary requirements.

Experimental Condition 2: High Social Vision—Low Disruptive Vision

BrainChain

We listen. We innovate. We help people!

Our vision

Who we are

We are BrainChain: the future sustainability leader in supply chain optimization. We were founded in 2015 on the belief that supply chain optimization and automation should help the move to a sustainable and socially responsible world.

At every turn, we ask ourselves how we can help the environment and society benefit from optimization and automation of the world's supply chains. For too long companies have optimized supply chains at the cost of negative human and environmental impact, relying on myopic decision making. This has to change.

What we do

Our services and solutions are non-compromising in improving sustainability and social responsibility. We provide supply chain optimization and automation services based on advanced algorithms and artificial intelligence. We deliver a fully integrated approach of consulting and analytics with a long term approach. Our core product is a single platform on which all world-class algorithms operate and that is easily connected with an organization's existing business processes and infrastructures.

Where we are going

We are already working with many large organizations, including national railway companies, horticulturists, and water treatment and transportation companies. Through our integrated solutions, we will ensure that all organizations have access endlessly scalable algorithms, real artificial intelligence, and exceptional analytics. As a result, we drastically improve environmental and human footprints of their supply chains at all levels.

We envision a future where supply chains have a positive impact on nature and society and foster a sustainable world for generations to come.

Job vacancy

Business analytics / Data Science - AI & Operational Research

Job title - Operations Research Consultant – Rotterdam office

BrainChain is looking for you: a young and enthusiastic starter. As an operations research consultant at BrainChain, you will help secure a future where supply chains give back to

the world. Through our platform, you will provide advice, analytics and algorithms to optimize and automate organizations' operational supply chain decision making.
Join us and design, build, implement and execute world-improving concepts, and be part of our green team in the field of Industrial Internet of Things, Supply Chain Optimization, and Artificial Intelligence.

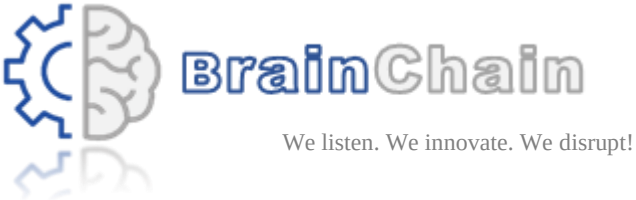
What we can offer you:

- You will learn from the best—our highly experienced people
- You will work independently and have much freedom for your own projects and personal development
- You will solve complex puzzles and hack sustainability challenges
- You will work on the most innovative projects out there
- You will enjoy an honest, fun, and transparent culture

Job requirements

- Masters degree or equivalent in Business Administration, Information management, Economics, Supply Chain / Logistics / Transportation or Operations Research
- A knack for aligning stakeholders and customers to help achieve our vision of a future where the supply chains have a positive impact on nature and society.
- Proven track record in distilling a required solution out of a wide variety of opinions, data systems, and other sources
- A can-do attitude, enthusiasm, and initiative.
- Excellent interpersonal skills and fluent in English.
- Experience translating customer demands into responsible solutions
- We favor data analytics skills in Python, SQL, R or Javascript. However, these are not necessary requirements.

Experimental Condition 3: Low Social Vision—High Disruptive Vision



Our vision

Who we are

We are BrainChain: the future disruptor in the world of supply chain optimization. We were founded in 2015 on the belief that supply chain optimization and automation can be done in a fundamentally different and more effective way than the market currently delivers.

At every turn, we ask ourselves how we can transform the market of supply chain optimization and automation. For too long companies have optimized supply chains in a very ineffective and inefficient way, relying on fragmented and outdated services. This has to change.

What we do

Our services and solutions drastically change how optimization and automation work. We provide services based on advanced algorithms and artificial intelligence. We deliver a fully integrated approach of consulting and analytics with a radical approach. Our core product is a single platform on which all world-class algorithms operate and that is easily connected with an organization's existing business processes and infrastructures.

Where we are going

We are already working with many large organizations, including national railway companies, horticulturists, and water treatment and transportation companies. Through our integrated solutions, we ensure that all organizations have access to endlessly scalable algorithms, real artificial intelligence, and exceptional analytics. As a result, we revolutionize supply chain optimization at all levels.

We envision a future where supply chains work in a fundamentally different and more effective way, and where we have become the next standard in supply chain optimization and automation.

Job vacancy

Business analytics / Data Science - AI & Operational Research

Job title - Operations Research Consultant – Rotterdam office

BrainChain is looking for you: a young and enthusiastic starter. As an operations research consultant at BrainChain, you will help fuel the paradigm shift in supply chain optimization. Through our platform, you will provide advice, analytics and algorithms to optimize and automate organizations' operational supply chain decision making.

Join us and design, build, implement and execute groundbreaking concepts, and be part of our disruptive team in the field of Industrial Internet of Things, Supply Chain Optimization, and Artificial Intelligence.

What we can offer you:

- You will learn from the best—our highly experienced people
- You will work independently and have much freedom for your own projects and personal development
- You will solve complex puzzles and our revolution
- You will work on the most innovative projects out there
- You will enjoy an honest, fun, and transparent culture

Job requirements

- Masters degree or equivalent in Business Administration, Information management, Economics, Supply Chain / Logistics / Transportation or Operations Research
- A knack for aligning stakeholders and customers to help achieve our vision of a future where supply chain optimization works in a dramatically different and more effective way
- Proven track record in distilling a required solution out of a wide variety of opinions, data systems, and other sources
- A can-do attitude, enthusiasm, and initiative.
- Excellent interpersonal skills and fluent in English.
- Experience translating customer demands into market transforming solutions
- We favor data analytics skills in Python, SQL, R or Javascript. However, these are not necessary requirements.

Experimental Condition 4: Low Social Vision—Low Disruptive Vision

Our vision

Who we are

We are BrainChain: a young company in supply chain optimization. We were founded in 2015 on the belief that supply chain optimization and automation are a core need of a globalizing world. It is our calling.

At every turn, we ask ourselves how we can help improve our client's supply chain. For too long companies have only worried about making supply chains work without mistakes, relying on reactive approaches to problems. This has to change.

What we do

Our services and solutions are proactive and drastically improve efficiency and effectiveness. We provide supply chain optimization and automation services based on advanced algorithms and artificial intelligence. We deliver a fully integrated approach of consulting and analytics with an innovative approach. Our core product is a single platform on which all world-class algorithms operate and that is easily connected with an organization's existing business processes and infrastructures.

Where we are going

We are already working with many large organizations, including national railway companies, horticulturists, and water treatment and transportation companies. Through our

integrated solutions, we ensure that all organizations have access to endlessly scalable algorithms, real artificial intelligence, and exceptional analytics. As a result, we help them to improve their supply chain performance on all levels.

Job vacancy

Business analytics / Data Science - AI & Operational Research

Job title - Operations Research Consultant – Rotterdam office

BrainChain is looking for you: a young and enthusiastic starter. As an operations research consultant at BrainChain, you will help secure our success. Through our platform, you will provide advice, analytics and algorithms to optimize and automate organizations' operational supply chain decision making.

Join us and design, build, implement and execute new concepts, and be part of our dream team in the field of Industrial Internet of Things, Supply Chain Optimization, and Artificial Intelligence.

What we can offer you:

- You will learn from the best—our highly experienced people
- You will work independently and have much freedom for your own projects and personal development
- You will solve complex puzzles and drive our success
- You will work on the most innovative projects out there
- You will enjoy an honest, fun, and transparent culture

Job requirements

- Masters degree or equivalent in Business Administration, Information management, Economics, Supply Chain / Logistics / Transportation or Operations Research
- A knack for aligning stakeholders and customers to help optimize supply chains
- Proven track record in distilling a required solution out of a wide variety of opinions, data systems, and other sources
- A can-do attitude, enthusiasm, and initiative.
- Excellent interpersonal skills and fluent in English.
- Experience translating customer demands into novel solutions
- We favor data analytics skills in Python, SQL, R or Javascript. However, these are not necessary requirements.

CHAPTER 4

NEVER CHANGE A WINNING TEAM?

The Moderating Effect of Prior Team Performance on the Membership Change - Venture Team Success Relationship.

4.1 INTRODUCTION

Entrepreneurs need to build an effective venture team to achieve high performance and high growth. Maintaining this high performance is essential for ventures' continued growth. However, a rapidly growing business creates a constant influx of new people, and an outflow of old team members (Boeker & Karichalil, 2002; DeSantola & Gulati, 2017). Despite decades of scholarly work how team structures, processes, and dynamics can create high performing teams (for reviews, see Cronin, Weingart, & Todorova, 2011; Humphrey & Aime, 2014; Kerr & Tindale, 2004; Mathieu, Tannenbaum, Donsbach, & Alliger, 2014; Mathieu, Hollenbeck, van Knippenberg, & Ilgen, 2017), less is known about how to sustain high team performance during the phase in which businesses are continuously attracting new talent. This raises the question how membership change affects venture teams that have achieved high performance.

While acknowledging the importance of investigating the dynamics of the entire venture team in explaining early stage venture success (Cooney, 2005), literature on new venture teams have predominantly studied the entrepreneurs or leadership of

the start-up (e.g., Beckman & Burton, 2008; Carland & Carland Jr, 2012; Hmieleski & Ensley, 2007; Hmieleski, Cole, & Baron, 2012; West III, 2007). For example, while scholars clearly show that venture management team dynamics and shifts in the leadership structure affect important venture outcomes, they also acknowledge that such changes may stem from changes in the broader venture team (Beckman, Burton, & O'Reilly, 2007; Boeker & Wiltbank, 2005; Ensley, Hmieleski, & Pearce, 2006). However, dynamics of the broader venture have so far not been investigated. We extend our scope to include all individuals working at the venture that both actively participate in the development and implementation of the evolving strategy of the new venture *and* in its daily operations (cf. Klotz et al., 2014: 227). In that sense, early stage venture teams can be seen as project teams founded around entrepreneurs' ideas. Thus, we draw from the rich team literature in answering our question.

This stream of research suggests that as past performance increases, team members converge in their thinking and develop rigid routines (Mohammed et al., 2010; Peterson & Behfar, 2003; Staw et al., 1981), which in turn stifle creativity and subsequent performance (Katz, 1982; March, 1991). Membership change—changes in team composition due to new members joining (i.e., newcomers) and/or existing ones leaving the team (i.e., leavers)—has been suggested as a remedy to counteract inertia and stagnation (e.g., Choi & Thompson, 2005; March, 1991; Perretti & Negro, 2007). Accordingly, membership change introduces new perspectives and ideas to the team (Ancona & Caldwell, 1992; Choi & Levine, 2004; de Dreu & West, 2001), and helps team members redefine the team's routines to meet changing task demands (Arrow & Mcgrath, 1993).

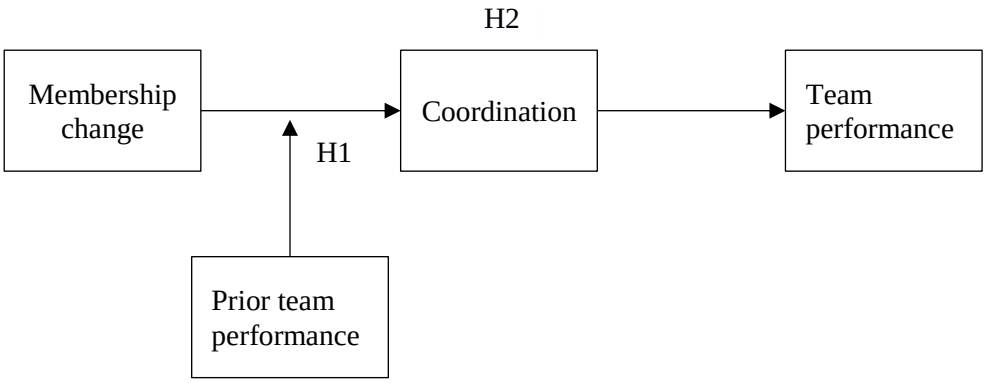
We challenge this received wisdom and argue that membership change is detrimental to team performance, especially for those teams with high prior performance, such as entrepreneurial teams that have achieved high venture growth and want to maintain it. Membership change disrupts that team's coordination routines, and urges them to redefine these routines for subsequent tasks (e.g., Argote, L., Insko, Yovetich, & Romero, 1995; Lewis, Belliveau, Herndon, & Keller, 2007; Summers, Humphrey, & Ferris, 2012). Whereas teams with low prior performance use the disruption as an opportunity to reflect on their existing routines, teams with high performance converge in their thinking and become less likely to adapt their routines. This is because teams with high prior performance tend to favor existing routines, as they believe that what worked well in the past should work well in the future. However, these routines may prove to be dysfunctional in light of a new team composition. Additionally, high performing teams may experience

friction when socializing newcomers, as existing members discourage any newcomer behavior that deviates from the status quo (e.g., Choi & Levine, 2004; Cini, Moreland, & Levine, 1993; Gruenfeld, Martorana, & Fan, 2000; Kane, Argote, & Levine, 2005; Molleman & van der Vegt, 2007). This friction makes it more difficult to integrate fresh perspectives brought by newcomers, fostering conflict between the oldtimers and newcomers and leading to coordination problems between the two subgroups. Therefore, we hypothesize a mediated moderation model wherein prior team performance moderates the relationship between membership change and team coordination problems, which in turn affects subsequent team performance (Figure 1). We collected longitudinal performance and team membership data from 665 video game sequels released between 1978 and 2002. We chose this empirical setting of the video game industry from this period to proxy the venture team context. The team dynamics in that era of video game industry match that of the venture team context, as most project were initiated by a single entrepreneur who grew a team around them. The results of our analyses of these data provide empirical support for our theoretical model.

This study offers four contributions to team and entrepreneurship research alike. First, our study motivates entrepreneurship and venture management team research to broaden its scope to the effects the larger venture team on important venture outcomes (e.g., Busenitz et al., 2005; Ensley et al., 2006). Second, we challenge the received wisdom that membership change acts as a panacea for stagnation in teams with high prior performance. Our results show that membership change creates more coordination problems in teams with high prior performance than in teams with low prior performance, which in turn hamper subsequent performance. Second, our work offers prior team performance as a novel contingency factor for research on routines and mental models (cf. Lewis et al., 2007; Summers et al., 2012) and newcomer socialization literature (for a review, see Rink, Kane, Ellemers, & van, 2013). Specifically, we identify coordination as the factor underpinning the negative effects of prior team performance and membership change on subsequent team performance. Third, we emphasize that prior team performance is more than just a control variable in team research, and is itself an important determinant of subsequent team processes. We respond to calls for research that incorporates prior team outcomes as contingency factors of processes in team dynamism (cf. Cronin et al., 2011; Humphrey & Aime, 2014; Mathieu et al., 2014). Our paper shows that prior team performance is an important group level characteristic that needs to be taken into account when examining teams experiencing membership change.

Figure 1

Graphical Representation of Theoretical Model



4.2 THEORETICAL BACKGROUND

4.2.1 Prior performance and Stagnation

Team members form expectations about future team outcomes by observing past outcomes (Dirks, 2000). Hence, prior team performance alters beliefs and reference structures of individuals in the team (Peterson & Behfar, 2003; Staw, 1975), which in turn affect subsequent member interactions and team performance (Cronin et al., 2011; DeShon et al., 2004; Mathieu, Maynard, Rapp, & Gilson, 2008). For example, high prior performance raises high expectations for future performance. The feedback implied by high performance fosters inertia in the form of reinforced team processes and behaviors, as team members believe that having "common expectations for the task and team" (Cannon-Bowers, Salas, & Converse, 1993) helps the team to maintain their level of performance in the future (Mathieu et al., 2000; Rentsch & Klimoski, 2001). This optimistic inertia can be to the detriment of team performance, however, in that teams may become more rigid and less adaptive in times of uncertainty (Geiger & Antonacopoulou, 2009; Levinthal & March, 1993), which makes them vulnerable to stagnation over time (Katz, 1982; March, 1991).

4.2.2 Team Membership Change as a Solution to Stagnation

Membership change has been advocated to prevent such rigidities by infusing teams with diverging perspectives and new ideas through the entry of newcomers (Ancona

& Caldwell, 1992; de Dreu & West, 2001; De La Hera, Carlos Maria Alcover & Rodriguez, 1999). As early as 1960, work by Ziller and colleagues showed that teams undergoing membership change exhibit greater creative output (Ziller & Behringer, 1960; Ziller, Behringer, & Goodchilds, 1962; Ziller, 1965). Choi & Thompson (2005) affirm these findings, and add that the entry of new individuals not only provides new ideas and perspectives directly, but also has the potential to make residing members themselves (i.e., oldtimers) more creative. Indeed, newcomers and their influence on oldtimers can push the team towards more explorative behaviors and thus boost innovative output (March, 1991; Perretti & Negro, 2007). Consequently, membership change stimulates reflective behaviors and makes the team less rigid and more adaptive (Arrow & Mcgrath, 1993; Gorman, Amazeen, & Cooke, 2010).

We challenge the received wisdom about the ability of membership change to break stagnation in team processes. Specifically, we theorize that high performing teams, which are supposedly prone to stagnation, suffer more from membership change than do teams with low prior performance. Two mechanisms underlie our theory: the team's ability in (i) adapting to disruptions created by departing team members, and in (ii) socializing newcomers. First, departing team members cause a loss in access to knowledge and interrupt interaction patterns that are foundational to team processes. While such a disruption may help teams with poor prior performance weed out poorly performing members, and provide an opportunity to reflect and improve upon suboptimal team processes, it hurts teams with high prior performance. Specifically, in such teams, the rigidity of their routines and team mental models prevent them from adapting their routines to the new team composition, creating coordination problems. Second, residing members of high performing teams fail to appropriately socialize their newcomers, which further hinders coordination. In the following section, we develop a mediated moderation model such that coordination mediates the team performance effects of the interplay between prior team performance and membership change (see Figure 1).

4.3 HYPOTHESIS DEVELOPMENT

Coordination is one of the central determinants of a team's performance. Coordination is "the process of orchestrating the sequence and timing of interdependent actions" (Marks et al., 2001: 376-368) and involves explicit and purposeful exchange of information to synchronize team members' actions and behaviors (Brannick et al., 1993; Rico et al., 2008). Teams that have previously

achieved high performance have benefitted from effective coordination among their members.

Membership change disrupts coordination through both inward and outward flows of team members. In the former case, the addition of new members requires residing members to integrate new individuals into their coordination routines and knowledge structure. In the latter case, the exit of team members weakens knowledge structures and interrupts interaction patterns. Taken together, a team facing membership change thus needs to explicitly re-coordinate: team members need to reallocate tasks and agree on new patterns of interaction in light of both incoming and outgoing members.

We argue that membership change has distinct effects on subsequent coordination in teams with either high or low prior performance as those teams differ in how they (i) adapt to disruptions created by departing team members, and in how they (ii) absorb newcomers.

4.3.1 Prior Team Performance and Team Mental Models

First, members leaving the team disrupt the team's mental model about members' knowledge and roles. Team mental models foster a common understanding about members' knowledge, roles, and task environment, and how these factors contribute to team success (Brandon & Hollingshead, 2004; He, Butler, & King, 2007; Klimoski & Mohammed, 1994; Lewis, Lange, & Gillis, 2005; Ren & Argote, 2011). A shared and well-developed mental model allows team members to develop a common anticipation of which efforts and responsibilities to expect, and helps the team to coordinate actions and adapt behavior to task demands (Cannon-Bowers et al., 1993; Rouse, Cannon-Bowers, & Salas, 1992). Failing to adapt team mental models, therefore, can hamper subsequent coordination (Lewis et al., 2007).

We argue that teams with high prior performance lose highly valuable knowledge and proven routines when members leave the team. More importantly, these teams suffer most acutely from membership change because their team mental model is rigid and maladaptive to changes, making them unwilling and unlikely to adapt in the face of change. Specifically, the achievement of high performance initiates performance feedback narratives that shape team member beliefs about the foundations of their team's performance. In case of a high performing team, performance feedback entrenches within them the shared belief that they possess hard-to-replace qualities that allow the team to perform well on the task at hand (DeShon et al., 2004; Gully, Incalcaterra, Joshi, & Beaubien, 2002) and compels

team members to attribute their success to the superiority of their current approach, and to naturally feel no need to adapt (Campbell & Sedikides, 1999; Miller. & Ross, 1975). Thus, achieving high performance drives team members to incorporate shared evaluative belief structures about their performance (Cannon-Bowers et al., 1993; Mohammed, Klimoski, & Rentsch, 2000) and the team states that members prefer or expect based on prior experiences (Mohammed et al., 2010) in their team mental models.

Therefore, as membership change presents the team with a new and uncertain situation, teams that have previously performed highly experience such a change as a threat to the continued performance of their team and therefore become more rigid in their behaviors. As a result, when re-establishing coordination, residing members tend to repeat behavioral patterns that they believe to have worked well in the past and are less reflective of their behaviors and routines. These routines and behaviors may be dysfunctional in light of the void created by departing members by being too dependent on underlying knowledge structures and routines that are no longer intact. Thus, membership change hampers coordination in high performing teams. In contrast, we argue that lower performing teams experience the disruptive effects of membership change on coordination to a lesser extent. In a team that has not yet achieved high performance, the mental model of roles, knowledge, and task environment, and how they each relate to high performance, diverges more widely among individual team members (cf. Mathieu et al., 2000). Indeed, it is less likely in lower performing teams that there is a strong or salient common understanding of which behaviors and interactions contribute to high performance. However, their lack of success may make team members more likely to have a shared sense of what fails – that is, a common understanding of what to avoid in subsequent tasks (Cannon & Edmondson, 2001). Thus, membership change offers the opportunity to weed out poorly performing members, and the departure of members fuels an opportunity for oldtimers to reflect and change potentially dysfunctional routines. In lower performing teams, therefore, the negative effects of the disruption to existing routines is counterbalanced by a potential impetus to pursue functional improvements to these routines in subsequent efforts.

4.3.2 Prior Team Performance and Newcomer Socialization

The second mechanism that explains how high and low performing teams experience membership change is the socialization of newcomers. To benefit from the unique knowledge and fresh perspectives that newcomers bring to the team, residing members need to engage in the socialization of newcomers—a two-way

process whereby the newcomers assimilate the shared cognition, knowledge, norms and values needed to perform their roles in the team, as well as the team's assimilation of the newcomers cognition, knowledge, norms and values (Anderson & Thomas, 1996; Cooper-Thomas & Anderson, 2006; Kozlowski & Bell, 2003; Levine & Moreland, 1991; O'Connor, Gruenfeld, & McGrath, 1993). Depending on how the socialization process unfolds, new member additions can be a great source of novel ideas and perspectives (March, 1991; Rink et al., 2013) that can broaden the team's stock of task-related knowledge (Argote, Linda & Ingram, 2000) and boost learning to prevent stagnation (Gruenfeld et al., 2000; Katz, 1982; Perretti & Negro, 2007) which in turn motivates reflection on the team's vested routines.

In teams with high prior performance, there is more friction inherent in newcomer socialization. We reiterate that high prior performance reinforces oldtimers' estimation of which elements contributed to their success and entrenches the shared belief of the superiority of their current approach, biasing them against change and novelty. Consequently, newcomers face strong one-way socialization pressures to conform to the in-place cognition, knowledge, norms and values that are esteemed among veterans of a team. This effectively amounts to the oldtimers exerting strong asymmetrical socialization pressures on the newcomers, discouraging any behaviors that are new to the team in the eyes of oldtimers. Newcomers are discouraged from imparting their unique knowledge to the team, and even if the newcomer decides to share new information, existing members are less likely to consider newcomer inputs as legitimate and valuable, further hampering the integration of new knowledge in the subsequent team decisions (Choi & Levine, 2004). Overall, high performing teams fail to assimilate the new perspectives and knowledge new team members bring in, preventing the team from learning through renewal.

To the extent that newcomers feel that their contributions to the team can be uniquely valuable, but observe an unwillingness of residing members to accept them, they develop resistance to the one-way socialization pressures. Consequently, newcomers do not feel a sense of belonging to the team (cf. Haunschild, Moreland, & Murrell, 1994). That is, we argue that prior team performance increases the dynamic of in-group versus outgroup sentiment between oldtimers and newcomers, which, in combination with socialization pressures, may lead the team to develop dysfunctional conflict between subgroups (Peterson & Behfar, 2003). Therefore, prior team performance exacerbates extant coordination problems during the redevelopment of team routines due to heightened conflict between oldtimers and newcomers.

For similar reasons, we argue that lower performing teams experience less friction when socializing new members into the team. Members of such teams have less incentive to retain approaches from earlier, less effective efforts, and thus exert less socialization pressure on new additions to conform to vested cognitions, norms, values, and knowledge. Hence, poor past performance increases the likelihood of considering newcomer contributions and noting their value, additionally making newcomers feel more comfortable sharing ideas and perspectives. Therefore, we propose the following hypothesis:

> *Hypothesis 1:* Prior team performance moderates the relationship between team membership change and coordination, such that teams with high prior performance experiencing membership change coordinate worse than do teams with low prior performance.

4.3.3 Mediating Effect of the Coordination Process

Effective coordination is essential to achieving high performance (Lepine et al., 2008; Reagans, Argote, & Brooks, 2005). When members coordinate well, their actions tend to be aligned and in sync, optimizing the use of teams' temporal and knowledge resources, thereby helping overall team performance. Conversely, when there are problems in coordination in a team, members are out of sync and misalignments arise. Output quality suffers because members' knowledge utilization is suboptimal, and tasks may take longer and can become unnecessarily costly. We build on arguments for Hypothesis 1 by arguing that membership change creates more problems in establishing effective coordination in teams with high prior performance than those with low prior performance, and that these detriments to coordination negatively affect subsequent team performance. Therefore, we hypothesize that:

> *Hypothesis 2:* Team coordination mediates the moderated relationship between membership change and team performance. That is, membership change deteriorates coordination in teams with high prior performance, and hampers subsequent team performance to a greater extent than it does in teams with low prior performance.

4.4 METHODS

4.4.1 Data

Entrepreneurial teams are essentially project teams founded around a new idea or innovation, generally led by a passionate entrepreneur. Unfortunately, data on entrepreneurial team dynamics is hard to obtain. While many venture teams are founded each year, their membership composition is not accurately tracked over time. To remedy this, we chose to sample the video game development industry between 1978 and 2002 to proxy the nature of small entrepreneurial teams. First, in this industry core development teams are clearly defined, and membership accurately monitored (Mortensen, 2015), and since these organizations create sequels, we can accurately track changes in team membership and ensue performance through time. Second, the small team and project nature of this period in the video game industry resembles that of contemporary early stage entrepreneurship. In this period of the video game industry, new ideas or innovations (i.e. the video games) were often founded by single game developers, who formed a team around them to further develop the video game and often experienced high team dynamism. Importantly, after 2002 maturation in the video game industry stemming from the advent of Internet production and distribution of videogames, spawned divergent business models amid converging platform architecture standards under high competitive pressures. Since mid-2000, publishing houses have been forced to assign different teams working in parallel on the development of sequels within the same video game family. Such a practice confounds tracking membership change. In addition, we also observe a proliferation of cross-team and cross-company collaborations in developing video games since the late 2000's – blurring project team boundaries and mitigating the industry's similarity to the venture team context.

We compiled our dataset from www.mobygames.com using a web-scraper, and manually corrected for completeness and accuracy. The MobyGames database is an Internet repository documenting video game information since 1999. Owners of the database define its mission as "To meticulously catalog all relevant information – credits, screenshots, formats, and release info – about electronic games (computer, console, and arcade) on a game-by-game basis." Because of such painstaking detail, the database has been favored by several scholars in the past (e.g., De Vaan, Stark, & Vedres, 2015; Mollick, 2012). Our unit of analysis is game sequels, allowing us to track team membership pre- and post-sequel and to assess the performance effects of those changes. The original full, web-crawled data set consisted of 41,200 video

games released between 1978-2013. The data between 1978-2002 contained 22,739 released games.

We removed video games that were add-ons or compilation software and those with no performance score or team information. This elimination reduced our data set to 15,223 video games, which we used to derive many of our control variables. Among these games, 681 produced one or more sequels for a total of 1333 sequels (i.e. the set from which our main variables of interest are derived). After discarding games with additional missing values on our variables of interest, our final sample included 665 sequels. In addition, we manually corrected the data to include only members of the development team and to exclude individuals from publishing-houses. Also, we incorporated roles solely pertinent to the production of video games: producers, designers, programmers, artists, sound technicians, coders, directors, concept/story board artists, video technicians/graphics, editors, composers and software designers. Unspecified roles and non-essential roles were excluded such as packaging, voice acting, musicians, motion capturing artists, marketing, network maintenance, and secretaries.

4.4.2 Variables

4.4.2.1 Dependent Variable

Our dependent variable is team performance. We utilized industry expert assessments to measure team performance as provided by the MobyGames database. Expert assessments ranging on a scale from 0 to 100 (with 100 being best) entail reviews and rankings of professional critics and reviewers from many media outlets. Quality, accuracy, and consistency of these different reviewers can vary sharply. Thus, the weighted average for individual critics is formed by each expert's history, accuracy, and past variance. As the MobyGames website points out: "Critics with high accuracy, low variance, and high reputation have their scores weighted higher in the MobyRank calculation than critics with low accuracy, high variance, and low reputation." Critic scores appear in the database only if at least six reviews for a video game on a particular platform have been offered.

We also purchased sales data from a market research firm, which were available only for games published between 1995 and 2002, significantly reducing the sample size (N = 361). Our results remain qualitatively similar when unit sales is used as our dependent variable (see the robustness analysis section for details).

4.4.2.2 Independent Variables

Our main independent variable is team membership change. We measured membership change as the ratio of new and departing members to the sum of new, departing and residing members. We chose this operationalization of membership change because it more accurately captures the total fluctuation in membership for teams that have varying rates of individuals leaving and entering the team (cf. Mortensen, 2015).

Our main moderator variable is a video game development team's *prior performance*. We used the prequel's performance to measure prior performance (see definition of performance above as the dependent variable).

Our mediator variable is *coordination*. We proxy coordination as the time (in years) between consecutive video game sequels. We reverse coded the variable, such that the faster the project was completed, the higher a team's coordination would be. In the highly competitive video game development industry the ability of teams to finish their project timely is of utmost importance to team performance. Video game development follows strict development schedules, often tailored to the seasonal demands of the consumer market. Extending deadlines is a precarious action, as competitors may encroach the game's target market if they release at an earlier point in time. Moreover, the many technologies involved and developed in the project may become obsolete in a matter of months – new platforms will be released and/or make certain graphics out-of-date (MacCormack & D'Angelo, 2004). In meeting these tight schedules optimal coordination is an essential requirement. Any misalignment of team members' efforts is, per definition, associated with surpassing these schedules.

4.4.2.3 Control Variables

To account for alternative explanations, we applied several controls, including team-, game-, industry-, and firm-related factors. First to mention is a control characteristic of membership change itself. The quality of newcomers and leavers has often been cited as an important factors influencing the effect of membership change on team performance (Bunderson, Van der Vegt, Gerben S, & Sparrowe, 2013; Chen, 2005; Summers et al., 2012). Hence, we controlled for *average newcomer quality* and *average leaver quality* by calculating the historic average performance of newcomers and leavers from the performance of all video game development projects these individuals took part in before the focal project.

Table 1. Mean, Standard Deviation, and Pearson Correlations across Variables.

	Mean	**SD**	**1**	**2**	**3**	**4**	**5**	**6**
1. Team Performance	76.81	10.44						
2. Prior team performance	78.85	9.22	0.54***					
3. Coordination	7.38	1.25	-0.04	-0.12**				
4. Team membership change	0.81	0.15	-0.05	-0.08*	-0.32***			
5. Average newcomer quality	75.08	6.06	0.32***	0.39***	-0.11**	0.03		
6. Average leaver quality	75.11	6.99	0.16***	0.22***	-0.15***	0.10*	0.47***	
7. Team size	56.01	39.64	0.26***	0.20***	-0.03	-0.02	0.21***	0.15***
8. Team size change	0.44	1.03	0.09*	-0.01	-0.23***	0.20***	-0.04	0.03
9. Team tenure	3.38	1.97	-0.06	-0.06	0.16***	0.08*	0.11**	0.09*
10. Team genre diversity	0.62	0.22	0.11**	0.04	-0.05	0.11**	0.12**	0.12**
11. Competition	803.36	73.75	0.04	0.00	0.05	0.04	0.03	-0.09*
12. Media exposure	20.56	16.13	0.37***	0.26***	-0.07†	0.00	0.16***	0.12**
13. Action dummy	0.46	0.50	-0.05	-0.02	0.00	0.08*	0.00	0.00
14. Adventure dummy	0.05	0.23	-0.07†	-0.08*	-0.09*	0.04	-0.08*	0.05
15. Racing driving dummy	0.13	0.34	-0.09*	-0.05	0.02	0.02	-0.04	-0.03
16. Role playing dummy	0.11	0.31	0.08*	0.08*	-0.04	-0.02	0.06	0.08*
17. Simulation dummy	0.17	0.37	0.07†	-0.01	-0.01	0.01	-0.07†	-0.04
18. Sports dummy	0.19	0.39	0.08*	0.06.	0.09*	-0.02	0.02	-0.07†
19. Strategy dummy	0.19	0.39	-0.01	-0.02	-0.03	-0.05	-0.04	-0.01

† $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Correlation table does not show correlations between dummy variables.

Table 1. Mean, Standard Deviation, and Pearson Correlations across Variables (cont.)

	Mean	**SD**	**7**	**8**	**9**	**10**	**11**	**12**
1. Team Performance	76.81	10.44						
2. Prior team performance	78.85	9.22						
3. Coordination	7.38	1.25						
4. Team membership change	0.81	0.15						
5. Average newcomer quality	75.08	6.06						
6. Average leaver quality	75.11	6.99						
7. Team size	56.01	39.64						
8. Team size change	0.44	1.03	0.29***					
9. Team tenure	3.38	1.97	0.17***	-0.08*				
10. Team genre diversity	0.62	0.22	0.12**	0.05	0.11**			
11. Competition	803.36	73.75	-0.11**	0.00	-0.03	0.05		
12. Media exposure	20.56	16.13	0.32***	0.08*	0.05	0.12**	-0.05	
13. Action dummy	0.46	0.50	-0.06^{+}	0.06^{+}	-0.05	0.15***	0.05	0.12**
14. Adventure dummy	0.05	0.23	-0.07^{+}	0.02	-0.02	-0.02	0.12**	-0.05
15. Racing driving dummy	0.13	0.34	-0.01	0.03	-0.08*	0.07^{+}	-0.10*	0.02
16. Role playing dummy	0.11	0.31	0.19***	-0.02	0.08*	0.01	0.02	0.06
17. Simulation dummy	0.17	0.37	-0.06	-0.02	-0.01	-0.07^{+}	-0.06	-0.14***
18. Sports dummy	0.19	0.39	0.06^{+}	0.05	0.07^{+}	0.07^{+}	0.00	0.02
19. Strategy dummy	0.19	0.39	-0.04	-0.07^{+}	-0.05	-0.20***	-0.10*	-0.13**

$^{+}p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Correlation table does not show correlations between dummy variables.

Second, we controlled for team characteristics. We add *team size* as a covariate because a larger team requires more coordination (Mueller, J. S., 2012). Additionally, we controlled for *team tenure* since teams that work together longer tend to converge in their thinking and build routines that facilitate coordination. Team tenure is quantified as the number of previous sequels that a certain team produced. Also, teams that have more diverse experience in video game types are more likely to adapt to changing circumstances—a critical feature of teams in an industry driven by technological shifts and popular trends. We controlled for *team genre diversity* by calculating Blau's index (Harrison & Klein, 2007) over the number of games that each team published in any of the genres before the focal game. Last, we controlled for *team size change* since resizing teams may affect the availability of knowledge resources and the ability to coordinate effectively. The third set of controls relates to the game traits. We controlled for *game genre*: Action, Adventure, Racing/Driving, Roleplaying, Simulation, Sports, and Strategy. Genres attract target audiences, creating diverse expectations for novelty and quality criteria. Also, we control for *media exposure*. Prolific games tend to enjoy more media exposure, affecting the perceived quality of the game by industry experts. We proxy media exposure by calculating the number of critic reviews that the video game received.

Fourth, we included a control external to the focal game. Since games compete in the marketplace, we controlled for *competition* as measured by the total number of video games released in the full market during the release of the focal sequel.

Table 1 shows the main descriptive statistics and Pearson correlations among variables.

4.4.2.4 Analytical Approach

Once a video game releases a sequel, a family of games commences. With every consecutive sequel referring to the premise of its predecessors, the family grows with individual observations (i.e. the video games) nested within these families. Nestedness imposes family-level effects on individual-level outcomes in the model (Bliese, 2013). To deal with nesting of the data, multilevel mixed-effects modeling has been used for analysis, including an additional error term to account for intercept variance.

We assessed whether this approach was appropriate. In our full sample data, family grouping accounts for 37% of the variance in team performance (ICC1), with

Table 2. Multilevel Regression Results of Coordination

	Model 1	**Model 2**	**Model 3**
Independent variables	Estimate (Std. Error)	Estimate (Std. Error)	Estimate (Std. Error)
(Intercept)	-0.11 (0.11)	-0.12 (0.11)	-0.13 (0.11)
Team size	0.07† (0.04)	0.04 (0.04)	0.05 (0.04)
Team size change	-0.28*** (0.05)	-0.19*** (0.04)	-0.20*** (0.04)
Team tenure	0.08* (0.03)	0.09** (0.03)	0.08* (0.03)
Team genre diversity	-0.05 (0.05)	-0.02 (0.04)	-0.02 (0.04)
Competition	0.17† (0.09)	0.19* (0.08)	0.19* (0.08)
Genre dummies	*Included*	*Included*	*Included*
Media exposure	-0.05† (0.03)	-0.04† (0.03)	-0.03 (0.03)
Average newcomer quality	-0.10* (0.05)	-0.08† (0.04)	-0.06 (0.05)
Average leaver quality	-0.07† (0.04)	-0.05 (0.04)	-0.04 (0.04)
Team membership change		-0.40*** (0.05)	-0.42*** (0.05)
Prior performance			-0.08* (0.04)
Team membership change x Prior performance			-0.08* (0.04)
Within family R-squared	0.14	0.21	0.22
Between family R-squared	0.17	0.22	0.23
AIC	1690.63	1623.36	1615.83
Log Likelihood	-827.31***	-792.68***	-786.93***
Test against competing models		69.27***	11.49**

† $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. All variables, excluding the genre dummies, were z-score standardized. $N = 665$.

Table 3. Multilevel Regression Results of Team Performance

	Model 1	**Model 2**	**Model 3**	**Model 4**
Independent variables	Estimate (Std. Error)	Estimate (Std. Error)	Estimate (Std. Error)	Estimate (Std. Error)
(Intercept)	72.99*** (1.17)	73*** (1.17)	73.59*** (1.04)	73.65*** (1.04)
Team size	1.05** (0.39)	1.01* (0.39)	0.68† (0.35)	0.63† (0.35)
Team size change	0.40 (0.47)	0.49 (0.48)	0.93* (0.45)	1.11* (0.46)
Team tenure	-1.95*** (0.36)	-1.91*** (0.36)	-0.77** (0.29)	-0.88** (0.30)
Team genre diversity	0.69 (0.47)	0.73 (0.48)	0.96* (0.4)	0.99* (0.40)
Competition	1.50 (0.91)	1.52† (0.91)	1.46† (0.86)	1.31 (0.86)
Genre dummies	*Included*	*Included*	*Included*	*Included*
Media exposure	2.38*** (0.28)	2.39*** (0.28)	1.75*** (0.24)	1.78*** (0.24)
Average newcomer quality	2.82*** (0.48)	2.83*** (0.48)	1.31** (0.47)	1.37** (0.47)
Average leaver quality	-0.02 (0.43)	0.01 (0.43)	-0.14 (0.39)	-0.09 (0.39)
Team membership change		-0.47 (0.51)	-0.60 (0.47)	-0.29 (0.49)
Prior performance			4.82*** (0.4)	4.88*** (0.4)
Team membership change x Prior performance			-1.26** (0.41)	-1.19** (0.41)
Coordination				0.81* (0.39)
Within family R-squared	0.27	0.27	0.41	0.42
Between family R-squared	0.29	0.29	0.47	0.48
AIC	4788.43	4789.56	4689.14	4686.68
Log Likelihood	-2376.22***	-2375.78***	-2323.57***	-2321.34***
Test against competing models		0.87	104.42***	4.46*

† $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. All variables, excluding the genre dummies, were z-score standardized. $N = 665$.

a reliability of 47% (ICC2). A model featuring random intercept variance fits the data better than a model without it (*Log-ratio test* = 65.84, $p < 0.001$, AIC_{nested} = 4959.54, $AIC_{non\text{-}nested}$ = 5009.89). Therefore, we applied multilevel modeling in our analyses. Additionally, we conducted causal mediation analysis over our multilevel models. We used R-package 'mediation' because it offers causal mediation analysis over multilevel models (R Core Team, 2017; Tingley et al., 2014). Quasi-Bayesian Monte Carlo simulations (King, G., Tomz, & Wittenberg, 2000) are used to calculate the 95% confidence intervals. This approach approximates the posterior distribution of quantities of interest by their sampling distribution and is considered most efficient for causal mediation analysis with parametric models (Imai, Keele, & Tingley, 2010).

4.5 RESULTS

4.5.1 Testing

Table 2 displays the multilevel regression estimation on coordination. Variance inflation factors did not exceed 2 in any of the models, indicating that multicollinearity is not a concern. Model 1 in Table 2 includes only the control variables. In the control model, we see that larger changes in team size (β = -0.28, *S.E.* = 0.05, $p < 0.001$) and higher quality of newcomers (β = -0.10, *S.E.* = 0.05, p = 0.045) are negatively related to coordination. Conversely, team tenure increases the level of coordination in teams (β = 0.08, *S.E.* = 0.03, p = 0.02). In Model 2, we added membership change. We clearly observe a strong negative relationship of membership change (β = -0.40, *S.E.* = 0.05, $p < 0.001$) with coordination.

In Model 3, we added the interaction between membership change and prior team performance on coordination. The overall moderating effect is significant (β = -0.08, *S.E.* = 0.04, p = 0.049). Figure 2 depicts this interaction for 1 standard deviations above (i.e. high performing teams) and below (i.e. low performing teams) the mean prior team performance. Simple slope analysis confirms that membership change hurts coordination of teams with high prior performance (β = -0.50, *S.E.* = 0.07, $p <$ 0.001) and, to a lesser extent, also negatively affects the coordination of low performing teams (β = -0.35, *S.E.* = 0.06, $p < 0.001$). Hence, these results provide evidence for Hypothesis 1. We note that the direct effect of prior team performance (β = -0.08, *S.E.* = 0.04, p = 0.037) on coordination is negative. Ostensibly, this minor effect may seem counterintuitive. However, our measure of coordination assumes that the less time the team took to complete the project the stronger their coordination. In that sense, this finding is in line with prior work, suggesting that

higher performing teams may set higher goals, are allocated more resources, and, thus, experience increased task complexity (DeShon et al., 2004). This hampers effective coordination (e.g., Argote, L. et al., 1995; Weingart, 1992).

Table 3 presents the multilevel regression results on team performance. In Model 1, which includes only the control variables, we observe that larger teams (β = 1.05, *S.E.*= 0.39, p = 0.008), teams with more media exposure (β = 2.38, *S.E.*= 0.28, p < 0.001) and teams with higher quality of the newcomers (β = 2.82, *S.E.*= 0.48, p < 0.001) attain higher team performance.

Table 4

Causal Mediation Results with Quasi-Bayesian Confidence Intervals

	Direct: unmediated	**Indirect: mediated by coordination**	**Total effect**
Team membership change	-0.35	-0.35*	-0.70
Team membership change* -1 S.D. Prior performance	0.78	-0.28*	0.50
Team membership change* +1 S.D. Prior performance	-1.53*	-0.41*	-1.94**

$^{+}p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 5

Quasi-Bayesian 95% Confidence Intervals of Mediation Results

	Direct: unmediated		**Indirect: mediated by coordination**		**Total effect**	
	Lower	Upper	Lower	Upper	Lower	Upper
Team membership change	-1.34	0.62	-0.69	-0.05	-1.65	0.23
Team membership change* -1 S.D. Prior performance	-0.22	1.89	-0.58	-0.01	-0.49	1.62
Team membership change* +1 S.D. Prior performance	-2.94	-0.24	-0.85	-0.02	-3.33	-0.69

1000 Monte Carlo Simulations

This latter effect echoes the informational perspective on newcomer contributions to a team (cf. Rink et al., 2013). However, the model also shows that teams with longer tenure (β = -1.95, *S.E.*= 0.36, $p < 0.001$) had lower performance, which is in line with research on team longevity (e.g., Katz, R., 1982; Schippers, Den Hartog, Koopman, & Wienk, 2003; West & Anderson, 1996). In addition, video games published in the simulation genre performed better than games in other genres (β = 3.80, *S.E.* = 1.02, $p < 0.001$) and games in the racing genre scored lower (β = -3.23, *S.E.* = 1.24, p = 0.01). Model 2 shows no significant effect of membership change (β = -0.47, *S.E.* = 0.51, p = 0.36), which would be expected based on the conflicting findings from the literature.

Thus, in Model 3 we show that there is evidence for Hypothesis 1, stating that there is a moderating effect of prior team performance on the relationship between team membership change and team performance (β = -1.26, *S.E.* = 0.41, p = 0.002). We plotted this interaction in Figure 3 for 1 standard deviations above (i.e. high performing teams) and below (i.e. low performing teams) the mean prior team performance, accompanied with simple slope tests. Simple slope analysis shows full support for the negative effect of membership flux for teams that had higher performance (β = -1.88, *S.E.* = 0.65, p = 0.004), and a null-effect for lower performing teams (β = 0.47, *S.E.* = 0.54, p = 0.38). Last, Model 4 adds our mediator to the regression equation. As expected, coordination is positively related to team performance (β = 0.81, *S.E.* = 0.39, p = 0.038). Post-hoc analysis of the interaction effect of prior team performance and membership change on team performance (while controlling for coordination) shows that the slope for teams with low prior performance becomes significant at 1.6 standard deviations below the mean (β = 1.40, *S.E.* = 0.70, p = 0.046).

Hypothesis 2 proposed that coordination mediates the moderated relationship between team membership change and team performance. We test Hypothesis 2 through causal mediation analysis suitable for multilevel modelling. Table 4 presents mediation coefficients. Table 5 shows the quasi-Bayesian 95% confidence intervals of the estimates from Table 4. We find that teams with high prior performance suffer more in subsequent performance due to detriments in coordination (β = -0.41, *95% CI* = [-0.85, -0.02], p = 0.04, 1000 Monte Carlo simulations) than teams with low prior performance (β = -0.28, *95% CI* = [-0.58, -0.01], p = 0.046, 1000 Monte Carlo simulations). Thus, our results support hypothesis 2.

Figure 2. Interaction Plot of Team Membership Change and Prior Team Performance on Coordination.

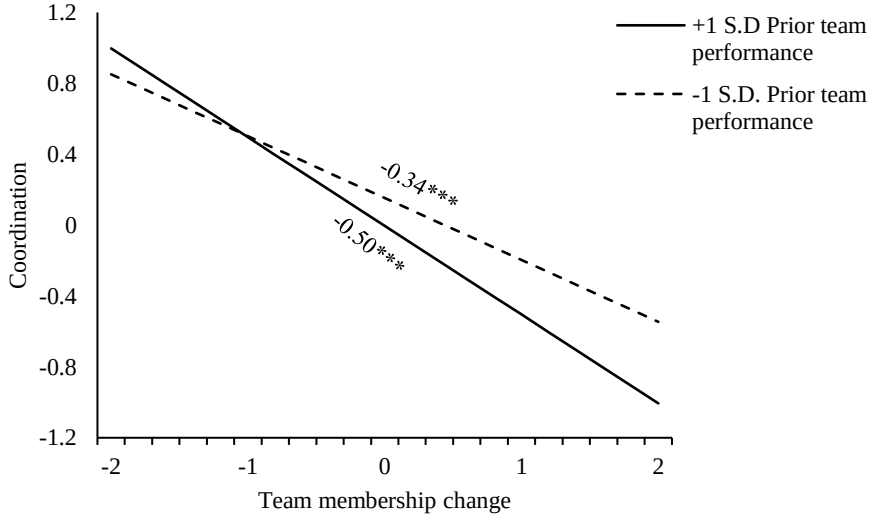
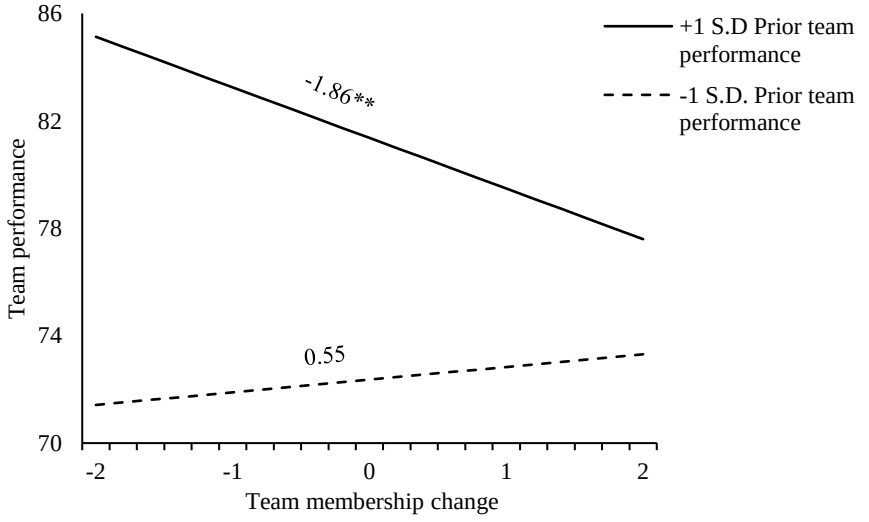


Figure 3. Interaction Plot of Team Membership Change and Prior Team Performance on Subsequent Team Performance (Based on Model 3, Table 3).



4.5.2 Robustness Analyses

We verified robustness of our results by regressing all four models (as specified in Table 3) on unit sales of the video games between 1995-2002 (N = 361). We purchased this data set from the NPD group which tracks the consumer purchases in the video game industry in the US. We find similar results when regressing unit sales (in thousands) on the variables included in Model 4 (of Table 2) ($\beta_{coordination}$ = 78.5, *S.E.* = 39.32, p = 0.048) and when conducting mediated moderation analysis with the model as specified in Model 3 (of Table 3). Namely, these mediation results dictate that teams with high prior performance suffer more in subsequent unit sales due to detriments in coordination (β = -43.82, *95% CI* = [-89.9, 1.74] , p = 0.046) than teams with low prior performance (β = -27.06, *95% CI* = [-59.48, -0.68], p = 0.044). Hence, our conclusions remain qualitatively similar when regression models on unit sales.

Furthermore, we need to address concerns that the observed pattern of performance change in our study is not due to the naturally occurring statistical pattern of regression to the mean (RTM), but a result of membership change. RTM occurs when repeated measurements are made on the same unit of observation (Barnett, van der Pols, Jolieke C, & Dobson, 2005). In our case this amounts to the following: at every measurement of team performance over time, the more severely a team's performance deviated from the population mean before the higher the chances that this team will be closer to the population mean at current measurement. Barnett et al. (2005) advice researchers to minimize the effect of RTM by correcting for within and between group variance (over the different time points), potentially using an ANOVA style analysis that corrects for a baseline mean. We already address this by conducting multi-level random coefficient modelling (cf. Bliese, 2013). Additionally, because RTM increases with larger measurement variability (Barnett et al., 2005), we can reduce this variability by only including teams that had more than one performance measurement. Hence, we re-ran our analyses excluding those teams that only produced one sequel (N = 486). We find that the results of membership change (β = -0.48, *S.E.* = 0.06, $p < 0.001$) and the interaction effect with prior performance (β = -0.11, *S.E.* = 0.05, p = 0.038) on coordination, as well as the results regarding the interaction effect (β = -1.10, *S.E.* = 0.51, p = 0.03) and coordination (β = 1.01, *S.E.* = -0.99, p = 0.03) on team performance remain qualitatively similar. Finally, mediation results also proved alike for both low (β = -0.40, *95% CI* = [-0.80, -0.05], p = 0.02) and high (β = -0.60, *95% CI* = [-1.20, -0.02], p = 0.44) prior performance of teams.

4.6 DISCUSSION

Our results demonstrate that membership change inhibits coordination and subsequent performance to a greater extent in teams that had already attained high performance compared to those that had not. These results have several theoretical implications for team researchers, as well as for practitioners who are concerned about creating and retaining successful teams.

4.6.1 Theoretical Implications

Entrepreneurial teams are highly dynamic and their composition changes frequently as they grow their business (Boeker & Karichalil, 2002). Crucial talent frequently enters the team, while residing members leave when the business outgrows them (Boeker & Wiltbank, 2005). Despite the clear the importance of investigating venture team membership change, research has given it scarce attention and has yet to consider venture team dynamics beyond the founding team (Cooney, 2005; Klotz et al., 2014). Specifically, this stream of research has often employed theories on teams and leadership in explaining the effect of management team composition and member change on venture outcomes (Carland & Carland Jr, 2012; Ensley et al., 2006; Hmieleski & Ensley, 2007; West III, 2007), but ignores how dynamics of the broader venture team influence important venture outcomes (e.g., Busenitz et al., 2005). For example, leadership may emerge and shift as the team grows and its composition changes (e.g., Hmieleski et al., 2012). Research should consider that members outside the founding team may affect how leadership and team dynamics develop subsequently. Our work motivates entrepreneurship and venture team research to consider the dynamics of the growing entrepreneurial team, including all its members, in explaining important venture outcomes.

We challenge the received wisdom that membership change offers performance benefits through renewal, especially regarding teams with high prior performance. Specifically, prior work has suggested that as past performance increases, team members converge in their thinking and develop rigid routines, risking team stagnation (e.g., Katz, 1982; March, 1991; Mathieu et al., 2000). Membership change is said to have the potential to break stagnation by introducing new perspectives and ideas, thereby helping team members to redefine the team's routines to navigate changing team composition and task demands. In contrast, we hypothesize and show that the same convergence and rigidity that have helped these teams achieve high performance previously now prevent them from benefiting from membership change, due to resulting coordination problems.

Moreover, our work bridges two streams of membership change research that have provided fairly separate insights up till now (Humphrey & Aime, 2014). On the one hand, studies have focused on the effects of newcomer socialization on innovation, oldtimer reflection and, subsequently, increases in team performance (see Rink et al., 2013 for a review; e.g., Choi & Thompson, 2005; Gruenfeld & Fan, 1999; Perretti & Negro, 2007). On the other hand, separate research has argued that membership change (especially through departures) disrupts team mental models and team processes, and, consequently, hampers team performance (Akgün & Lynn, 2002; Argote, L. et al., 1995; Lewis et al., 2007; Summers et al., 2012). Yet, neither stream of research has payed attention to the impact of prior team performance on this dynamic, nor have they unearthed coordination as the team process underpinning the negative effects of prior performance and membership change on team performance.

Thus, our work extends the findings of newcomer socialization literature on the effects of prior team performance, and we offer prior team performance as a novel contingency factor in research on team processes. Importantly, the consideration of prior team performance allows scholars to explain when and how the knowledge utilization and coordination effects of membership change on team performance are most pronounced. Post-hoc analysis of the interaction effect of prior team performance and membership change on team performance (while controlling for coordination) shows that the slope for teams with low prior performance becomes significant at 1.6 standard deviations below the mean (β = 1.40, *S.E.* = 0.70, p = 0.046). This, in combination with our mediation results and prior findings from newcomer socialization research (e.g., Choi & Levine, 2004; Choi & Thompson, 2005; Kane et al., 2005), implies that, in the process of membership change, knowledge utilization and reestablishment of coordination are distinct processes that are affected differently by prior team performance. Hence, we offer the field new insights into why high performing teams tend to suffer from membership change but low performing teams stand to gain from it.

Lastly, we (re)emphasize prior team performance as a theoretical angle in need of investigation in the context of teams. The concept of prior team performance as an important facet of team life is not fully new: team researchers often consider it as control variable (e.g., DeRue et al., 2008; Perretti & Negro, 2007; Summers et al., 2012). Our work shows that prior team performance is an important group level characteristic that needs to be taken into account when examining teams experiencing membership change (cf. Cronin et al., 2011; Mathieu et al., 2008). Thus, we emphasize that prior team performance is more than a control variable in

team dynamics research, and that it has distinct effects on team transitions from one period to the next. Therefore, we advocate for and improve the field's understanding of the influences of group level outcomes on individual team member interactions and team routines. These findings call for future research that fully incorporates prior team performance as a crucial contingency factor of processes in team dynamism (cf. Humphrey & Aime, 2014; Mathieu et al., 2014).

4.6.2 Managerial Implications

Venture teams are highly dynamic. Talented employees may enter the team, hoping to find a new challenge, while others exit as the new organization rapidly outgrows them. However, our findings not only advise entrepreneurs. For managers of existing organizations, change is inevitable as well. For example, in the United States alone, individuals change jobs more than 11 times during their careers on average (U.S. Bureau of Labor Statistics, 2016). In addition, to increasing labor mobility, organizational level practices, such as the wider use of temporary project teams, promotions, downsizing, and rotation of new employees, make teams far from stable entities. Our results provide novel insights into how this particular state of flux affects teams and venture teams that have already achieved high performance, thereby informing appropriate strategies for entrepreneurial and managerial practice.

Our results warn founders and managers against churn in high performing teams. In such teams, membership change disrupts the well-functioning processes and routines that generated the superior performance in the first place. Moreover, these teams are prone to continue behavior they believe worked well in the past and over-socialize newcomers. Therefore, membership change leads to more coordination problems for teams with high prior performance than for teams with low prior performance, preventing high performing teams from sustaining their subsequent performance at a comparable level. Hence, we suggest that entrepreneurs and managers should aim to limit change of teams with high prior performance, and remain aware of the potential interventions needed to allow these teams to deal with change and prevent dysfunctional rigidities.

4.6.3 Limitations and Directions for Future Research

Our study is not free of limitations. First, while our study ostensibly investigates the effects of venture team dynamics on team performance of high performance ventures, we tested our theory on a dataset of video game development teams from

the early stages of the video game industry. Our decision was based on the clear similarities between the newly formed teams in this phase of the video game industry and contemporary early stage venture teams, and we expect these similarities to uphold. Data on real venture teams is hard and costly to obtain, because an exhaustive dataset of such teams does not exists. Many early stage ventures do not survive their first years of existence (Kerr et al., 2014). Despite this, future research should replicate our findings in other empirical settings, preferably even closer related to the early stage venture team context.

Second, our choice for this field setting further has broader consequences for our conclusions about team dynamics. Prior research has often studied membership change as replacing only one team member with another (e.g., Argote et al., 1995; Arrow & Mcgrath, 1993; Baer, Leenders, Oldham, & Vadera, 2010; Huckman, Staats, & Upton, 2009; McCarter & Sheremeta, 2013; Summers et al., 2012). While those studies offer stronger causal claims, more research in field settings has been called for. Beyond offering external validity, field settings capture the fact that teams experience membership change not only in the form of a single member replacement, but also in varying rates of departures and entries. Our analyses allow accounting for such flows.

However, this field setting also includes an empirical condition that limits our inferences in industry-level labor mobility. The video game industry's labor market is highly dynamic, characterized by significant cross-collaboration, aggressive head-hunting for high-quality producers, and the use of freelancers. Our sample alone demonstrates an average turnover of about 50% after each sequel production. In addition, we could not account for whether the departures were voluntary or involuntary (Park. & Shaw, 2013; Shaw, Park, & Kim, 2013). Future research should aim to expand these findings to industries with less transient labor conditions and address the cause of membership change.

We argued that the interplay between membership change and prior performance affects coordination because of the rigidity of residing member thinking and the effects of newcomer socialization. Our work leaves open several important questions in this regard. Specifically, 'what can help to break the rigidity of residing members of winning teams in relying on former processes and help them become more reflective'? And, 'how can we help oldtimers of winning teams to accept newcomer contributions and thus boost team innovation'? Future research could productively explore interventions that may help high performing teams to sustain their performance, such as influence tactics or identity strategies that help to

increase newcomer knowledge utilization (Kane & Rink, 2016; Rink & Kane, 2014). Moreover, there is the opportunity for additional research into which characteristics of residing members help them to be more receptive to change (Park, G. & DeShon, 2010).

Finally, we cannot rule out that the results of this study can be partly explained by a statistical phenomenon called regression to the mean. This phenomenon occurs when repeated measurements are made on the same unit of observation (Barnett et al., 2005), as is the case with our measurement of teams' performance time. We the followed advice given by Barnett and colleagues (2005) to minimize the effect of regression to the mean and find nearly identical results as compared to our original analyses. However, to completely rule out the potential bias of regression to the mean in our results, future research should conduct a carefully designed experimental study including control groups. Inclusion of control groups can be used to estimate the baseline effect of regression to the mean in the sample.

4.7 CONCLUSION

Membership change is a pressing issue for both entrepreneurs and managers alike. As a result, sustaining the performance of high performing teams (such as high growth venture teams) becomes more and more challenging. Yet, we still have limited knowledge of the effects of membership change in high performing teams. Our findings suggest that the development of team processes, as a function of prior team performance, exerts influence on team coordination, and, eventually, on team performance. Thus, our study paves the way for the examination of how team processes unfold both at higher levels and lower levels of prior team performance, encouraging team researchers to develop even more finely-grained theories of venture team dynamics.

CHAPTER 5

GENERAL DISCUSSION

The early stages of high growth venture teams are probably the most precarious stages of venture life. Start-up survival depends on the entrepreneurs' overcoming of the challenges inherent to these stages: the acquisition of vast amounts of financial capital, the attraction of dedicated talent to the venture team, and the management of team dynamics. I provided new insights in this dissertation with respect to each of these paramount challenges. Particularly, I have shed more light on (1) how the communication of disruptive visions affects early stage entrepreneurs' ability to acquire financial investments, (2) how the communication of social visions affects their ability to attract talent to the venture team, and (3) whether entrepreneurs should promote or prevent team membership change in their high performance venture teams. Through a set of detailed theoretical perspectives, unique empirical settings and rigorous methodology, I provide evidence that these behaviors play a significant part in achieving the growth outcomes of early stage venture teams.

In the following section I present an overview of the chapters. Next, I discuss the theoretical contributions of this dissertation. Last, I elaborate on the managerial relevance of my work, and discuss directions for future research.

5.1 OVERVIEW OF CHAPTERS

Chapter 2. Disruptive visions have become a prevalent phenomenon in entrepreneurial practice in the last two decades. Entrepreneurs often communicate these visions to investors in order to secure a first round of financial capital. However, research had so far ignored the investigation of such communications by entrepreneurs and their effect on investor decision making. In Chapter 2, I set out to investigate how the communication of disruptive visions affected entrepreneurs' ability to acquire a first-round of financial funding. By integrating impression management and real options theory I theorized that disruptive vision would have a higher likelihood of attracting a first-round of investments, because among a portfolio of similar investment opportunities the start-up with a disruptive vision raises expectations of extraordinary return with investors. However, a highly disruptive vision also indicates much uncertainty regarding a venture's potential for success in the future, deterring investors from making large speculative investments into the venture initially. In a study of 918 Israeli start-ups, I confirm my hypotheses and found that start-ups that increased their disruptive vision communication by one standard deviation had 22 percent higher odds of acquiring a first round of investments, but obtained 24 percent less funds in that round. Furthermore, in an online randomized experiment with 253 participants I found that investors' expectations of extraordinary return mediate the positive relationship between disruptive visions and the investment decision. The chapter concluded with important theoretical contributions to research on disruptive innovations, real options theory, impression management, and vision communication.

Chapter 3. In this chapter, I investigated the phenomenon of the for-profit venture that communicates a social vision to stakeholders. Increasingly entrepreneurs' communicate a social vision for their start-up in the hopes of convincing stakeholders to support their aims. In particular, early stage ventures need to attract dedicated talent to their team. However, prior exploratory research suggests that ventures with social aims may struggle with hiring and retaining employees, but the theoretical underpinnings of this observation remain unclear. Chapter 3 centered on the effects of social vision communication on job seekers' attraction and salary demands. I hypothesized that social vision communication negatively impacts talent attraction, because social visions prevent job seekers from perceiving the venture as an opportunity for personal achievement—i.e. opportunity for personal advancement, influence, distinction and excellence. Furthermore, I argued that social vision communication drives job seekers to set a premium on the

minimum required salary to seriously consider employment at the venture. A randomized field experiment with 102 job seekers provided support for my hypotheses. A start-up that communicates with a social vision had 72 percent lower odds of job seekers' providing either their contact information or applying for the job, and drove job seekers to set a premium of 252 euro's on the minimum required salary Furthermore, I found that potential recruits' perception of opportunity for achievement mediated this relationship. The chapter concluded with strong theoretical implications for research on social entrepreneurship, vision communication, and recruitment.

Chapter 4. As entrepreneurs attract talent, they start organizing their team for high performance and high growth. Maintaining high performance is essential for venture growth, however it is not a given that they do, given the dynamic nature high growth ventures. Therefore, in Chapter 4 I investigated how membership change affects high performing teams. I hypothesized that the coordination routines that underlie the performance of high performing teams, are severely disrupted by membership change. This is not only because change breaks the teams shared stock of knowledge and shared understanding of the task, but also because high performing teams tend to over-socialize newcomers, making the team less receptive to newcomers' ideas and perspectives. This disruption of coordination routines caused by membership change leads to detriments in subsequent team performance. I find that support for my hypotheses in a dataset of 378 video game development teams. My results indicate that teams with high prior performance suffer from membership change, whereas teams with low prior performance may gain from it. I find that coordination problems mediate this relationship. The chapter concludes with contributions to the literature teams and team dynamics.

5.2 THEORETICAL CONTRIBUTIONS

5.2.1 Contributions to Entrepreneurship Research

My dissertation and its chapters provide contributions for broader scholarly work on entrepreneurship, vision communication, and team dynamics. First, this dissertation contributes to research on how entrepreneurs can overcome the central challenges in the early stages of their venture's life cycle. Despite underlining its importance, prior research has scarcely investigated entrepreneurs' ability in overcoming the challenges inherent to early stage venturing (DeSantola & Gulati, 2017; Sorenson & Stuart, 2008). Prior work has often centered on the challenges of ventures in later stages, when they have already obtained earlier rounds of funding

(e.g., Martens et al., 2007; Maxwell & Lévesque, 2014; Mueller et al., 2012). Such an approach does not consider the effects of initial selection (e.g. Gompers, 1995; Kanze & Iyengar, 2017; Ter Wal et al., 2016). I look at entrepreneurs' efforts in obtaining a first round of resources (i.e. attracting investments and talent). My work helps to understand the factors contributing to venture growth in the early stage. In particular, I espouse the effects of communicating to external stakeholders on in obtaining a first round of funding and talent.

Second, this dissertation responds to a call for more empirical research about entrepreneurs' interactions (i.e. what they do) within their environments after venture establishment (Wood & Mckinley, 2017, p. 31). This field of research is built on the perspective that start-ups are a means to enact entrepreneurial opportunities, and that this enactment is an ongoing interaction between the entrepreneurs and their stakeholders (Alvarez & Barney, 2013). Chapters 2 and 3 in this dissertation contribute to this stream of literature from the linguistic perspective of opportunity enactment (e.g., Ramoglou & Zyglidopoulos, 2015; Ramoglou & Tsang, 2016), enhancing scholarly understanding of the relationship between entrepreneurs' communications and opportunity sensemaking by the receiving audiences (Alvarez et al., 2015; Bird & Schjoedt, 2009; Garud et al., 2014). In particular, Chapter 2 looks at the mobilizing of investor audiences and how disruptive vision communication affects their sensemaking of the venture as an opportunity. Chapter 3 elaborates on job seeking audiences and whether the venture's social vision communication drives their attraction to the venture as a career opportunity. My findings underscore the need for entrepreneurship research into the interpretation of communications by stakeholder audiences during the opportunity enactment process (Aguinis & Glavas, 2012; Breaugh, 2013; Celani & Singh, 2011).

Specifically, Chapters 2 and 3 introduce vision communication as a particular category of entrepreneurs' future-oriented impression management efforts. Despite acknowledging the importance of future-oriented communications in understanding outcomes at the venture-level, prior research has predominantly focused on entrepreneurs' backward-looking communications (i.e., accomplishments) with which they legitimize their claims (e.g., Bernstein et al., 2017; Lounsbury & Glynn, 2001; Martens et al., 2007; Zott & Huy, 2007). With vision communication entrepreneurs attempt to convince stakeholders of the intrinsic or substantive value of what the venture aims to achieve and they build more distinctive claims about their venture. I show that disruptive and social visions have far-reaching effects on audience decisions concerning the start-up, and that entrepreneurs should craft their

message carefully as particular types of content can have unforeseen up- and downsides. This sets the stage for future scholars to further investigate the effects of future-oriented communications on entrepreneurial outcomes.

5.2.2 Contributions to Vision Communication Research

Third, Chapters 2 and 3 in this dissertation shift the investigation of vision communication away from the strict leader-follower relationship and extends the concept of vision communication to theories on influencing tactics and impression management (e.g., Garud et al., 2014; Yukl, G., Kim, & Falbe, 1996; Yukl, Gary & Falbe, 1990; Zott & Huy, 2007). Classically, the leadership literature builds on the notion that vision communication is a central activity for leaders in mobilizing followers. This leader-follower perspective is often applied to organizational studies and therefore presumes a hierarchical ordering between sender and receiver of the vision as a message. Chapters 2 and 3 jointly show that entrepreneurs may use vision communication to mobilize people external to the start-up, to support their aims—either by investing in the venture or by joining the team as an employee. Thus, this opens the field to investigation of the relationship between vision communication and audience vision pursuit in lateral and up-ward situations, such as entrepreneurs' communication to stakeholders.

Fourth, my work contributes to calls for research into vision content and their sensemaking by various audiences. To date, the content of vision communication and how receiving audiences interpret this content remains an under-researched topic (van Knippenberg & Stam, 2014). Prior vision research has predominantly focused on communication style rather than thematic content (e.g., social or disruptive visions). For example, most scholars prescribe the effectiveness of repetition, rhythm, balance, contrasts, lists, puzzles, alliteration, imagery, analogies and metaphors, classification, generalization, and authority (Carton et al., 2014; Conger, 1991; Den Hartog & Verburg, 1998; Hill & Levenhagen, 1995; van Werven et al., 2015), but forgo investigation of the effects integrative themes on people's sensemaking. Integrative themes yield synergistic effects that strengthen a distinct, collective perception about ventures and entrepreneurs (e.g., a high growth venture, Baum et al., 1998; an aspiring market leader, Martens et al., 2007; a collaborator or competitor, Ansari et al., 2016).

I espouse the underlying mechanisms that explain how audiences or followers make sense of thematic communications. In particular, Chapter 2 investigated how investors make sense of entrepreneurs' disruptive visions and shows that their

expectations of extraordinary return underlie effects on investment decisions. Chapter 3 adds upon this by investigating how job seekers deal with entrepreneurs' social vision communication. My findings show that job seekers' perception of a career at the venture as an opportunity for achievement underlies the relationship between vision communication and talent attraction. Together with the these findings, my conceptualization of social and disruptive visions opens up a new research avenue with respect to integrative themes in entrepreneurs' vision communication and their effect on audience sensemaking. Importantly, the focus on vision content—namely, disruptive and social visions—shows that particular forms of content can backfire in attaining early stage venture growth outcomes. Thereby, the findings of my chapters also contribute to the scant work on downsides of visionary communications (e.g., Ateş et al., 2018; Berson et al., 2015; Carton et al., 2014; Conger, 1991) and challenge the often presumed unilateral positive returns from it (Baum et al., 1998; Baum & Locke, 2004; Van Knippenberg & Stam, 2014). The focus on disruptive and social visions, has shown that

5.2.3 Integration of Team Dynamics and Venture Team research

Fifth, Chapter 4 provides unique insights for broader team literature and motives future research to further investigate venture team dynamics. The chapter provides insights into the organizational perspective of opportunity enactment (e.g., Mueller, S. et al., 2012) by delving deeper into the relationship between venture team dynamics and subsequent venture team performance. Importantly, by approaching Chapter 4 from the broader literature on team dynamics I motivate the field of venture team research in entrepreneurship to consider the more established literature in team dynamics to explain the venture team phenomenon. This is important, because the burgeoning research into new venture management teams only investigates the dynamics concerning the start-ups founders and management team. However, in doing so it cannot provide consistent theory on how to deal with the dynamics of growing venture teams a whole, and how this affects their performance.

Specifically, while prior work suggests that teams with high prior performance may benefit from membership change because it breaks the convergence in team member thinking and maintains the flexibility of routines (e.g., Choi & Thompson, 2005; March, 1991; Perretti & Negro, 2007), I challenge this wisdom by showing that high performance teams mainly suffer from membership change, and only teams with low performance may benefit from it. By doing so, we motivate broader research to consider prior team performance as a crucial contingency factor for team processes (cf. Humphrey & Aime, 2014; Mathieu et al., 2017). Furthermore, despite

the Chapter 4's theoretical focus on teams literature in general, its empirical findings should drive future research to consider team dynamics in the context of the early stage venture.

5.3 MANAGERIAL CONTRIBUTIONS

The studies in this dissertation also provide strong implications for entrepreneurial practice. The entrepreneurs of early stage start-ups put great effort in trying to pursue their high growth business ideas. However, many of them fail to realize their envisioned growth and often do not survive the initial years of their existence. My studies provide insights into the role vision communication in the acquisition financial and human resources essential to the growth of start-ups. Additionally, I espouse how the management of team membership change affects venture team performance amidst an ever-growing and changing venture team. Specifically, I motivate entrepreneurs to reflect on how they communicate to investors, how they use their communication to attract talent, and whether they should manage the retention of this talent for team performance.

The findings of Chapters 2 and 3 show that developing elaborate visions and strategies for the future of the market is not enough to attract resources. The communication of this vision informs stakeholders of the goals and purpose of the organization. Thus, entrepreneurs should be aware that the communication of these visions has considerable effects on the sensemaking of investors and job seekers. Importantly, both Chapters 2 and 3 point out that blindly following popular types vision content, such as disruptive or social visions for their venture, may have unforeseen downsides. For example, communicating a highly disruptive vision increases the likelihood of receiving an investment, but tends to decrease the amount of funds received in that investment. Additionally, communicating a social vision shows detriments to the entrepreneurs' ability to attract talent to the venture team. Hence, my findings should drive entrepreneurs to carefully consider the end-goal of communicating to external stakeholders, and to craft their message with the various stakeholder audiences in mind.

Furthermore, entrepreneurs and managers alike face the challenge of maintaining high performance of their teams. However, venture teams are highly dynamic and are in constant flux. Chapter 4 provides crucial insights about the effects of membership change on team performance and provides important recommendations for entrepreneurs and managers alike. My results warns them against too much change if their teams have achieved high performance, because it hampers their

coordination routines. Conversely, my findings suggest membership change if their teams underperform, as these teams stand to benefit from the perspectives newcomers can bring in. Thus, my findings suggest that entrepreneurs and managers should be aware of the performance of their team and remain critical of whether and when they should aim to change team members.

5.4 THE ROAD AHEAD: DIRECTIONS FOR FUTURE RESEARCH

The chapters of this dissertation addressed three prudent challenges that entrepreneurs face in the growth of their start-ups. While I unearthed the significant role of vision communication on resource acquisition, and highlighted the importance of management of team dynamics as core activity of entrepreneurs, these three challenges are only a very small set of the tremendously larger category of problems that entrepreneurs may face in pursuing the growth of their businesses (e.g., DeSantola & Gulati, 2017; Fisher et al., 2016; Mueller, S. et al., 2012). Future research should make an attempt to extend investigations of vision communication and management of team dynamics, and their interaction, to the broader set of challenges faced by entrepreneurs. For example, future research can investigate whether vision communication affects employee turnover and retention. However, research should also be motivated to consider other challenges, including the ongoing communication between investors and entrepreneurs, the emerging development and implementation of strategy, or the structural transformation from small to large organization. Last, the role of vision communication and venture team dynamics can also be extended to the later stages of the venture life cycle. For example, future research should investigate how the in- and outflow of talent affects both the ongoing the development of the venture's strategy and vision.

While disruptive and social visions are two common types of vision communication, both in practice and academia, many other forms of content may exist. In that sense, the conclusions of Chapter 2 and 3 are limited to how these types of visions compare with other content types, such as growth visions (cf. Baum et al., 1998; Baum & Locke, 2004). Different content may serve different purposes for entrepreneurs in achieving crucial outcomes (e.g., Hallen, 2008). This presents a valuable opportunity for future research to investigate how common integrative themes in (vision) communication affect the growth outcomes of early stage ventures.

The conclusions of my Chapters are perhaps limited to the contexts in which they have been tested. However, in all Chapters an attempt was made to carefully choose

a setting that maximizes generalizability the other context. For example, the Israeli start-up scene (Chapter 2) is one of the world's most impactful entrepreneurial environments, with more high-tech start-ups per capita than any other country. In that sense, conclusions generated from this context should be highly comparable to other entrepreneurial settings in developed economies, such as Silicon Valley in the United States. Furthermore, Chapter 2 also tests its main hypotheses in a complementary experiment, facilitating both claims of ecological validity, generalizability and causality. Similarly, Chapter 3 conducts a randomized field experiment, including real job seekers and a real vacancy, and Chapter 4 uses the early video game development industry as its context, because of comparability to the team conditions of contemporary early stage venturing. Further examining whether the findings of my Chapters indeed hold in related settings, as well as triangulating findings through complementary research methods is an interesting opportunity for future research in strengthening the academic and practical impact of my Chapters.

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SUMMARY

We increasingly expect start-ups to tackle the great systemic problems of the world, with a rising demand for game-changing innovations that are both sustainable, responsible and economically viable. However, most of these ventures fail to realize their envisioned growth, or do not even survive their first four years of existence. This is because entrepreneurs face hard-to-overcome challenges to start-up growth and survival. Amongst other things in the early stages of their venture's life cycle, the most important challenges they face are the acquisition of financial resources, the attraction of talent, and the organization of this talent into an effective team. In this dissertation, I espoused the roles of vision communication and the management of team dynamics in facing these three challenges.

First, entrepreneurs' vision communications are elementary in attracting both financial and human resources. The communication of visions influences how investors and potential recruits make sense of the venture as an opportunity and informs them of what the venture aims to achieve in the future. However, while the communication of a vision for the venture is perhaps one the most engaged in activities by entrepreneurs in practice, additional academic insights are needed to understand how visions affect the decision making of investors and job seekers. Therefore, I investigated how disruptive (Chapter 2) and social vision (Chapter 3) communication by early stage venture affects entrepreneurs' ability to attract investments and recruits, respectively. I show that disruptive and social visions affect the sensemaking of these audiences and may therefore have unforeseen downsides in convincing them to support the venture.

Second, as the venture team achieves high performance and grows through the influx of talent, many individuals will also leave the team. This form of membership dynamism presents entrepreneurs with the challenge of maintaining high performance as their organization continues to grow. Literature on new venture teams currently provides conflicting accounts on whether membership change will help or hamper teams that have achieved high performance before. Thus, I have investigated exactly this issue (Chapter 4), and focused on the underlying mechanism that explains this relationship. I show that both entrepreneurs and managers should attempt to minimize membership change in high performance teams.

In summary, I have shown that both vision communication and management of team dynamics contribute significantly to the crucial growth outcomes of start-ups.

The insights of this dissertation provide numerous opportunities for future research to deepen the understanding of how entrepreneurs attract and organize financial and human resources.

NEDERLANDSE SAMENVATTING

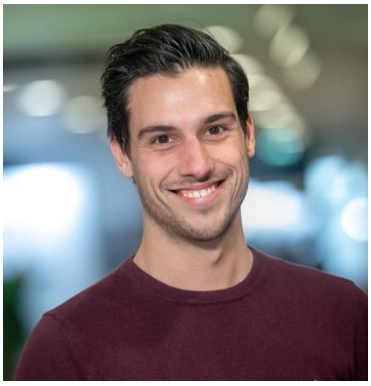
De huidige samenleving verwacht dat ondernemers de problemen van deze tijd kunnen oplossen door zowel sociale als economisch verantwoorde innovaties op de markt te brengen. Maar de meeste ondernemingen blijken niet in staat de voorgestelde groei en impact te verwezenlijken. Sterker nog, startende ondernemingen overleven vaak niet eens de eerste cruciale jaren, als zij er niet in slagen investeerders en talent te werven en het niet lukt om leiding te geven aan een dynamisch team.

De visie van de onderneming is cruciaal in het aantrekken van kapitaal en talent. De inhoud van de visie informeert men over wat de onderneming probeert te bereiken in de toekomst en heeft daarom grote invloed op potentiële investeerders en werknemers. Ondanks dat het belang van visiecommunicatie in de praktijk vaak benadrukt wordt, is er meer wetenschappelijk onderzoek nodig om te begrijpen hoe dit werkt. Daarom onderzocht ik in deze dissertatie de invloed van disruptieve visiecommunicatie op het verkrijgen van investeringen (Hoofdstuk 2) en de invloed van sociale visiecommunicatie op het werven van getalenteerd personeel (Hoofdstuk 3). De twee hoofdstukken tonen dat visiecommunicatie een grote impact heeft op de besluitvorming van potentiële investeerders en werknemers. Daarnaast kunnen bepaalde vormen van visiecommunicatie juist nadelig zijn voor beginnende ondernemingen in het werven van zowel kapitaal als werknemers.

Wanneer ondernemers bekwame werknemers in dienst hebben en het team maximaal presteert, kan er een nieuw probleem ontstaan. Hoe kunnen ondernemers deze hoge mate van prestatie in stand houden wanneer het team snel van personeel wisselt? De huidige literatuur geeft geen duidelijk antwoord op deze vraag. Ik onderzocht hoe de wisseling van individuen in succesvolle teams de toekomstige prestaties kunnen beïnvloeden (Hoofdstuk 4). Daarnaast analyseerde ik het onderliggende mechanisme, waaruit bleek dat zowel ondernemers als managers moeten proberen om wisselingen in succesvolle teams te minimaliseren omdat het anders de coördinatie in het team verslechterd.

Samenvattend onderzocht ik in deze dissertatie het effect van visiecommunicatie en teamdynamiek op drie belangrijke speerpunten van een beginnende onderneming: het werven van financiële middelen, het rekruteren van talent, en de prestaties van het team in een groeiende organisatie. De resultaten bieden perspectief voor toekomstig onderzoek naar de communicatie en teamdynamiek van startende ondernemingen.

ABOUT THE AUTHOR



Timo Hans van Balen (1989) obtained his Bachelor's degree in Business Administration from the VU University Amsterdam in 2011, and graduated from the ERIM MPhil Research Master Program at the Rotterdam School of Management, Erasmus University in 2014. In October 2014, Timo joined the Innovation Management section at the Rotterdam School of Management to pursue his PhD. His research interests include early stage entrepreneurship, innovation, vision communication, leadership and team dynamics. He presented his research at several international conferences, including the INGRoup and the Academy of Management conferences. His work has been published in Journal of Management Studies and Harvard Business Review in 2018, and is currently under review in top management journals. Per January 2019, Timo has started as Operations and Innovation Lead at Innovation in Motion in Amsterdam, and holds a position as part-time lecturer for the Innovation Management section at the Rotterdam School of Management.

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Academic degrees

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Academic articles

Journal publications

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Articles under review

Stam, D., Knippenberg, D. & Van Balen, T. H. In Pursuit of Visions: How Leader Vision Communication Affects Collective Vision Pursuit.

Articles in progress

Van Balen, T. H. & Tarakci, M. Making the World a Better Place With You? Attracting Talent Through Entrepreneurs' Social Vision Communications

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Knippenberg, D., van Ginkel, W., Giessner, S., Stam, D. & van Balen, T. H. Gender Dissimilarity and Performance: Cross-Level Influences of Team Diversity Mindsets and Information Elaboration (working title).

Professional publications

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TOEFL

GMAT

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We increasingly expect start-ups to tackle the great systemic problems of the world, with a rising demand for game-changing innovations that are both sustainable, responsible and economically viable. However, most of these ventures fail to realize their envisioned growth, or do not even survive their first four years of existence. This is because entrepreneurs face three hard-to-overcome: acquisition of financial resources, the attraction of talent and the organization of this talent into an effective team. In this dissertation, I espouse the roles of vision communication and the management of team dynamics in facing these three challenges.

First, the dissertation investigates how entrepreneurs' vision communication affects the way investors and potential recruits view the venture. Results point out that disruptive and social vision communication strongly affect their perception about the venture. Specifically, both types of visions may have unforeseen downsides in convincing investors and recruits to join the start-up's pursuits. Second, we show that the management of team membership change is elementary to sustaining the high performance of venture teams. We find that both entrepreneurs and managers should attempt to minimize membership change in high performance teams. Overall, this dissertation provides numerous practical and academic contributions to the fields of entrepreneurship, impression management, vision communication and team dynamics.

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