

# Gaining the (Over)Confidence to Start your Business

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This version: September 2019

## Abstract

We demonstrate entrepreneurial confidence is shaped by social interactions as individuals compare themselves to peers rather than the population. In our setting, randomized connections to peers with high entrepreneurial confidence increase the likelihood young managers also become entrepreneurs, especially women with lower confidence prior to treatment. By surveying treated individuals, we confirm managers gain interest in entrepreneurship through increased confidence. We reject alternative explanations including access to entrepreneurial knowledge and decreased risk aversion. Our results also suggest shocks to confidence may increase participation in entrepreneurial training programs. Overall, we offer the first experimental evidence that peers increase entrepreneurship and relate these variables through (over)confidence.

**JEL Classification:** L26, D81, D84, D91, C92

**Keywords:** Entrepreneurship, Overconfidence, Peer Effects, Random Assignment, Entrepreneurial Gender Gap

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# 1 Introduction

Innovative entrepreneurs have the potential to dramatically enhance the productivity of firms and, consequentially, economic growth (Aghion et al., 1998; Baumol, 1968; Lucas, 1988; Schoar, 2010). However, entrepreneurship is also characterized by a significant failure rate (Shane, 2008), low compensation compared to waged employment (Hamilton, 2000), and high exposure to nondiversified investments (Moskowitz and Vissing-Jørgensen, 2002). As standard theories of risk and return are not able to explain the high rate of entry (Hall and Woodward, 2010), the signature question facing entrepreneurship researchers is why individuals choose to start a firm in the first place. A leading explanation is that individuals often overestimate their ability relative to the population (Camerer and Lovo, 1999; Holm et al., 2013; Koellinger et al., 2007);<sup>1</sup> confident individuals are then attracted to the highly skewed returns to entrepreneurship despite the low average risk-adjusted returns.<sup>2</sup> Despite the pervasiveness of this result, the literature has largely neglected analyzing how workers form expectations of their entrepreneurial ability, or even if expectations vary across time; in fact, the current indirect evidence suggests these traits may be determined prior to adulthood as entrepreneurship is strongly predicted by genetics (Lindquist et al., 2016; Nicolaou et al., 2008), gender (Fairlie and Robb, 2009), and exposure to entrepreneurs during childhood years (Decker et al., 2016).<sup>3</sup>

In this paper, we illustrate that entrepreneurial confidence is not a fixed trait, but instead shaped by social interactions. Under an experimental setting that randomizes the social networks of young managers, we demonstrate individuals evaluate their ex-ante entrepreneurial abilities relative to nearby peers, rather than the population; these errors lead individuals to update their beliefs when peer groups are nonrepresentative and ultimately impact the rate of entrepreneurship. Despite the potential costs of the bias, we demonstrate that positive shocks to entrepreneurial confidence may offer benefits to the entrepreneurial sector by promoting female entrepreneurship and increasing the rate of entrepreneurial education.

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<sup>1</sup>A related line of literature finds entrepreneurs are confident in their likelihood of success (Åstebro et al., 2007) and generally hold optimistic views in life (Puri and Robinson, 2007). In addition, overconfidence is common among managers (Ben-David et al., 2007; Malmendier and Tate, 2005) and this bias explains the risky investment decisions (Malmendier and Tate, 2008; Malmendier et al., 2011).

<sup>2</sup>For instance, Shane (2008) estimates over fifty percent of new firms fail within five years, while 0.03 percent achieved more than \$100 million in sales.

<sup>3</sup>For instance, Lindquist et al. (2015) estimate that 35% of an individual's decision start an incorporated firm can be explained by family background.

Assuming ex-ante entrepreneurial ability is not directly observable, we hypothesize individuals inaccurately estimate their relative abilities based on the subset of the population they frequently observe and interact with, rather than the full population. Testing this argument requires (i) causal identification of peer effects, (ii) detailed employment data, and (iii) measures of an individual's experiences or views on entrepreneurship directly before interaction. To meet the first criteria we study students enrolled in the Master of Business Administration (MBA) program at Indiana University (IU).<sup>4</sup> At IU, every entering MBA student is randomly assigned to a cohort and a team in their first year in the program.<sup>5</sup> Students in the same cohort take the core MBA classes together, while students in the same team are assigned to work together on course projects and a large case study at the end of the first semester. Given that students do not choose these groups, some students will be more exposed to a particular set of students for reasons exogenous to their ability, effort, or interests.

To analyze each individual's career path before and after peer involvement with their peers, we obtain detailed individual-level employment records from a large online business networking service. From this online platform, we observe employment history (job title, location, start and end dates, firm name) and education (undergraduate institution, MBA major, graduation year). We also collect information on the employment and survival of each new firm. We then merge this data with the information about cohort and team assignments, and admissions information obtained from the MBA office at Indiana University. Finally, we use the online networking service to collect detailed employment information for each firm created by an individual in the sample.

To identify students confident in their entrepreneurial abilities, we incorporate admissions data detailing the intended major of the student prior to entering the MBA program. According to the sample, thirty-five percent intend to complete a major (either first or second) in entrepreneurship. We verify these students are significantly more likely to start a new firm following graduation. In addition, we survey incoming current students and confirm that students intending to major in entrepreneurship express high confidence about their entrepreneurial abilities (according to three separate measures) even after controlling for other observable characteristics. In comparison, we find no evidence that individuals who want

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<sup>4</sup>Ahern et al. (2014); Lerner and Malmendier (2013); Shue (2013) also explore a related setting. We differ from this past literature by precisely identifying peer interaction within groups of four individuals.

<sup>5</sup>A cohort has an average of approximately sixty students, while a team has four students on average. Depending on the year, an MBA class at IU has approximately 180 students.

to major in entrepreneurship are less risk/ambiguity averse than the rest of the population, limiting the role of risk preferences in our setting.<sup>6</sup> We then aggregate the number of confident peers within teams and cohorts.

We estimate having one cohort member with high entrepreneurial confidence (but without prior entrepreneurial experiences) increases the rate of entry into entrepreneurship by 0.4 percentage points within three years after graduation. Given the rate of firm creation during the three years following MBA graduation (3.4 percentage points), peers increase firm creation by roughly twelve percent relative to the mean. In contrast, we estimate that interaction with a cohort member experienced in entrepreneurship actually decreases the rate of entrepreneurship by 0.6 percentage points, confirming the findings of [Lerner and Malmendier \(2013\)](#).<sup>7</sup> By controlling for the intended major of each student, we can confirm students are modifying their future career plans in response to peer interaction. In addition, these effects reverse when peers intending to major in entrepreneurship also hold top GMAT scores, illustrating that students increase their relative confidence only when confident peers fail to sufficiently demonstrate ability.<sup>8</sup>

Given that each cohort has approximately sixty students, we hypothesize the effects will be larger if students were to interact in smaller groups, leading to tighter relationships. Since IU also forces students to interact in small teams of approximately four students, we can test this prediction. We show that a confident team member increases the overall rate of entering entrepreneurship by 1.2 percentage points; that is, when interactions are tighter, treatment increases firm creation by roughly thirty-five percent relative to the mean.

We next assess the economic implications of peer influence on entrepreneurship. First, we evaluate the long-term effects by extending the time period for each student to start a new firm. We find the differences between the treated and untreated students remain five years following graduation, suggesting that peers cause the creation of firms that would otherwise not exist in the economy. Second, we measure en-

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<sup>6</sup>In this way, our results find further support for [Holm et al. \(2013\)](#); [Koudstaal et al. \(2015\)](#) who find no evidence that entrepreneurs are more risk averse than the rest of the population.

<sup>7</sup>To classify students that previously started a new business we incorporate resumé and firm information from the online networking service. We estimate that 3.4 percent of the students in our sample had an unsuccessful entrepreneurial experience before the MBA.

<sup>8</sup>To further rule out the role of learning we confirm treatment continues to increase the rate of firm creation when (i) peers ultimately change to a major outside entrepreneurship or (ii) choose not to start a firm within five years of graduation. We argue these students may still influence the entrepreneurial confidence of other students, but are less likely to offer valuable advice to students about the entrepreneurial process.

entrepreneurial success by firm survival (lasting at least five years) and size (hiring at least ten employees), and confirm that student interactions impact the rate of successful firm creation. Third, entrepreneurs in our sample are more successful than the average entrepreneur in the economy. For example, by matching up the new firms in the sample to online information on funding sources, we estimate two percent of the firms created by IU-MBA graduates experience a successful exit by either being acquired or successfully completing an IPO. In addition, four percent of the firms receive venture capital funding, a rate six times higher than the average new firm in the economy (Robb and Robinson, 2012). Our results highlight the economic significance of peer influence on entrepreneurship.

To confirm the peer effect corresponds to increased entrepreneurial confidence, we directly survey the students in the population. First, we survey all graduates in the sample, asking how they rate their entrepreneurial abilities relative to other Kelley MBA alumni. We examine whether alumni interacting with peers intending to major in entrepreneurship (defined at both the cohort and team-level) report higher rates of relative confidence. In addition to our standard controls, we also condition on (i) whether the student ultimately graduated with an entrepreneurship major and (ii) whether the student founded a firm following graduation. Across all specifications we confirm an increase in relative confidence among the treated population years after the original treatment.

Second, we contact the treated students in our sample (those with a team member intending to major in entrepreneurship) and establish three key findings. According to the responses, 22 percent of students report the team member increased their likelihood of start a firm, while no students reported a decrease in likelihood. In addition, among impacted students, 46 percent report a change in views towards entrepreneurship, compared to eight percent reporting an increase in knowledge (and 46 percent report both channels). Most significant for our study, the majority of students report their changing views are related to increased entrepreneurial confidence rather than (i) increased willingness to accept risk, (ii) increased expectations of the financial benefits, (iii) altered preferences regarding non-financial benefits, or (v) other changes. The results help establish a direct connection between peer influence and increased entrepreneurial confidence.

As prior evidence highlights lower rates of entrepreneurship among women (Fairlie and Robb, 2009), we next evaluate whether peer influence affects the gender composition of entrepreneurs. Assuming

students endogenously sort into groups based on similar characteristics (i.e., male students interacting with other male students), the gender gap may be driven by peer effects as female workers will have less interaction with past or future entrepreneurs. We first confirm women are (i) less likely to major in entrepreneurship and (ii) less likely to enter entrepreneurship even after controlling for intended major. Second, we analyze our earlier surveys and confirm current and incoming female MBA students are significantly less confident in their entrepreneurial abilities compared to the male students. Third, we estimate larger peer effects for women, suggesting that forced interaction is especially valuable when students are otherwise less likely to connect with entrepreneurs. While past research has argued the entrepreneurial gender gap may be related to social networks (Markussen and Røed, 2017), we are the first to examine this relationship in an experimental setting and the first to connect these findings through overconfidence.

Lastly, we assess whether increased confidence affects the quality of entrepreneurship. On the one hand, individuals who overestimate their entrepreneurial ability should create lower-quality firms as their realized return to entrepreneurship is lower than estimated at entry. On the other hand, developing an early career interest in entrepreneurship, even if driven by overconfidence, might lead to acquiring more entrepreneurial skills early in a manager's career (i.e., entrepreneurial education, employment in start-ups, improving professional network, or better career timing to start a firm). Our results show that firms founded by treated individuals are no worse than those created by control individuals (as measured by survival rates and employment size), suggesting the positive effects of overconfidence may outweigh the negative aspects outlined above. In addition, we provide supporting evidence on the micro-foundations of our hypothesis. As we observe intended and actual majors, we verify that individuals intending to major in entrepreneurship increase the likelihood their peers switch majors to entrepreneurship.<sup>9</sup> Furthermore, we confirm that students graduating with an entrepreneurship major are more likely to later create a firm relative to other MBA students. Our results offer novel evidence that altering entrepreneurial confidence early in the career will indirectly impact the proportion of successful entrepreneurs. In this way, we add to the literature evaluating the effects of entrepreneurial programs on later firm creation (Huber et al., 2014; Lyons and Zhang, 2018).

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<sup>9</sup>Using employment at graduation, we also find weak evidence that individuals intending to major in entrepreneurship increase their peers likelihood of working at a start-up after graduation.

## 2 Literature Review

Our paper contributes to two separate literatures: (i) the behavioral traits of entrepreneurs and (ii) the role of social influence on entry to entrepreneurship. To begin, past research has analyzed whether entrepreneurs have unique behavioral traits from the rest of the population including optimism about the future (Puri and Robinson, 2007), risk aversion (Parker, 2009), ambiguity aversion (Knight, 1921), preferences for independence (Cooper and Saral, 2013), or preferences for variety (Åstebro and Thompson, 2011). Closest to our own research are papers analyzing whether entrepreneurs are overconfident in their abilities (Åstebro et al., 2007; Holm et al., 2013). We make two contributions to this literature. First, we offer novel evidence that entrepreneurial confidence is not a fixed trait, but instead impacted by peers networks. In this way, we build on a recent literature demonstrating behavioral preferences vary across time (Cohn et al., 2015; Guiso et al., 2018). Second, any behavioral differences between entrepreneurs and non-entrepreneurs may be driven by the fact that entrepreneurs have unique career experiences from the rest of the population. By observing the future entrepreneurial plans of skilled workers (rather than past experiences), we can measure differences in these individuals prior to starting a firm. According to our findings, workers intending to start a firm are more confident in their entrepreneurial abilities; however, we find limited evidence of greater optimism, lower risk or ambiguity aversion, or stronger preferences for variety or independence. Therefore our results highlight the primary role of overconfidence in explaining entry to entrepreneurship.

Next, we add to the literature documenting peer influence on entrepreneurship rates (Giannetti and Simonov, 2009; Kacperczyk, 2013; Lerner and Malmendier, 2013; Markussen and Røed, 2017; Nanda and Sorensen, 2010). Especially close to our experimental setting is Lerner and Malmendier (2013), who find that peers with prior entrepreneurial experience decrease the rate of firm creation by offering advice on entrepreneurial ideas; to our knowledge, this result is unique as other past research documents peer influence increases entrepreneurship. We add to their work, and make three primary contributions to this literature. We are the first to confirm peers can causally increase the rate of entrepreneurship in an experimental setting. In addition, we are the first to causally identify that peers can affect a behavioral trait, such as overconfidence, which in turn may impact entry to entrepreneurship. And lastly, we reconcile the past literature by demonstrating the dual existence of negative and positive peer effects.

### 3 Data

This paper relies on the random assignment of MBA students, data on new firm creation and success, and information on each student's intended major. We first introduce our experimental setting by closely following [Hacamo and Kleiner \(2017\)](#), then summarize the datasets, and finally confirm students intending to major in entrepreneurship are more confident than the rest of the population.

#### 3.1 Data Sources

**Kelley School of Business MBA Program.** Upon entry to the Full-Time MBA program, students are assigned to a cohort of roughly sixty students and take first semester courses together; each graduating class is composed of three or four cohorts in total. Students are also assigned to a team of four students and members must complete multiple case competitions and group homework assignments together. Assignment to a cohort and team is based on maximizing diversity within groups and is similar to methods in other MBA programs ([Ahern et al., 2014](#); [Shue, 2013](#)). For students graduating in 2003-2010, assignment was based across five characteristics: gender, race (for domestic students), citizenship (classified as US or International), GMAT scores (grouped in quartiles), and undergraduate major (business, STEM disciplines, and all other majors). Starting with the class of 2011, the MBA office added Keirseey Personality Type as a sixth characteristic. While the system is electronic, staff members are also allowed to make manual corrections to achieve balance. Important to our study, students are not sorted based on their intended MBA major or future employment goals. This is a particular benefit of the data, as randomizing based on majors or employment goals will generate little variation across teams and cohorts ([Chetty et al., 2011](#)).

**Student Admissions and Transcript Data.** We collect additional information about students from applications and Indiana University transcripts. Application information includes personal characteristics (citizenship, gender, ethnicity, etc.), GMAT scores, and intended MBA major. We create seven fixed effects for nationality: US, India, China, South Korea, Japan, Taiwan, and Other, as all other nations compose less than one percent of the sample. Race is included only for domestic managers and is defined as: Asian, Black, Hispanic, White, and Other. Other includes multi-racial, Native American, and Pacific Islander,



which each comprise less than one percent of the sample. We split GMAT scores into quartiles and create a fixed effect for each subset. Finally, we distinguish between three undergraduate majors: STEM, Business/Economics, and Other and create three separate fixed effects.

**Online Business Networking Service Data.** To observe career outcomes over several years we match each student to his or her corresponding profile from a large online social network. The profiles include self-reported data on both employment and education. All data is publicly available and obtained through web searches and then parsed into a panel dataset.<sup>10</sup> From this data we identify students starting new firms. We define firm creation using the following criteria. First, we include individuals that classify their job title as 'founder' of a firm. Second, we include in our list of entrepreneurs any 'chief executive officer', 'chief financial officer', or 'owner' that joined their firms the same year of founding. Each firm's startup year is either directly observed in the firm's profile on the business networking website, or estimated using the earliest date any employee joined the firm (as observed on the website). Finally, we include individuals with job titles like 'self-employed' and 'entrepreneur' and job titles that contain the phrase 'independent'. We impose additional restrictions on these criteria. In particular, if the firm already has employees prior to a person joining, we require that person be explicitly classified as an owner or founder in order to count him/her as an entrepreneur.

**Data Cleaning.** To match each student in the sample to his or her online profile, we find all online profiles that state the individual attended the Indiana University MBA program. We then manually match profiles based on first and last name and year of graduation (when available on the profile). We drop any graduates without online profiles as well as cases where the profiles list incorrect graduation years. Finally, we confirm that the undergraduate college/university from the admissions data matches the listed undergraduate college/university according to the online profile. In total, we are able to match nearly 95% of MBA graduates to their online profiles.

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<sup>10</sup>For a more detailed description of the data, we refer readers to [Hacamo and Kleiner \(2016\)](#).

## 3.2 Data Summary

**Student Demographics.** We first summarize firm creation across the sample in four separate figures. We include only students without prior experience in entrepreneurship in our sample. Figure 1 plots the rate of entrepreneurship by the year of graduation among all students in the MBA program. We require the students to start the firm within the first three years of graduation as the most recent class graduated in 2013. Rates of new firm creation are lowest among the class of 2004 and highest among the class of 2010. From the time-series, we identify a counter-cyclical pattern of firm creation.

We next measure entrepreneurship rates across subsets of the sample. First, Figure 2 distinguishes students with (i) no intention to major in entrepreneurship, and (ii) intending to either first or second major in entrepreneurship. We find students intending to major in entrepreneurship are nearly twice as likely to start a firm within five years of graduation. Second, Figure 3 splits the sample into students that (i) graduated the MBA with a major in entrepreneurship and (ii) those that majored in other fields. We find entrepreneurship majors are four times as likely to start a firm within five years of graduation. Third, Figure 4 distinguishes students (i) entering a start-up firm upon graduation, and (ii) those entering alternative employment. We find students entering a start-up are seventy-five percent more likely to start a firm within five years of graduation relative to the rest of the population.

We summarize the rates of entrepreneurship in Panel A of Table 1. Our sample initially includes all MBA students graduating between 2003 and 2013. The sample initially includes 2,189 students. Excluding students with prior experience as an entrepreneur, we reduce the sample to a final 2,102 students. Among the students in our final sample, 1.2% of students found a new firm directly after graduation and 1.8% within a year of graduation. After three (five) years of graduation, rates of new firm creation increase to 3.4% (4.3%). Last, we define a small firm as any firm employing at most ten employees and define a young firm as any firm that started after the student graduated from the MBA. We define a start-up as any firm classified as either young or small. We find that sixteen percent of the sample joins (rather than starts) a start-up firm within the three years following graduation.

According to the data, fourteen percent of students intended to first major in entrepreneurship, while another eighteen percent intended to second major in entrepreneurship. According to the online networking service only four percent of students actually graduate with a first major in entrepreneurship.

Turning to the team and cohort results, each team has an average of four students, while each cohort has an average of sixty-two students. First, the average team includes 0.1 students with prior experience in entrepreneurship, compared to the 2.1 students in the average cohort. Second, the average team includes 0.5 students intending to first major in entrepreneurship, compared to 10.5 students in the average cohort. Third, the average team includes 0.6 students intending to second major in entrepreneurship, compared to twelve students in the average cohort.

**New Firm Demographics.** We summarize data on the new firm demographics in Figures 5 and 6. First, we estimate that over 90% of firms survive over one year, 70% survive three years, and over 40% survive for five years following creation. Second, to measure employment, we use the networking website to find all users who report that they are working (or have worked) for the new firms created by our entrepreneurs. Within our sample, over 90% hire an employee (other than the founder), 50% hire five employees, and over 40% hire at least ten employees during the life of the firm.

In addition, we note a small proportion of these firms are particularly successful. We attempt to match each firm in our sample to information on financing sources from an entrepreneurial networking website. According to the data, two percent of the firms created by IU-MBA graduates experience a successful exit by either being acquired or successfully completing an IPO; in addition, four percent of the firms received VC funding.

Finally, in unreported results, we also match each new firm to a two-digit NAICS code. New firms predominantly arise in the industries: Professional, Scientific, and Technical Services (23%), Information (17%), Health Care (14%), Finance and Insurance (12%), Retail Trade (7%), Administrative (7%), and Educational Services (7%).

## 4 Methodology

### 4.1 Empirical Specification

[ ADD THEORY HERE ]

In this paper, we examine whether close interaction with peers intending to enter entrepreneurship may influence how individual's perceive their own entrepreneurial skills. Below, we provide a simple

argument detailing why a relationship may exist. To start, assume all individuals in the MBA program must decide between (i) joining the waged workforce and (ii) starting a new firm, and students make this decision based on their future expected wages. Students are aware of their potential employer job opportunities; for instance, students can apply for positions and observe the salary offers of each job offer.

While students can observe the distribution of entrepreneurial wages for all students, they may not be able to observe their relative place in the distribution. This is a standard argument in the entrepreneurship literature beginning with [Knight \(1921\)](#). In this case, they must base their expectations on (i) knowledge of their own skills, knowledge, and abilities, (ii) comparing these measures to their peers, and (iii) observing the confidence of their peers to gauge how they place themselves in the distribution. When students readily observe the characteristics of all other students in the sample, then the closeness of the relationship will be irrelevant in the decision. Alternatively, when students cannot observe the characteristics of all other students, then students will make judgements based on only a subset of peers. If this subset is representative of the population, this does not bias the information; however, if the subset is not representative, students will be biased when deciding their place in the distribution of entrepreneurial talent. Therefore, according to our hypothesis, when peers demonstrate high rates of confidence despite limited evidence of actual ability, individuals overweight their place in the distribution of the entrepreneurial talent pool, leading to increased rates of entrepreneurship.

Analyzing the hypothesis outline above is complicated by two primary obstacles. First, social networks may influence the rate of entrepreneurship through access to information and resources without altering confidence ([Gompers et al., 2005](#)). For instance, individuals with past entrepreneurial experience may discourage others from pursuing poor entrepreneurial endeavors ([Lerner and Malmendier, 2013](#)). To separately identify a change in confidence from learning access to information, we distinguish between (i) peers interested in starting a firm in the future but without prior entrepreneurial experience and (ii) peers with prior experience in entrepreneurship. We argue that while groups may impact entrepreneurial confidence, only the latter holds detailed knowledge about the entrepreneurial process. In a subsequent analysis presented below, we directly survey treated individuals to confirm this conjecture.

Second, to identify whether peers have a causal effect on the decision to start a firm, we must address the endogeneity concerns associated with peer effects ([Hellerstein et al., 2015](#); [Manski, 1993](#)). In our set-

ting, we exploit the forced assignment of incoming students into cohorts and teams at Indiana University. Students in the same cohort take the core MBA classes together, while students in the same team are assigned to work together on course projects and a large case study at the end of the semester. Specifically, we follow the standard approach in the literature and estimate peer effects from these cohorts and teams through a linear-in-means regression framework (Graham, 2008; Manski, 1993):

$$\begin{aligned} Entrepreneur_i &= \alpha + \beta \times Treatment_i + \gamma \times Experienced Peer_i \\ &+ \rho \times Intended Entrepreneur_i + Controls_i + YearFE_i + \varepsilon_i \end{aligned} \quad (1)$$

where  $Entrepreneur_i$  is a binary variable that takes a value of one when student  $i$  starts a new firm following MBA graduation. While the results primarily focus on firm creation within three years of graduation, we also vary the time frame from one to five years after graduation. Our primary independent variable of interest is  $Treatment_i$ , a discrete variable denoting the number of cohort (or team) members of student  $i$  that intend to major in entrepreneurship and have no prior entrepreneurial experience. We test the hypothesis that  $\beta > 0$ , which implies that individuals intending to major in entrepreneurship increase their peers' likelihood of firm creation.

First, to distinguish a behavioral effect from a transfer of entrepreneurial knowledge we follow the past literature and control for  $Experienced Peer_i$ : a discrete variable denoting the number of cohort (team) members of student  $i$  that created a failed firm prior to entering the MBA program. Based on Lerner and Malmendier (2013) we expect  $\gamma < 0$ , which implies that individuals with prior unsuccessful entrepreneurship experience decrease the likelihood of entrepreneurship of her peers. Second, to explicitly identify a change in career plans, we control for whether the student intends to major in entrepreneurship. Specifically, we include the variable  $Intended Entrepreneur_i$ , which takes a value of one if student  $i$  intends to either first or second major in entrepreneurship according to her MBA application.

Additionally, we include a year of graduation fixed effect since students are only randomly assigned within the same graduating class. We also include several other controls in the analysis to account for individual characteristics used by the MBA office in the assignment to teams and cohorts, namely: gender, citizenship, race, GMAT, and undergraduate major fixed effects. Finally, all errors are clustered at the cohort (team) level.

## 4.2 The Traits of Entrepreneur Majors

**Entrepreneurial Confidence.** We frame our paper on evaluating entrepreneurial confidence; however, focusing on confidence is traditionally challenging for two reasons. First, confidence is generally difficult to directly observe. Second, past students with high entrepreneurial confidence are also more likely to gain entrepreneurial experience following graduation; differences between these groups may therefore be driven by later career experiences rather than initial beliefs. To overcome both concerns, we consider a proxy for entrepreneurial confidence: whether the student intended to major in entrepreneurship at the time of MBA application.<sup>11</sup> Focusing on intended entrepreneurship majors is valuable as (i) we are able to observe this measure for the entire sample of students and (ii) we observe the measure prior to student interaction and prior to post-MBA employment experiences.

Given our primary interest in examining entrepreneurial confidence, it is necessary to confirm that students intending to major in entrepreneurship are significantly more confident compared to their classmates. Unfortunately, we cannot observe the entrepreneurial confidence of students prior to interaction as our data follows students in the MBA classes of 2003-2013. Instead, we survey current and incoming Indiana University MBA students from the classes of 2021 in the summer of 2019.<sup>12</sup> We summarize the class of 2021 in Panel B of 1. We estimate 24% of the students intend to first or second major in entrepreneurship; as a result, students have 15 peers in their cohort planning to major in entrepreneurship and 1.3 peers in their team.

In addition, we reached out to a total of 137 students across the class and received a total of 125 responses, a response rate of 91%. Within each survey we ask three questions to measure entrepreneurial (over)confidence:

Q1: Do you believe you would be worse, equal, or better at starting a company relative to the other MBA students at Kelley?

Q2: How confident are you in your ability to start a company?

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<sup>11</sup>For a more detailed discussion of the relationship, we refer the readers to the appendix.

<sup>12</sup>The downside of analyzing survey responses from the classes of 2021 is that these students may differ from students in the classes of 2003-2013 that are the focus of our primary analysis. Therefore, we also conduct a similar survey of the classes of 2003-2013 and confirm students that intended to major in entrepreneurship at the time of the MBA application remain more confident in their entrepreneurial abilities compared to other students. We refer interested readers to the Results Section for the full details of this analysis.

Q3: Among past IU graduates that started a firm, only 5-10% employ ten or more workers within the first year. What is the likelihood you personally start a firm that employs ten or more workers within the first year?

The first question (Q1) is our primary focus as it measures a student's *relative confidence* compared to other students in the same MBA class. We offer five multiple choice options: (i) Bottom 10% of students, (ii) Better than 10% of students, (iii) Better than 30% of students, (iv) Better than 50% of students, and (v) Better than 70% of students. We expect both overconfident individuals as well as those aware of their high entrepreneurial ability are likely to score higher in this question.

In addition to the first question, we also provide two alternate measures of confidence. The second question (Q2) develops a measure of *absolute confidence* on entrepreneurial ability as we do not incite a comparison with others nor provide a benchmark. As in (Q1), we expect students who are either overconfident or aware of their high entrepreneurial ability to rank higher on this measure. We offer five potential answers, (i) Not Confident, (ii) Not Very Confident, (iii) Somewhat Confident, (iv) Confident, and (v) Very Confident. The third question (Q3) measures whether students are confident in their abilities to start highly successful firms, and aims to separate *overconfident* individuals. We offer eight potential answers: (i) 0-1%, (ii) 1-2%, (iii) 2-5%, (iv) 5-10%, (v) 10-15%, (vi) 15-20%, (vii) 20-30%, (viii) 30-50%, and (ix) above 50%. We conjecture that students who respond above 10-15% are overconfident on their entrepreneurial ability. Our underlying assumption is that those who believe that their likelihood of starting a highly successful firm is well above the best entrepreneurs who attend the IU MBA are overconfident.

We present the first question (Q1) responses for both intended entrepreneurs and other students in Figure 7. As mentioned above, students are offered five multiple choice options: (i) Bottom 10% of students, (ii) Better than 10% of students, (iii) Better than 30% of students, (iv) Better than 50% of students, and (v) Better than 70% of students. Assuming students are fully aware of their own entrepreneurial abilities, we should observe that roughly half the sample replies they are above the median. However, in contrast, we observe that 70% of respondents place themselves above the median. We find this result is greater among students intending to major in entrepreneurship (87% respond at or above the median); however, 64% of students not intending to major in entrepreneurship still respond above the median. In addition, we find students intending to major in entrepreneurship are twice as likely to place themselves

in the top 30% of the distribution as the rest of the student population. Overall, students who intend to major in entrepreneurship self report higher rate of relative entrepreneurial confidence, and the differences are especially great within the right-hand side of the distribution.

As discussed above, we are primarily interested in whether students intending to major in entrepreneurship are more confident than other students. Therefore, for each question we rank each potential multiple choice answer and create a categorical variable that varies between 1 and n, where n is the highest ranked answer.<sup>13</sup> We then estimate the relationship between intending to major in entrepreneurship and each measure of confidence under a linear regression model. We present the results in Panel A of Table 2. Each regression model controls for a wide range of controls including graduation year, gender, nationality, and race. . We offer more details concerning each measure in the discussion in the next section and the appendix. Finally, we include an indicator whether the student started a firm prior to entering the MBA program.

The results in the first and second column in Panel A of Table 2 report the estimations for Q1, and show that students intending to major in entrepreneurship demonstrate higher relative entrepreneurial confidence. The first column excludes controls variables, while the second column includes the controls discussed above. The third and fourth column shows these same students also demonstrate higher absolute confidence (Q2). The fifth and sixth column reports our measure of overconfidence(Q3) and again find similar results. In addition, all three results are statistically significant. For comparison, we also present the relationship between entrepreneurial confidence and prior entrepreneurial experience. Across two of the three measures, we find no statistically significant evidence that students that previously started a firm are more confident in their entrepreneurial abilities. The results again help confirm that the intention to major in entrepreneurship is a valid and unique proxy for entrepreneurial confidence.

**Measures of Alternate Behavioral Traits.** Of course, any estimated relationship between entrepreneurial confidence and the intention to enter entrepreneurship has the potential for measurement error due to variables unobservable to the econometrician. Of particular concern is that behavioral traits or preferences, which are often observable in our primary dataset, may influence entrepreneurial outcomes. This presents a concern in our identification strategy; to demonstrate these concerns are relatively minor in our

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<sup>13</sup>The answers listed in the previous paragraph are already sorted from lowest to highest rank.



setting, we examine whether students intending to major in entrepreneurship differ from other students in their (i) optimism about the future, (i) risk and ambiguity aversion, and (ii) preferences for workplace independence and variety. Inclusion of these particular measures is motivated by the prior literature as discussed below. We therefore include the following questions in the survey:

Q4: Over the past 90 years, the US stock market has observed an average return of 9% a year. What will be the average annual US stock market return over the next ten years?

Q5: Among people born in the US in 1919, 1.4% are still alive in 2019. What is the likelihood you live to age 100?

Q6: How much would you pay for a lottery ticket that gives you a 50% probability of winning \$500 and 50% of winning nothing?

Q7: How much would you pay for a lottery ticket that gives you a  $x\%$  probability of winning \$500? ( $x$  is between 25% and 75%)

Q8: How important is it for you to be in control of your daily schedule?

Q9: How important is it for you to have a job providing a variety of different tasks?

Each question is related to a potential behavioral characteristic or preference that predicts entrepreneurship according to the literature. Q4 offers a measure of optimism about the economy (Bengtsson and Ekeblom, 2014). Q5 measures non-economic optimism (Puri and Robinson, 2007). Q6 measures risk aversion (Parker, 2009), while Q7 is about ambiguity aversion (Knight, 1921). Q8 details preferences for independence (Cooper and Saral, 2013) and Q9 concerns preferences for workplace variety (Åstebro and Thompson, 2011).

As before, we offer several multiple choice answers for each question, and describe all possible answers in the online appendix. We then rank each answer and convert to a positive integer. We estimate the relationship between intending to major in entrepreneurship and each characteristic. We then present the results in Panel B of Table 2. As before, we control for a wide range of controls including graduation year, gender, race, and nationality. Across all six measures, we only find two statistically significant links: students intending to major in entrepreneurship are less optimistic about future stock market returns,

while they are more optimistic about their health. Given these measures suggest opposing relationships, we argue optimism is unlikely to be driving our results. Otherwise, we find no evidence that students intending to major in entrepreneurship hold different behavioral traits from the rest of the population. The results help confirm the unique role of overconfidence in predicting entrepreneurial career plans.

## 5 Results

To test our hypotheses, we introduce three sets of results. First, we evaluate the influence of peers on new firm creation under a range of empirical specifications. Second, we test whether the results are driven by a change in entrepreneurial confidence. Third, we examine whether a shock to confidence leads to an increased rate of successful firms and a higher proportion of female entrepreneurs.

### 5.1 Peer Effects on Firm Creation

**Peer Effects at the Cohort Level.** In Table 3, we evaluate how peers influence firm creation. In Panel A, we define peers at the cohort-level, which include on average sixty-one students. The first and second column detail the results under a linear probability model, while the third and fourth columns offer the results under a probit regression model. The dependent variable of interest is a binary variable denoting the student founded a firm within three years of graduation. We use three years as the most recent MBA class graduated in 2013 and we collected employment data in 2016, allowing all students the same number of years to start a new firm. In Columns (1) and (3) of both panels, we include year fixed effects as students are only randomly assigned within the same graduating class. We also control for whether the student intended to major in entrepreneurship according to her application. In Columns (2) and (4), we add controls for experienced peers as well as demographics used in the sorting process: gender, nationality, race, GMAT score, and undergrad major.

According to Column (2) of panel A, we estimate that students with a cohort member intending to major in entrepreneurship (and without prior entrepreneurial experience) are 0.4 percentage points more likely to enter entrepreneurship. As the likelihood of starting a firm within three years of graduation is 3.4%, each cohort member increases the rate of peer new firm creation by 12% relative to the mean. Since these peers have no prior entrepreneurial experiences, the results lend support to our argument that

peers influence entrepreneurial confidence. To the best of our knowledge, this is the first evidence that peers increase firm creation in an experimental setting.<sup>14</sup>

In comparison, students with a cohort member with prior experience in entrepreneurship are 0.6 percentage points less likely to enter entrepreneurship, a decrease of over 20% relative to the mean. Recall from our earlier discussion that past research including [Nanda and Sorensen \(2010\)](#) report a positive correlation between an individual's past entrepreneurial experience and the incidence of firm creation of his workplace peers. However, in subsequent work, [Lerner and Malmendier \(2013\)](#) demonstrate in a randomized setting that an individual with entrepreneurial experience causally reduces the entry to entrepreneurship of her peers. Our results replicate the findings of [Lerner and Malmendier \(2013\)](#), while providing support for the existence of positive and negative peer effects. As a result, we are able to reconcile the opposing findings documented in the literature.

**Peer Effects at the Team Level.** In addition to cohorts, students are also assigned to a team of roughly four students, and students in the team complete group assignments and case studies together during the entire first year of the MBA. Given this close relationship, we expect peers to have a larger impact, relative to cohort members, on the career outcomes of fellow team members. We evaluate the influence of team peers on rates of new firm creation in Panel B of Table 3.

According to Column (2), we estimate that adding a peer intending to major in entrepreneurship increases the rate of firm creation among other team members by 1.2 percentage points, a 35% increase relative to the mean. We also estimate that adding a peer with entrepreneurial experience to a team decreases the rate of firm creation among other team members by two full percentage points, a decrease of over 50% relative to the mean. We note two deviations from the cohort results in Panel A of Table 3. First, the coefficients are significantly larger in size than the results from Panel A of Table 3. Second, the coefficients are no longer statistically-significant at the one percent level. Both results are likely driven by differences in the definition of a peer: as team are composed only four students (rather than sixty in the cohort), we expect greater peer influence due to team members, yet also more noise within the estimation.

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<sup>14</sup>While other researchers identify a similar positive relationship from peers within the same school ([Kacperczyk, 2013](#)), neighborhood ([Markussen and Røed, 2017](#)), or family ([Lindquist et al., 2015](#)), peers are not randomly assigned.

**Nonlinear Specification.** Given the likelihood of firm creation is only 3.4% according to Table 3, the binary dependent variable takes a value of one for only a small set of students, potentially raising concerns that the linear probability model is a misfit for this application. To mitigate these concerns, we also introduce a probit regression model in the third and fourth column of Panel A and B to ensure the results are robust to the modeling choice in the baseline estimation. We confirm that a student with a cohort (and team) member intending to major in entrepreneurship is more likely to start a new firm; meanwhile, a cohort (and team) member with prior experience in entrepreneurship decreases the likelihood other students start a new firm. The results suggest our prior estimates under the linear probability model do not depend on the particular empirical specification.

## 5.2 Robustness Results

**Temporary or Permanent Effects?** The results highlight the influence of peers on firm creation. One explanation for our findings is that peers may simply impact the timing of firm creation; alternatively, peers may impact the ultimate decision to enter entrepreneurship, leading to the creation of firms that otherwise would not exist in the economy. If peer influence leads to a permanent increase in firm creation, then the estimated peer effects will remain persistent in the long-run. If peers only accelerate the timing of firm creation (as opposed to the overall likelihood), then we should observe peer effects dissipate as the horizon increases.

In Panel A of Table 4 we estimate the impact of peer influence on new firm creation at one to five years following MBA graduation. First, we estimate that treatment increases the rate of new firm creation among fellow cohort members by 0.2 percentage points after one year, compared to 0.4 percentage points after three years, and 0.4 percentage points after five years.<sup>15</sup> Given the results persist after five years, we conclude that peers have a permanent impact on entrepreneurship rates, leading to the creation of firms that would otherwise not exist in the economy.

**Do Peers Affect the Creation of Successful Firms?** Thus far, we define entrepreneurs in the sample by requiring (i) the student is identified as the founder of the firm and (ii) no other employees joined the

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<sup>15</sup>In addition, we estimate that experienced peers decrease the rate of new firm creation among fellow cohort members by 0.4 percentage points after one year, compared to 0.6 percentage points after three years and 0.6 percentage points after five years.

firm prior to the student. One potential concern is that peers only influence the creation of small and unsuccessful firms. However, if the economic value of firm creation is contingent on the survival rate and employment growth, we can evaluate whether peers impact the rate of successful firm creation in our setting. To this end, we tighten the restriction of entrepreneur in Panel B of Table 4 by also requiring the firm (i) survives for at least  $x$  years, or (ii) employs at least  $x$  workers.

In Columns (1)-(3), we estimate the impact of peers on establishing employer firms. Cohort members intending to major in entrepreneurship increase the rate of employer firms with at least six employees by 0.4 percentage points and employer firms with at least ten employees by 0.3 percentage points.<sup>16</sup> In Columns (4)-(6), we estimate the impact of peers on establishing resilient firms—those that survive for at least five years. We estimate the likelihood of starting a firm lasting at least five years increases by 0.3 percentage points when a cohort member intends to major in entrepreneurship (compared to a similar rate of 0.4 percentage points for firms lasting at least one year).<sup>17</sup> In sum, peers influence the likelihood of employer and resilient firms, highlighting the potential for real effects on the economy.

### 5.3 Do Peers Affect Entrepreneurial Confidence?

**Reported Entrepreneurial Confidence** In Table 2 we illustrate that intended majors entrepreneurship majors are more confident in their entrepreneurial abilities than the rest of the student population after controlling for observable characteristics. In addition, the results discussed in above provide compelling evidence that peers influence the rate of firm creation. However, the combination of these two results does not confirm that peers impact the rate of firm creation through a change in entrepreneurial confidence. Therefore, in this section, we attempt to better isolate a change in entrepreneurial confidence through two additional analyses based on surveying the MBA graduates from the classes of 2003-2013.

In the first section, we attempt to contact all XXX students within the 2003-2013 sample by email and ask each student to complete a single question

Q1: Do you believe you would be worse, equal, or better at starting a company relative to the other MBA graduates from your class at Kelley?

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<sup>16</sup>Cohort members with prior experience in entrepreneurship decrease the rate of employer firms with six or more employees by 0.4 percentage points and the rate of 10+ employee firms by 0.3 percentage points.

<sup>17</sup>The likelihood of starting a firm lasting at least five years decreases by 0.6 percentage points when a cohort member has prior experience in entrepreneurship (compared to a rate of 0.8 percentage points for firms lasting at least one year).

We survey a total of XXX students, leading to a response rate of XXX%. We present our findings in Table 5. The first and second column define peers at the cohort-level, while the third and fourth column define peers at the level of the team. In the first and third column, we control only for year fixed effects and whether the student initially intended to major in entrepreneurship for consistency with the prior findings. In the second and fourth column, we include the standard fixed effects for (i) nationality, (ii) race, (iii) GMAT, and (iv) undergraduate major. We include two additional controls that likely influence entrepreneurial confidence. First, as these students have graduated, we control whether the students actually completed an entrepreneurship major as coursework may improve confidence. Second, as these students have worked following graduation, we also control for whether the student founded a firm during the five years following the MBA.

We estimate each additional cohort level peer intending to major in entrepreneurship increases relative confidence by roughly 0.03 points. Given a mean confidence of 3.1, we estimate a one percentage point increase relative to the mean. In addition, we estimate each additional team-level peer intending to major in entrepreneurship increases relative confidence by roughly 0.2 points, an increase of six percentage points relative to the mean. The results confirm our interpretation that individuals gain confidence from peer influence.

In addition, to confirm a relationship between intending to major in entrepreneurship and entrepreneurial confidence, recall that we surveyed MBA students in the classes of 2021. We focus on this particular set of students for three reasons. First, these students have a high response rate of over ninety percent. Second, these students completed their MBA application within the prior six months, limiting the amount of time between application and survey response. Third, as these students have not yet graduated, they have not had the chance to enter entrepreneurship following the MBA, which likely impacts confidence in abilities. However, a concern is that these classes of students are different from the MBA classes of 2003-2013 that are the focus of the majority of our analysis. The results presented in Table 5 help alleviate this concern: across all four specifications, we confirm that students intending to major in entrepreneurship report higher rates of relative confidence in their entrepreneurial abilities, and the results are statistically significant at the one percent level.

**Self Reported Effects of Treatment.** Next, we augment our current dataset by surveying the treated students in the data. We contact each student with a team member intending to major in entrepreneurship; among the 495 students contacted, we received 185 replies, for a response rate of 37%. We then ask three questions:

Q1: In your first-year at IU-Kelley, one of your teammates was interested in becoming an entrepreneur and wanted to choose entrepreneurship as his/her MBA major. Did the team member impact the likelihood that you would started (or already started) a company?

Q2: If so, how did he/she affect your likelihood?

Q3: If he/she changed your views of entrepreneurship, in what what way?

We report the multiple choice answers to the questions in the online appendix. We believe the survey results have three primary benefits. The first question confirms that peers intending to major in entrepreneurship increase interest in firm creation among the rest of the population. As students that have not started a new firm may still hold an interest in entrepreneurship, we can potentially identify a significantly larger peer effect than is directly observable from the employment histories. The second question helps distinguish between a change in behavioral traits and learning. The third question helps isolate which behavioral traits change. Specifically, we test whether peers influence (i) entrepreneurial confidence, (ii) risk aversion, (iii) optimism about the returns to entrepreneurship, or (iv) preferences toward non-monetary awards (such as valuing independence and variety).

We summarize the survey data in Figures 8, 9, and 10. First, we estimate that 22.4 percent of respondents reply that the peer team member increased their interest in starting a firm; in comparison, 77.6 percent of students report no impact and no students report a decrease. We note we are able to compare these findings directly to our regression analysis. According to Table 3, we estimated a team member increases the likelihood of firm creation by only 1.2 percentage points; therefore the majority of students that choose to not enter entrepreneurship are still influenced by treatment.

Second, among the students reporting the team member had an effect, 46 percent of students responded that the team member changed his/her views of entrepreneurship, 8 percent report he/she learned about entrepreneurship from the team member, and 46 percent responded that both channels

are present. Therefore, while it is difficult to fully distinguish between these channels, we find peers disproportionately impact behavioral characteristics.

Third, we distinguish how peers influence a student's views towards entrepreneurship. Among the students reporting a change in views, we offered five possible responses: (i) made me confident about my abilities (shock to entrepreneurial confidence), (ii) decreased my concerns about the risk of owning business (shock to risk aversion), (iii) helped me realize I would enjoy entrepreneurship (shock to preferences), (iv) increased my expectations of monetary incentives (shock to optimism), or (v) other. According to the results 56.5% of the population reported a change in entrepreneurial confidence. In comparison, we find smaller effects on risk aversion (26.1%), entrepreneurial preferences (4.4%), optimism (0%), and other (4.4%). Overall, the survey results further support our argument that the increase in firm starts is primarily driven by a change in entrepreneurial confidence.

#### **5.4 Do Peers Affect the Proportion of Female Entrepreneurs?**

**Entrepreneurial Confidence across Gender.** The results above (i) find confident peers increase the rate of entrepreneurship in the economy and (ii) offer evidence that this relationship is due to increased confidence. Based on these results, we next examine the implications of a shock to entrepreneurial confidence on the economy. We first analyze the impacts of confident peers on the rate of female entrepreneurship as past researchers have found significantly lower rates of entrepreneurship among women compared to men (Fairlie and Robb, 2009). We hypothesize the gap may be partially driven by peer effects: assuming individuals endogenously choose to sort into groups based on similar characteristics (i.e. males interacting with other males), female workers will then have less interaction with past or future entrepreneurs (Markussen and Røed, 2017). For the women in our setting, the forced assignment of students into teams and cohorts may be the only chance to interact with entrepreneurial students, leading to greater peer effects, and ultimately, entrepreneurial diversity.

Before analyzing peer influence by gender, we offer three initial findings. First, according to Panel A of Table 6 female students are 5.4 percentage points less likely to intend to major in entrepreneurship. Second, we confirm that men are roughly twice as likely to start a new firm relative to female students in the sample. In Panel A of Table 7 we estimate that women are 1.2 percentage points less likely to start



a firm in the first year after graduation and 3.2 percentage points less likely five years after graduation even after controlling for the intention to major in entrepreneurship. Therefore, we find evidence that the entrepreneurial gender gap widens over the student's career.

Third, we return to our survey results in Panel B and C of Table 6. In Panel B, we document that the women in the class of 2021 are less confident in their entrepreneurial abilities compared to the male students. These results hold after controlling for the intended major of the student, the prior entrepreneurial experience of the student. In Panel C, we document a similar relationship among women in the classes of 2003-2013. The results suggest that a shock to entrepreneurial confidence may have a disproportionate impact on female workers.<sup>18</sup>

**Peer Effects on Firm Creation across Gender.** We measure peer effects separately among male and female students. According to the the first and second column of Panel B of Table 7, peer influence disproportionately affects female students. We estimate peers majoring in entrepreneurship increase firm creation by 0.8 percentage points among female students compared to 0.3 percentage points among the male students in the sample.<sup>19</sup>

The results above highlight the significance of peer effects on female students. Assuming students choose to form sub-groups with similar students within classroom settings (Carrell et al., 2013), we may also find larger peer effects among similar students (i.e. female peers have larger effects on other female students in the same cohort). We test this hypothesis in the third and fourth column of Panel B by distinguishing between male peers and female peers within the cohort. Focusing on female entrepreneurship, we find that a female peer intending to major in entrepreneurship increases firm creation by one percentage point (compared to 0.7 percentage points for the male peer). Overall, we offer suggestive evidence that the gender of the peer impacts the rate of firm creation.

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<sup>18</sup>In addition, in unreported results, we find evidence that women are more risk averse and more ambiguity averse than their male counterparts.

<sup>19</sup>In unreported results, we establish similar results among racial minority students. First, we estimate white students are slightly more likely to start a new firm than international and U.S. minority students. Second, while we find limited evidence of peer affects on white students, peers with an intended major in entrepreneurship increase firm creation among minority students by 0.4 percentage points.

## 5.5 Do Peers Affect the Success of Entrepreneurs?

**Peer Effects on the Proportion of Successful Firm Creation.** We next evaluate whether peer influence impacts the proportion of entrepreneurial success. We exclusively analyze students that founded a firm within three years of graduation. According to Column (2) of Table 8 we find cohort members intending to major in entrepreneurship affect the rate of success (defined as surviving at least five years) by 5.1 percentage points, though this estimate is not statistically significant at the 10% level. According to our estimates in Column (4), cohort members intending to major in entrepreneurship increase the rate of success (now defined as employing five or more workers) by 8.0 percentage points. We find no evidence that a shock to entrepreneurial confidence increases the proportion of unsuccessful new firms.

**Peer Effects on Majoring in Entrepreneurship.** According to the results above, peer influence does not lead to the creation of worse firms. This is surprising as overconfident individuals will enter entrepreneurship despite holding a lower realized ability. One possible explanation for our results is that as peers influence future career plans, they also impact educational choices and employment in start-ups, leading to greater knowledge about entrepreneurship. When acquiring knowledge in this fashion also increases the chance of firm survival and growth (conditional on starting a firm), peers will alter the proportion of successful entrepreneurship. This argument is based on Panel B of Table 8, which illustrates that majoring in entrepreneurship is correlated with entrepreneurial success, conditional on starting a firm. In Columns (1) and (2), we measure success as employment size; in Columns (3) and (4), we measure success as survival. According to the results, students intending to major in entrepreneurship are 42% more likely to employ five or more workers and 42% more likely to survive at least five years.

To test whether peers affect the desire of students to major in entrepreneurship, we exploit data on the intended major of each student prior to interaction. In Panel A of Table 9, we first confirm that, relative to other majors, entrepreneurship majors are six percentage points more likely to start a firm within a year of graduation and eleven percentage points more likely to start a firm within five years. In Panel B of Table 9, we next evaluate how peers influence the decision to major in entrepreneurship. According to the second column, treatment increases the likelihood of switching to an entrepreneurship major by 2.1 percentage points. As students are required to choose a major in the first year of the MBA program,

the results confirm that peers immediately influence the decision to learn about entrepreneurship. The timing of the major choice also helps explain why peer influence during the first year of the MBA program can impact the rate of entrepreneurship years later.

**Peer Effects on Joining a Young or Small Firm.** For additional evidence, we next determine whether peers impact the choice to join a young firm (started after MBA graduation) or small firm (ten or fewer employees). Our analysis is guided by evidence suggesting individuals learn about firm creation through prior experience with start-ups (Guiso et al., 2015), and the assumption that employment with a start-up will lead to similar experiences as starting a firm—including a greater variety of responsibilities, experience with launching new products, exposure to income risk, and independence within the organization. In line with this argument, Panel A of Table 10 demonstrates that joining a young or small firm following MBA graduation increases the likelihood of starting a new firm by 2.7 percentage points within five years after graduation. For comparison, the effect is roughly a quarter the effect of majoring in entrepreneurship as measured above. We note students designated as a founder or owner of the company are not identified as joining a small/young firm.

We evaluate the impact of peers on joining a start-up following MBA graduation in Panel B of Table 10. According to Columns (1) and (2), a cohort member intending to major in entrepreneurship increases this likelihood by 0.4 percentage points, though the effect is not statistically significant at the 10% level. Besides offering additional evidence that peers influence the decision to learn about entrepreneurship, the results suggest peers may also allocate workers across young and small firms.

Combined with Table 9, our results contribute to the literature measuring the effects of learning about entrepreneurship on firm creation. Past research has found mixed evidence of these effects: while some studies illustrate that entrepreneurial training leads to increased firm creation (Huber et al., 2014; Lyons and Zhang, 2018), other researchers find more limited (or even negative) relationships (Fairlie et al., 2015; Oosterbeek et al., 2010; Von Graevenitz et al., 2010). By exploiting the random assignment of peers in classrooms, we offer new evidence that entrepreneurial learning (through education and on-the-job experience) does in fact increase the rate of firm creation.

## 5.6 Additional Tests

**Do the Results depend on the Abilities of the Intended Entrepreneur?** When judging their personal entrepreneurial abilities compared to fellow MBA students, we theorize students that regularly interact with intended entrepreneurs are better able to directly observe their entrepreneurial abilities and compare these students' abilities to their own. As the intended entrepreneurs in our sample do not perform better than other students in either entrance exams or classroom grades (as illustrated later in our results), students interacting with these students may gain increased confidence relative to their classmates.

To offer evidence of this argument, we distinguish between intended entrepreneurs entering the MBA program with a high GMAT score (in the top quartile of students) and all other intended entrepreneurs. According to the theory above, when students observe their classmates intending to major in entrepreneurship are more skilled than the rest of the population, they will be less confident in their abilities relative to the rest of the student population. Alternatively, when students observe these classmates are not unique in their skills, they may gain increased relative confidence. In line with this argument, we observe that intended entrepreneurs with a GMAT below the top quartile increase the rate of entrepreneurship among classmates; in contrast, intended entrepreneurs with a GMAT in the top quartile instead decrease the rate of entrepreneurship among classmates. The results offer a potential explanation for our findings and relate the increase in entrepreneurship to an increase in relative confidence.

**Are Our Results driven by Learning about Entrepreneurial Ideas?** To provide further evidence that our results are unlikely driven by a shock to information flows, we examine two subsamples of confident peers who are likely to have little information regarding whether a given entrepreneurial endeavor is a good investment: students who plan to major in entrepreneurship and then graduate with a different major or do not start a firm following graduation. In Columns (1) and (2) of Table 11, we define treatment as the number of cohort members that (i) intend to major in entrepreneurship and (ii) do not start a firm within five years following graduation. We estimate that treatment still increases the rate of firm creation by 0.6 percentage points. In Columns (3) and (4), we instead define treatment as the number of cohort members (i) intending to major in entrepreneurship and (ii) graduate from the MBA with a different major. According to this definition, peers increase firm creation rates by 0.4 percentage points.

The results continue to hold even after excluding peers holding relevant information.

**Peer Effects on Classroom Performance.** We illustrate peers influence the rate of firm creation, and argue for a behavioral channel as opposed to a rational framework such as learning. For evidence against a learning mechanism, we next illustrate that (i) intended entrepreneurs do not outperform other students in the classroom, and (ii) peers intending to major in entrepreneurship do not impact the classroom performance of peers. We focus on classroom performance based on prior research documenting the high success rate of skilled and educated entrepreneurs (Gupta and Hacamo, 2018; Walsh and Nagaoka, 2009; ?). We measure classroom performance from grades in the first semester of the MBA as all students are enrolled in the same Core Curriculum. Though the exact nature of the Core Curriculum has changed over the years, the courses cover eight topics taught by eight different faculty members: Critical Thinking, Economics, Finance, Accounting, Marketing, Operations, Quantitative Analysis, and Strategic Management. A recent literature has confirmed the value of these general managerial skills over more firm- or industry-specific knowledge (Custódio et al., 2013; Frydman, 2005; Murphy and Zbojnik, 2007).

We present the results in Table 12. In the first and second column we define peers at the cohort-level, while in the third and fourth column we define peers at the level of the team. Across all four columns, we find no evidence that peers intending to major in entrepreneurship impact classroom performance. Overall, we find no evidence that our peers effects are likely driven by a learning mechanism.

In addition, the results demonstrate that students intending to major in entrepreneurship are not statistically different in their classroom performance. If anything, these students perform slightly below the mean student, though these differences are not statistically different. These results offer one possible explanation for why interacting with intended entrepreneurs may increase entrepreneurial confidence: students realize intended entrepreneurs perform no better in the classroom than other peers, suggesting they do not hold unique abilities.

**Peers with other Intended Majors.** Our framework exploits our unique data on the intended major of each student in the sample prior to peer interaction. To identify individuals with confidence in starting a new firm, we analyze students intending to major in entrepreneurship. If this interpretation is correct, student peers intending to major in other subjects (finance, marketing, management, operations, and

strategy) should not affect the rate of firm creation.

In Table 13 we find no statistical evidence that cohort members intending to major in subjects outside entrepreneurship influence the likelihood of firm creation.<sup>20</sup> We consider each subject in a separate regression and combine both first and second intended majors. Across all specifications, no coefficient is statistically significant at the 10% level. The lack of results under all specifications suggest that the intention to major in entrepreneurship is a unique predictor of entrepreneurial confidence.

**Assignment based on Student Characteristics.** As mentioned, cohorts and teams are assigned based on a range of student characteristics. Assuming these characteristics also predict the intention to major in entrepreneurship, this is a potential concern in our identification strategy. To overcome this obstacle, our regression control for the characteristics used under the assignment process.

For further confirmation, we analyze whether the characteristics used in the assignment process predict cohorts/teams with a relatively high proportion of intended entrepreneurs in Table 14. Failure to find any relationship offers additional evidence our results are driven by exposure to peers intending to major in entrepreneurship. In Panel A we evaluate the demographics within each cohort, while Panel B evaluates demographics within each team. We include a year fixed effect when analyzing cohorts as students are only randomly assigned within the same graduating year. We include a cohort fixed effect when analyzing teams as students are randomly assigned to teams within the same cohort. As we conduct our analysis at the cohort/team level, Panel A has only 36 observations, while Panel B has 566 observations.

For both Panel A and B, the first column evaluates the number of cohort/team members with online business networking service profiles; as we are only able to complete our analysis for students with an online profile, we confirm that the missing profiles is unlikely to be driving our results. The second column evaluates the proportion of female students. The third column evaluates the mean GMAT Score of the students in each cohort/team. The fourth column evaluates the proportion of international students and the fifth column evaluates the proportion of U.S. minority students.

According to Table 14, cohort/teams with a high proportion of intended entrepreneurs (defined as those cohorts/teams with intended entrepreneurs above the median) are not statistically differ from the

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<sup>20</sup>In unreported results, we conduct a similar analysis identifying peers at the team level. Again, no coefficients are statistically significant at the 10% level.

rest of the cohort/teams. For instance, cohorts with a high proportion of intended entrepreneurs are slightly *more* likely to include female students (though the relationship is not statistically significant); in comparison, teams with a high proportion of intended entrepreneurs are slightly *less* likely to include female students (though again the result not statistically significant). Overall, the results continue to suggest that students are influenced by exposure to intended entrepreneurs and not alternative, correlated characteristics.

## 6 Concluding Remarks

This paper offers causal evidence that overconfidence is time-varying and influenced by social interactions, leading to increased entrepreneurship among skilled workers. Though we focus our analysis on students pursuing an MBA at Indiana University, the results have significant implications outside the particular experimental setting. First, as individuals will routinely interact with peers outside their team or cohort, our estimates offer only a lower bound on the influence of peer interaction on firm creation. Policies that promote interaction between skilled workers, even within narrow contexts, will likely impact entrepreneurial confidence (and therefore entrepreneurship rates) across the economy. Second, we find the sign of peer influence is ambiguous and depends on peer attitudes towards entrepreneurship. Policy makers must be aware of the divergent impact of peers when designing policies promoting firm creation. Third, as peer influence predominantly affects female students, our results highlight the potential for policies supporting the diversity of entrepreneurs. Fourth, our findings suggest that promoting entrepreneurial confidence will increase the rate of firm creation without decreasing the conditional rate of success.

## References

- Philippe Aghion, Peter Howitt, Maxine Brant-Collett, and Cecilia García-Peñalosa. *Endogenous growth theory*. MIT press, 1998.
- Kenneth R Ahern, Ran Duchin, and Tyler Shumway. Peer effects in risk aversion and trust. *Review of Financial Studies*, page hhu042, 2014.
- Thomas Åstebro and Peter Thompson. Entrepreneurs, jacks of all trades or hobos? *Research policy*, 40(5):637–649, 2011.
- Thomas Åstebro, Scott A Jeffrey, and Gordon K Adomdza. Inventor perseverance after being told to quit: The role of cognitive biases. *Journal of behavioral decision making*, 20(3):253–272, 2007.
- William J Baumol. Entrepreneurship in economic theory. *The American economic review*, pages 64–71, 1968.
- Itzhak Ben-David, John R Graham, and Campbell R Harvey. Managerial overconfidence and corporate policies. Technical report, National Bureau of Economic Research, 2007.
- Ola Bengtsson and Daniel Ekeblom. The bright but right view? A new type of evidence on entrepreneurial optimism. 2014.
- Colin Camerer and Dan Lovallo. Overconfidence and excess entry: An experimental approach. *American economic review*, 89(1):306–318, 1999.
- Scott E. Carrell, Bruce I. Sacerdote, and James E. West. From natural variation to optimal policy? The importance of endogenous peer group formation. *Econometrica*, 81(3):855–882, 2013.
- Raj Chetty, John N Friedman, Nathaniel Hilger, Emmanuel Saez, Diane Whitmore Schanzenbach, and Danny Yagan. How does your kindergarten classroom affect your earnings? Evidence from project star\*. *The Quarterly journal of economics*, 126(4):1593–1660, 2011.
- Alain Cohn, Jan Engelmann, Ernst Fehr, and Michel André Maréchal. Evidence for countercyclical risk aversion: An experiment with financial professionals. *American Economic Review*, 105(2):860–85, 2015.
- David J Cooper and Krista Jabs Saral. Entrepreneurship and team participation: An experimental study. *European Economic Review*, 59:126–140, 2013.
- Cláudia Custódio, Miguel A Ferreira, and Pedro Matos. Generalists versus specialists: Lifetime work experience and chief executive officer pay. *Journal of Financial Economics*, 108(2):471–492, 2013.
- Ryan Decker, John Haltiwanger, Ron Jarmin, Javier Miranda, Aaron Chatterji, Edward Glaeser, William Kerr, Yves Zenou, Jackline Wahba, and Ramana Nanda. The importance of family background and neighbourhood effects as determinants of entrepreneurship. 2016.
- Robert W Fairlie and Alicia M Robb. Gender differences in business performance: Evidence from the characteristics



- of business owners survey. *Small Business Economics*, 33(4):375, 2009.
- Robert W Fairlie, Dean Karlan, and Jonathan Zinman. Behind the gate experiment: Evidence on effects of and rationales for subsidized entrepreneurship training. *American Economic Journal: Economic Policy*, 7(2):125–161, 2015.
- Carola Frydman. Rising through the ranks. the evolution of the market for corporate executives, 1936-2003. *V Columbia University*, 2005.
- Mariassunta Giannetti and Andrei Simonov. Social interactions and entrepreneurial activity. *Journal of Economics & Management Strategy*, 18(3):665–709, 2009.
- Paul Gompers, Josh Lerner, and David Scharfstein. Entrepreneurial spawning: Public corporations and the genesis of new ventures, 1986 to 1999. *The journal of Finance*, 60(2):577–614, 2005.
- Bryan S Graham. Identifying social interactions through conditional variance restrictions. *Econometrica*, 76(3): 643–660, 2008.
- Luigi Guiso, Luigi Pistaferri, and Fabiano Schivardi. Learning entrepreneurship from other entrepreneurs? Technical report, National Bureau of Economic Research, 2015.
- Luigi Guiso, Paola Sapienza, and Luigi Zingales. Time varying risk aversion. *Journal of Financial Economics*, 128(3): 403–421, 2018.
- Nandini Gupta and Isaac Hacamo. Superstar (and entrepreneurial) engineers in finance jobs. Technical report, Kelley School of Business, Indiana University, 2018.
- Isaac Hacamo and Kristoph Kleiner. Finding success in tragedy: Forced entrepreneurs after corporate bankruptcy. *Working Paper*, 2016.
- Isaac Hacamo and Kristoph Kleiner. Competing for talent: Firms, managers, and social networks. *Working Paper*, 2017.
- Robert E Hall and Susan E Woodward. The burden of the nondiversifiable risk of entrepreneurship. *American Economic Review*, 100(3):1163–94, 2010.
- Barton H Hamilton. Does entrepreneurship pay? an empirical analysis of the returns to self-employment. *Journal of Political economy*, 108(3):604–631, 2000.
- Judith K Hellerstein, Mark J Kutzbach, and David Neumark. Labor market networks and recovery from mass layoffs before, during, and after the great recession. Technical report, NBER, 2015.
- Hakan J Holm, Sonja Opper, and Victor Nee. Entrepreneurs under uncertainty: An economic experiment in china. *Management Science*, 59(7):1671–1687, 2013.
- Laura Rosendahl Huber, Randolph Sloof, and Mirjam Van Praag. The effect of early entrepreneurship education:

- Evidence from a field experiment. *European Economic Review*, 72:76–97, 2014.
- Aleksandra J Kacperczyk. Social influence and entrepreneurship: The effect of university peers on entrepreneurial entry. *Organization Science*, 24(3):664–683, 2013.
- Frank H Knight. Cost of production and price over long and short periods. *Journal of Political Economy*, 29(4): 304–335, 1921.
- Philipp Koellinger, Maria Minniti, and Christian Schade. “i think i can, i think i can”: Overconfidence and entrepreneurial behavior. *Journal of economic psychology*, 28(4):502–527, 2007.
- Martin Koudstaal, Randolph Sloof, and Mirjam Van Praag. Risk, uncertainty, and entrepreneurship: Evidence from a lab-in-the-field experiment. *Management Science*, 62(10):2897–2915, 2015.
- Josh Lerner and Ulrike Malmendier. With a little help from my (random) friends: Success and failure in post-business school entrepreneurship. *Review of Financial Studies*, page hht024, 2013.
- Matthew J Lindquist, Joeri Sol, and Mirjam Van Praag. Why do entrepreneurial parents have entrepreneurial children? *Journal of Labor Economics*, 33(2):269–296, 2015.
- Matthew J Lindquist, Joeri Sol, Mirjam Van Praag, and Theodor Vladasel. On the origins of entrepreneurship: Evidence from sibling correlations. 2016.
- Robert E Lucas. On the mechanics of economic development. *Journal of monetary economics*, 22(1):3–42, 1988.
- Elizabeth Lyons and Laurina Zhang. Who does (not) benefit from entrepreneurship programs? *Strategic Management Journal*, 39(1):85–112, 2018.
- Ulrike Malmendier and Geoffrey Tate. CEO overconfidence and corporate investment. *The journal of finance*, 60(6): 2661–2700, 2005.
- Ulrike Malmendier and Geoffrey Tate. Who makes acquisitions? CEO overconfidence and the market’s reaction. *Journal of financial Economics*, 89(1):20–43, 2008.
- Ulrike Malmendier, Geoffrey Tate, and Jon Yan. Overconfidence and early-life experiences: the effect of managerial traits on corporate financial policies. *The Journal of finance*, 66(5):1687–1733, 2011.
- Charles F Manski. Identification of endogenous social effects: The reflection problem. *The review of economic studies*, 60(3):531–542, 1993.
- Simen Markussen and Knut Røed. The gender gap in entrepreneurship—the role of peer effects. *Journal of Economic Behavior & Organization*, 134:356–373, 2017.
- Tobias J Moskowitz and Annette Vissing-Jørgensen. The returns to entrepreneurial investment: A private equity premium puzzle? *American Economic Review*, 92(4):745–778, 2002.
- Kevin J Murphy and Jan Zabojnik. Managerial capital and the market for ceos. 2007.

- Ramana Nanda and Jesper B. Sorensen. Workplace peers and entrepreneurship. *Management Science*, 56(7):1116–1126, 2010.
- Nicos Nicolaou, Scott Shane, Lynn Cherkas, Janice Hunkin, and Tim D Spector. Is the tendency to engage in entrepreneurship genetic? *Management Science*, 54(1):167–179, 2008.
- Hessel Oosterbeek, Mirjam Van Praag, and Auke Ijsselstein. The impact of entrepreneurship education on entrepreneurship skills and motivation. *European economic review*, 54(3):442–454, 2010.
- Simon C Parker. *The economics of entrepreneurship*. Cambridge University Press, 2009.
- Manju Puri and David T Robinson. Optimism and economic choice. *Journal of Financial Economics*, 86(1):71–99, 2007.
- Alicia M Robb and David T Robinson. The capital structure decisions of new firms. *Review of Financial Studies*, page hhs072, 2012.
- Antoinette Schoar. The divide between subsistence and transformational entrepreneurship. *Innovation policy and the economy*, 10(1):57–81, 2010.
- Scott Shane. *Fool's Gold?: The truth behind angel investing in America*. Oxford University Press, 2008.
- Kelly Shue. Executive networks and firm policies: Evidence from the random assignment of MBA peers. *Review of Financial Studies*, 26(6):1401–1442, 2013.
- Georg Von Graevenitz, Dietmar Harhoff, and Richard Weber. The effects of entrepreneurship education. *Journal of Economic Behavior & Organization*, 76(1):90–112, 2010.
- John P Walsh and Sadao Nagaoka. Who invents? evidence from the japan&us inventor survey. *RIETI Discussion papers*, 2009.

**Table 1: Data Summary**

This table reports the summary statistics of all variables in our sample. Panel A summarizes students graduating in 2003-2013; Panel B summarizes students graduating in 2021. *Entrepreneur within X-y of MBA* is a dummy variable equal to one if an individual is an entrepreneur X years after graduating from the MBA program. *Joined Start-Up* is a dummy variable equal to one if, at the MBA graduation, an individual joins a firm that is younger than 2 years old or employs less than 10 workers. *Intended Entrepreneur* is a dummy variable equal to one if a student declares in her MBA application an intent to major in entrepreneurship as first or second major. *Graduated Entrepreneur Major* is a dummy variable equal to one if a student effectively graduates with a major in entrepreneurship. *Experienced Peer (Team/Cohort)* measures the number of peers a student has in her first year MBA team/cohort with failed entrepreneurial experience. *Treatment (Team/Cohort)* measures the number of peers a student has in her first year MBA team/cohort who intend to major in entrepreneurship.

**Panel A: Summary of 2003-2013 MBA Students**

	N	Mean	Std	50th
Entrepreneur within 1y of MBA	2102	0.018	0.13	0
Entrepreneur within 2y of MBA	2102	0.026	0.16	0
Entrepreneur within 3y of MBA	2102	0.034	0.18	0
Entrepreneur within 4y of MBA	2102	0.039	0.19	0
Entrepreneur within 5y of MBA	2102	0.043	0.20	0
Joined Start-Up	2102	0.16	0.36	0
Graduated Entrepreneur Major	2102	0.047	0.21	0
Intended Entrepreneur	2102	0.35	0.48	0
Peer Intending to Major in Entre (Cohort)	2102	22.3	8.04	21
Peer Intending to Major in Entre (Team)	2102	0.69	0.46	1
Experienced Peer (Cohort)	2102	2.12	1.82	2
Experienced Peer (Team)	2102	0.092	0.29	0
Team Size	2102	4.04	0.79	4
Cohort Size	2102	61.6	8.60	61
MBA Graduation Year	2102	2008.0	3.22	2008

**Panel B: Summary of 2021 MBA Students**

	N	Mean	Std	50th
Relative Entrepreneurial Confidence	125	3.74	0.97	4
Absolute Entrepreneurial Confidence	125	2.22	0.63	2
Entrepreneurial Overconfidence	125	3.10	1.72	3
Intended Entrepreneur	125	0.24	0.43	0
Prior Entrepreneur	125	0.10	0.31	0
Peer Intending to Major in Entre (Cohort)	119	15.4	3.69	16
Peer Intending to Major in Entre (Team)	119	1.29	0.81	1
Team Size	125	6.66	1.20	7
Cohort Size	125	65.4	14.8	64

**Table 2: Are Entrepreneurship Majors More Confident?**

This table reports the behavioral traits of students intending to major in entrepreneurship. In Panel A, we estimate whether students intending to major in entrepreneurship are more confident in their entrepreneurial abilities. The first and second column measures relative entrepreneurial confidence, the third and fourth column measures absolute entrepreneurial confidence relative to other MBA students, and the fifth/sixth column measures entrepreneurial overconfidence. Finally, we control for differences in graduation year, gender, nationality, and race. In Panel B, we estimate whether students intending to major in entrepreneurship are associated with other behavioral traits. The first column measures economic optimism, the second column measures non-economic optimism, the third column measure risk aversion, the fourth column measures ambiguity aversion, the fifth column measures a preference for independence, and the sixth column measures a preference for workplace variety. We control for whether the student previously founded a firm prior to the MBA. We also control for differences in graduation year, gender, nationality, and race. We use \* to denote significance at the 10% level, \*\* to denote significance at the 5% level, and \*\*\* to denote significance at the 1% level.

**Panel A: Entrepreneurial Confidence and Overconfidence**

	Relative Entrepreneurial Confidence		Alternate Measure 1		Alternate Measure 2	
	(i)	(ii)	(i)	(ii)	(i)	(ii)
Intended Entrepreneur	0.512*** (3.04)	0.459*** (2.66)	0.275* (1.90)	0.226* (1.76)	0.872** (2.52)	0.922*** (2.63)
Prior Entrepreneur		0.149 (0.49)		0.491** (2.22)		0.092 (0.19)
Gender FE	No	Yes	No	Yes	No	Yes
Nationality FE	No	Yes	No	Yes	No	Yes
Race FE	No	Yes	No	Yes	No	Yes
N	125	125	125	125	125	125
R-squared	.051	.16	.035	.15	.047	.16

**Panel B: Alternative Behavioral Traits**

	Optimism		Risk/Ambiguity Aversion		Preferences	
	Economic	Noneconomic	Risk	Ambiguity	Independence	Variety
Intended Entrepreneur	-0.365* (-1.67)	1.035** (2.12)	0.084 (0.23)	0.166 (0.51)	0.042 (0.26)	0.202 (1.31)
Prior Entrepreneur	0.001 (0.00)	-0.555 (-0.89)	0.800 (1.55)	0.690 (1.43)	0.196 (0.76)	0.317 (1.60)
Gender FE	Yes	Yes	Yes	Yes	Yes	Yes
Nationality FE	Yes	Yes	Yes	Yes	Yes	Yes
Race FE	Yes	Yes	Yes	Yes	Yes	Yes
N	125	124	125	125	125	125
R-squared	.034	.043	.081	.077	.08	.065

**Table 3: Do Peers Affect Firm Creation?**

This table reports how confident peers affect firm creation. In Panel A, we identify peers at the cohort-level; in Panel B, we identify peers at the team-level. In the first and second columns of both panels, we estimate a linear probability model; in the third and fourth columns, we estimate a probit model. *Treatment* measures the number of peers in her first year MBA cohort (in Panel A) or team (in Panel B) who intend to major in entrepreneurship. *Experienced Peer* measures the number of peers in her first year MBA cohort (in Panel A) or team (in Panel B) with a failed entrepreneurial experience. *Intended Entrepreneur* is a dummy variable equal to one if a student declares in her MBA application an intent to major in entrepreneurship. We use \* to denote significance at the 10% level, \*\* to denote significance at the 5% level, and \*\*\* to denote significance at the 1% level. We cluster standard errors at the cohort-level in Panel A and the team-level in Panel B.

**Panel A: Cohort Peer Effects**

	Linear		Probit	
	(i)	(ii)	(i)	(ii)
Treatment	0.003* (1.96)	0.004*** (3.37)	0.041** (2.08)	0.069*** (3.68)
Experienced Peer		-0.006*** (-3.20)		-0.098*** (-2.93)
Intended Entrepreneur	0.020** (2.67)	0.018** (2.42)	0.270*** (2.87)	0.250** (2.46)
Year FE	Yes	Yes	Yes	Yes
Gender FE	No	Yes	No	Yes
Nationality FE	No	Yes	No	Yes
Race FE	No	Yes	No	Yes
GMAT FE	No	Yes	No	Yes
Undergrad Major FE	No	Yes	No	Yes
N	2102	2102	1919	1892
R-squared	.016	.035		

**Panel B: Team Peer Effects**

	Linear		Probit	
	(i)	(ii)	(i)	(ii)
Treatment	0.013* (1.95)	0.012* (1.78)	0.239 (1.61)	0.263* (1.73)
Experienced Peer		-0.020** (-2.20)		-0.472* (-1.65)
Intended Entrepreneur	0.025*** (3.11)	0.022*** (2.85)		0.379*** (3.04)
Year FE	Yes	Yes	Yes	Yes
Team Size FE	Yes	Yes	Yes	Yes
Gender FE	No	Yes	No	Yes
Nationality FE	No	Yes	No	Yes
Race FE	No	Yes	No	Yes
GMAT FE	No	Yes	No	Yes
Undergrad Major FE	No	Yes	No	Yes
N	2102	2102	1919	1808
R-squared	.018	.041		

**Table 4: Do Peers Affect the Entry of Successful Firms?**

This table reports how confident peers affect cumulative firm creation and successful firm creation. In Panel A, we assess whether peers affect firm creation temporarily or permanently by estimating firm creation within X years following MBA graduation. We allow X to be 1,2,3,4,5 years. In Panel B, we measure successful firm creation as employing at least X employees, or surviving for a minimum of X years. *Treatment* measures the number of peers in her first year MBA cohort who intend to major in entrepreneurship. *Experienced Peer* measures the number of peers in her first year MBA cohort with a failed entrepreneurial experience. *Intended Entrepreneur* is a dummy variable equal to one if a student declares in her MBA application an intent to major in entrepreneurship. We use \* to denote significance at the 10% level, \*\* to denote significance at the 5% level, and \*\*\* to denote significance at the 1% level. We cluster standard errors at the cohort level.

**Panel A: Do peers affect firm creation temporarily or permanently?**

	Firm Creation X Years after MBA Graduation				
	1 Year	2 Years	3 Years	4 Years	5 Years
Treatment	0.002** (2.28)	0.001* (2.02)	0.004*** (3.37)	0.004*** (3.27)	0.004*** (3.16)
Experienced Peer	-0.004** (-2.59)	-0.005*** (-3.04)	-0.006*** (-3.20)	-0.005** (-2.42)	-0.006** (-2.51)
Intended Entrepreneur	0.014** (2.15)	0.023*** (3.72)	0.018** (2.42)	0.024** (2.39)	0.032*** (3.04)
Year FE	Yes	Yes	Yes	Yes	Yes
Gender FE	Yes	Yes	Yes	Yes	Yes
Nationality FE	Yes	Yes	Yes	Yes	Yes
Race FE	Yes	Yes	Yes	Yes	Yes
GMAT FE	Yes	Yes	Yes	Yes	Yes
Undergrad Major FE	Yes	Yes	Yes	Yes	Yes
N	2102	2102	2102	2102	2102
R-squared	.034	.039	.035	.037	.04

**Panel B: Do peers affect the entry of successful firms (employment and survival)?**

	Employment			Survival		
	2+ Emp	6+ Emp	10+ Emp	1+ Years	3+ Years	5+ Years
Treatment	0.003** (1.98)	0.004*** (2.61)	0.003*** (2.76)	0.004** (2.16)	0.003* (1.70)	0.003* (1.91)
Experienced Peer	-0.007** (-2.39)	-0.004* (-1.71)	-0.003 (-1.48)	-0.008** (-2.35)	-0.006* (-1.88)	-0.006** (-2.20)
Intended Entrepreneur	0.015** (2.25)	0.017*** (3.11)	0.012** (2.41)	0.016* (1.85)	0.013* (1.76)	0.014** (2.18)
Constant	-0.132 (-0.89)	-0.130 (-1.08)	-0.115 (-1.06)	-0.180 (-0.99)	-0.124 (-0.78)	-0.109 (-0.78)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Gender FE	Yes	Yes	Yes	Yes	Yes	Yes
Nationality FE	Yes	Yes	Yes	Yes	Yes	Yes
Race FE	Yes	Yes	Yes	Yes	Yes	Yes
GMAT FE	Yes	Yes	Yes	Yes	Yes	Yes
Undergrad Major FE	Yes	Yes	Yes	Yes	Yes	Yes
N	2102	2102	2102	2102	2102	2102
R-squared	.035	.041	.038	.034	.024	.02

**Table 5: Do Peers Impact Entrepreneurial Confidence?**

This table reports the entrepreneurial confidence of students intending to major in entrepreneurship. In Panel A, we survey students from the classes of 2003-2013 and ask them to report their confidence in their entrepreneurial abilities relative to other Kelley MBA alumni. In Panel B, we survey students in the class of 2021. In the first and second column, *Treatment* measures the number of peers in her first year MBA cohort who intend to major in entrepreneurship. In the third and fourth column, *Treatment* measures the number of peers in her first year MBA team who intend to major in entrepreneurship. *Intended Entrepreneur* is a dummy variable equal to one if a student declares in her MBA application an intent to major in entrepreneurship. *Graduated Entrepreneur Major* is a dummy variable equal to one if a student graduated with an entrepreneurship major. *Entrepreneur within 5y of MBA* is a dummy variable equal to one if a student founded a firm within five years of graduation. Finally, we control for differences in graduation year, gender, nationality, undergraduate major, GMAT score, and race. We use \* to denote significance at the 10% level, \*\* to denote significance at the 5% level, and \*\*\* to denote significance at the 1% level.

**Panel A: Survey of Classes of 2003-2013**

	Cohort-Level Peer		Team-Level Peer	
	(i)	(ii)	(i)	(ii)
Treatment (Cohort-Level)	0.044*** (3.06)	0.036** (2.21)		
Treatment (Team-Level)			0.163* (1.75)	0.193** (2.50)
Intended Entrepreneur	0.499*** (4.19)	0.475*** (3.37)	0.471*** (4.07)	0.461*** (3.30)
Graduated Entrepreneur Major		0.335* (1.96)		0.311* (1.73)
Entrepreneur within 5y of MBA		0.710*** (3.34)		0.723*** (3.53)
Year FE	Yes	Yes	Yes	Yes
Gender FE	No	Yes	No	Yes
Nationality FE	No	Yes	No	Yes
Race FE	No	Yes	No	Yes
GMAT FE	No	Yes	No	Yes
Undergrad Major FE	No	Yes	No	Yes
N	373	373	373	373
R-squared	.087	.19	.084	.19

**Panel B: Survey of Class of 2021**



**Table 6: Does Entrepreneurial Confidence Vary Across Gender?**

This table reports that women are less confident in their entrepreneurial abilities. In Panel A we analyze the relationship between gender and intending to major in entrepreneurship. In Panel B, we analyze the relationship between gender and relative entrepreneurial confidence among the class of 2021. In Panel C, we analyze the relationship between gender and relative entrepreneurial confidence among the class of 2003-2013. *Intended Entrepreneur* is a dummy variable equal to one if a student declares in her MBA application an intent to major in entrepreneurship. We use \* to denote significance at the 10% level, \*\* to denote significance at the 5% level, and \*\*\* to denote significance at the 1% level. We cluster standard errors at the cohort level.

**Panel A: Intended Major across Gender**

	Intended Entrepreneur	
	(i)	(ii)
Female Student	-0.075*** (-3.18)	-0.053** (-2.18)
Year FE	Yes	Yes
Nationality FE	No	Yes
Race FE	No	Yes
GMAT FE	No	Yes
Undergrad Major FE	No	Yes
N	2102	2102
R-squared	.041	.058

**Panel B: Confidence across Gender (Classes of 2021)**

	Relative Entrepreneurial Confidence	
	(i)	(ii)
Female Student	-0.600*** (-3.52)	-0.521*** (-2.99)
Intended Entrepreneur	0.484*** (2.95)	0.459*** (2.66)
Prior Entrepreneur		0.149 (0.49)
Nationality FE	No	Yes
Race FE	No	Yes
N	125	125
R-squared	.14	.16

**Panel C: Confidence across Gender (Classes of 2003-2013)**

	Relative Entrepreneurial Confidence	
	(i)	(ii)
Female Student	-0.221 (-1.64)	-0.185 (-1.46)
Intended Entrepreneur	0.468*** (3.70)	0.459*** (3.17)
Graduated Entrepreneur Major		0.327* (1.89)
Entrepreneur within 5y of MBA		0.704*** (3.29)
Year FE	Yes	Yes
Nationality FE	No	Yes
Race FE	No	Yes
GMAT FE	No	Yes
Undergrad Major FE	No	Yes
N	373	373
R-squared	.086	.18

**Table 7: Do Peer Effects Vary Across Gender?**

This table reports that women are less likely to enter entrepreneurship and that confident peers disproportionately affect firm creation among women. In Panel A, we estimate the rate of firm creation within X years following graduation by gender. In Panel B, we estimate male and female peer effects on firm creation. In the first and second column, we consider both male and female peers. In the third and fourth column, we distinguish between male and female peers. *Treatment* measures the number of peers in her first year MBA cohort who intend to major in entrepreneurship. *Experienced Peer* measures the number of peers in her first year MBA cohort with a failed entrepreneurial experience. *Intended Entrepreneur* is a dummy variable equal to one if a student declares in her MBA application an intent to major in entrepreneurship. We use \* to denote significance at the 10% level, \*\* to denote significance at the 5% level, and \*\*\* to denote significance at the 1% level. We cluster standard errors at the cohort level.

**Panel A: Firm Creation across Gender**

	Firm Creation (X+ Years)				
	1+ Years	2+ Years	3+ Years	4+ Years	5+ Years
Female Student	-0.012* (-1.68)	-0.020** (-2.43)	-0.027*** (-2.80)	-0.030*** (-2.97)	-0.032*** (-3.07)
Intended Entrepreneur	0.013** (2.11)	0.022*** (2.96)	0.015* (1.79)	0.021** (2.30)	0.029*** (3.04)
Year FE	Yes	Yes	Yes	Yes	Yes
Nationality FE	Yes	Yes	Yes	Yes	Yes
Race FE	Yes	Yes	Yes	Yes	Yes
GMAT FE	Yes	Yes	Yes	Yes	Yes
Undergrad Major FE	Yes	Yes	Yes	Yes	Yes
N	2102	2102	2102	2102	2102
R-squared	.034	.038	.033	.035	.038

**Panel B: Peer Effect on Firm Creation across Gender**

	All Peers		Peers by Gender	
	Female	Male	Female	Male
Treatment	0.008*** (3.12)	0.003* (1.83)		
Treatment (Female Peer)			0.010*** (3.47)	0.003 (1.56)
Treatment (Male Peer)			0.007** (2.32)	0.003 (1.24)
Experienced Peer	-0.017*** (-2.98)	-0.003 (-1.04)	-0.017*** (-2.95)	-0.003 (-0.98)
Intended Entrepreneur	0.008 (0.73)	0.022** (2.31)	0.014 (1.20)	0.025** (2.64)
Year FE	Yes	Yes	Yes	Yes
Nationality FE	Yes	Yes	Yes	Yes
Race FE	Yes	Yes	Yes	Yes
GMAT FE	Yes	Yes	Yes	Yes
Undergrad Major FE	Yes	Yes	Yes	Yes
N	539	1563	539	1563
R-squared	.083	.037	.084	.037

**Table 8: Do Peers Affect the Rate of Entrepreneurial Success?**

This table reports that confident peers affect the proportion of successful firm creation. We condition the sample on the set of students starting a firm within three years of graduation. In the first and second column, we define success as employing at least five employees. In the third and fourth column, we define success as surviving at least five years. *Treatment* measures the number of peers in her first year MBA cohort who intend to major in entrepreneurship. *Intended Entrepreneur* is a dummy variable equal to one if a student declares in her MBA application an intent to major in entrepreneurship. We use \* to denote significance at the 10% level, \*\* to denote significance at the 5% level, and \*\*\* to denote significance at the 1% level. We cluster standard errors at the cohort level.

	5+ Years		5+ Employees	
	(i)	(ii)	(i)	(ii)
Treatment	0.019 (0.48)	0.051 (1.35)	0.054 (1.61)	0.080** (2.04)
Intended Entrepreneur	0.073 (0.53)	0.419*** (3.21)	0.230* (1.71)	0.418** (2.40)
Year FE	Yes	Yes	Yes	Yes
Gender FE	No	Yes	No	Yes
Nationality FE	No	Yes	No	Yes
Race FE	No	Yes	No	Yes
GMAT FE	No	Yes	No	Yes
Undergrad Major FE	No	Yes	No	Yes
N	72	72	72	72
R-squared	.084	.5	.14	.38

**Table 9: Do Peers Influence a Change in Major Towards Entrepreneurship?**

This table reports that individuals who graduate with a major in entrepreneurship are more likely to become entrepreneurs and that confident peers influence a change in major towards entrepreneurship. In Panel A, we estimate the effect of majoring in entrepreneurship on firm creation within X years following graduation. In Panel B, we estimate peer effects on graduating with a major in entrepreneurship. *Graduated Entrepreneur Major* is a dummy variable equal to one if a student effectively graduates with a major in entrepreneurship. *Intended Entrepreneur* is a dummy variable equal to one if a student declares in her MBA application an intent to major in entrepreneurship. *Treatment* measures the number of peers in her first year MBA cohort who intend to major in entrepreneurship. We use \* to denote significance at the 10% level, \*\* to denote significance at the 5% level, and \*\*\* to denote significance at the 1% level. We cluster standard errors at the cohort level.

**Panel A: Does majoring in entrepreneurship impact firm creation?**

	Firm Creation X Years after MBA Graduation				
	1 Year	2 Years	3 Years	4 Years	5 Years
Graduated Entrepreneur Major	0.061** (2.25)	0.096*** (3.02)	0.092*** (2.88)	0.085*** (2.67)	0.111*** (3.18)
Intended Entrepreneur	0.008 (1.21)	0.014* (1.77)	0.008 (0.89)	0.014 (1.42)	0.020* (1.94)
Year FE	Yes	Yes	Yes	Yes	Yes
Gender FE	Yes	Yes	Yes	Yes	Yes
Nationality FE	Yes	Yes	Yes	Yes	Yes
Race FE	Yes	Yes	Yes	Yes	Yes
GMAT FE	Yes	Yes	Yes	Yes	Yes
Undergrad Major FE	Yes	Yes	Yes	Yes	Yes
N	2102	2102	2102	2102	2102
R-squared	.043	.054	.044	.043	.05

**Panel B: Do peers influence others to major in entrepreneurship?**

	Graduating with an Entrepreneurship Major	
	(i)	(ii)
Treatment	0.024** (2.50)	0.023** (2.33)
Intended Entrepreneur	0.079*** (6.14)	0.080*** (6.13)
Year FE	Yes	Yes
Gender FE	No	Yes
Nationality FE	No	Yes
Race FE	No	Yes
GMAT FE	No	Yes
Undergrad Major FE	No	Yes
N	2102	2102
R-squared	.04	.058

**Table 10: Do Peers Influence the Likelihood of Working in a Startup?**

This table reports that individuals who join a start-up at graduation are more likely to become entrepreneurs in the long-run and that confident peers influence the decision to join a start-up. Specifically, in Panel A, we estimate the likelihood that an individual who joined a start-up at graduation becomes an entrepreneur within X years following graduation. In Panel B, we estimate whether peers affect the likelihood that cohort members join a start-up at graduation. A start-up is defined as a firm that is younger than 2 years old or employs less than 10 workers. *Joined Start-Up* is a dummy variable equal to one if, at the MBA graduation, an individual joins a start-up. *Intended Entrepreneur* is a dummy variable equal to one if a student declares in her MBA application an intent to major in entrepreneurship. *Treatment* measures the number of peers in her first year MBA cohort who intend to major in entrepreneurship. We use \* to denote significance at the 10% level, \*\* to denote significance at the 5% level, and \*\*\* to denote significance at the 1% level. We cluster standard errors at the cohort level.

**Panel A: Does working in a startup affect the likelihood of becoming an entrepreneur?**

	Firm Creation X Years after MBA Graduation				
	1 Year	2 Years	3 Years	4 Years	5 Years
Joined Start-Up	0.011 (1.25)	0.019* (1.69)	0.021 (1.64)	0.023* (1.71)	0.027* (1.88)
Intended Entrepreneur	0.013** (2.00)	0.021*** (2.75)	0.015* (1.72)	0.020** (2.14)	0.028*** (2.76)
Year FE	Yes	Yes	Yes	Yes	Yes
Gender FE	Yes	Yes	Yes	Yes	Yes
Nationality FE	Yes	Yes	Yes	Yes	Yes
Race FE	Yes	Yes	Yes	Yes	Yes
GMAT FE	Yes	Yes	Yes	Yes	Yes
Undergrad Major FE	Yes	Yes	Yes	Yes	Yes
N	2102	2102	2102	2102	2102
R-squared	.034	.04	.035	.037	.04

**Panel B: Do peers influence the likelihood of working in a startup?**

	Joining a New/Small Firm	
	(i)	(ii)
Treatment	0.004 (1.39)	0.004 (0.98)
Intended Entrepreneur	0.023 (1.36)	0.019 (1.12)
Year FE	Yes	Yes
Gender FE	No	Yes
Nationality FE	No	Yes
Race FE	No	Yes
GMAT FE	No	Yes
Undergrad Major FE	No	Yes
N	2102	2102
R-squared	.0034	.021

**Table 11: How do Peers Impact Entrepreneurship?**

This table reports how confident peers affect firm creation under alternate treatment measures. In the first and second column of Panel A, *Treatment* measures the number of peers in her first year MBA cohort who intend to major in entrepreneurship and have a GMAT score in the bottom 75th percentile of Kelley MBA students. In the third and fourth column of Panel B, *Treatment* measures the number of peers in her first year MBA cohort who intend to major in entrepreneurship and have a GMAT score in the top 25th percentile of Kelley MBA students. In the first and second column of Panel B, *Treatment* measures the number of peers in her first year MBA cohort who intend to major in entrepreneurship, yet do not start a firm within five years of graduation. In the third and fourth column of Panel B, *Treatment* measures the number of peers in her first year MBA cohort who intend to major in entrepreneurship, yet do not graduate with a major in entrepreneurship. *Experienced Peer* measures the number of peers in her first year MBA cohort with a failed entrepreneurial experience. *Intended Entrepreneur* is a dummy variable equal to one if a student declares in her MBA application an intent to major in entrepreneurship. We use \* to denote significance at the 10% level, \*\* to denote significance at the 5% level, and \*\*\* to denote significance at the 1% level. We cluster standard errors at the cohort level.

**Panel A: Distinguishing Low and High Skill Peers**

	Low GMAT Student		High GMAT Student	
	(i)	(ii)	(i)	(ii)
Treatment (Low GMAT Peer)	0.004*** (3.60)		-0.002 (-0.91)	
Treatment (High GMAT Peer)		0.000 (0.15)		0.004*** (2.89)
Experienced Peer	-0.011*** (-4.55)	-0.011*** (-3.23)	0.000 (0.14)	-0.002 (-0.71)
Intended Entrepreneur	0.024** (2.12)	0.022* (1.96)	0.010 (0.89)	0.012 (1.11)
Year FE	Yes	Yes	Yes	Yes
Gender FE	Yes	Yes	Yes	Yes
Nationality FE	Yes	Yes	Yes	Yes
Race FE	Yes	Yes	Yes	Yes
GMAT FE	Yes	Yes	Yes	Yes
Undergrad Major FE	Yes	Yes	Yes	Yes
N	920	920	1182	1182
R-squared	.047	.044	.049	.05

**Panel B: Rejecting Learning about Entrepreneurial Projects**

	Without Firm Creation		Without Graduating with Major	
	(i)	(ii)	(i)	(ii)
Treatment (Limited Knowledge)	0.004** (2.54)	0.006*** (3.17)	0.002 (1.59)	0.004** (2.65)
Experienced Peer		-0.009*** (-3.04)		-0.007*** (-3.22)
Intended Entrepreneur	0.021*** (2.74)	0.020** (2.45)	0.019** (2.68)	0.018** (2.37)
Year FE	Yes	Yes	Yes	Yes
Gender FE	No	Yes	No	Yes
Nationality FE	No	Yes	No	Yes
Race FE	No	Yes	No	Yes
GMAT FE	No	Yes	No	Yes
Undergrad Major FE	No	Yes	No	Yes
N	2102	2102	2102	2102
R-squared	.017	.037	.016	.035

**Table 12: Do Peers Affect Classroom Performance?**

This table reports whether confident peers affect classroom performance. In the first and second column, we define peers at the cohort-level; in the third and fourth column, we define peers at the team-level. *Treatment* measures the number of peers in her first year MBA cohort or team who intend to major in entrepreneurship. *Intended Entrepreneur* is a dummy variable equal to one if a student declares in her MBA application an intent to major in entrepreneurship. We use \* to denote significance at the 10% level, \*\* to denote significance at the 5% level, and \*\*\* to denote significance at the 1% level. We cluster standard errors at the cohort-level in the first and second column and the team-level in the third and fourth column.

	Cohort-Level Peers		Team-Level Peers	
	(i)	(ii)	(i)	(ii)
Treatment	-0.005 (-1.07)	-0.002 (-0.52)		
Treatment			0.020 (0.82)	0.029 (1.35)
Intended Entrepreneur	0.011 (0.35)	-0.026 (-1.05)	0.015 (0.49)	-0.024 (-0.94)
Year FE	Yes	Yes	Yes	Yes
Nationality FE	No	Yes	No	Yes
Race FE	No	Yes	No	Yes
GMAT FE	No	Yes	No	Yes
Undergrad Major FE	No	Yes	No	Yes
N	1933	1933	1933	1933
R-squared	.13	.35	.13	.35

**Table 13: Do Peers in Other Intended Majors Affect Firm Creation?**

This table reports how peers in other intended majors influence the rate of firm creation. *Treatment (Finance)* measures the number of peers in her first year MBA cohort who intend to major in finance (and likewise for marketing, management, operations, and strategy). *Intended Entrepreneur* is a dummy variable equal to one if a student declares in her MBA application an intent to major in entrepreneurship. We use \* to denote significance at the 10% level, \*\* to denote significance at the 5% level, and \*\*\* to denote significance at the 1% level. We cluster standard errors at the cohort level.

	Firm Creation				
	(i)	(ii)	(iii)	(iv)	(v)
Treatment (Finance)	-0.000 (-0.38)				
Treatment (Marketing)		0.001 (0.65)			
Treatment (Management)			-0.000 (-0.12)		
Treatment (Operations)				-0.001 (-0.50)	
Treatment (Strategy)					0.001 (1.19)
Intended Entrepreneur	0.015* (1.99)	0.015* (1.97)	0.015* (1.99)	0.015* (1.99)	0.015* (1.99)
Year FE	Yes	Yes	Yes	Yes	Yes
Gender FE	Yes	Yes	Yes	Yes	Yes
Nationality FE	Yes	Yes	Yes	Yes	Yes
Race FE	Yes	Yes	Yes	Yes	Yes
GMAT FE	Yes	Yes	Yes	Yes	Yes
Undergrad Major FE	Yes	Yes	Yes	Yes	Yes
N					
R-squared	2102	2102	2102	2102	2102
r2	.033	.033	.033	.033	.033



**Table 14: How Different are Cohorts/Teams with a High Proportion of Intended Entrepreneurs ?**

This table reports whether cohort/ teams with a high proportion of intended entrepreneurs (above the median) also differ across other measures. *Above Median* is a dummy variable equal to one if the proportion of intended entrepreneurs (students intending to first of second major in entrepreneurship) in the cohort/ team is above the median. Panel A consider cohorts, while Panel B considers teams. The first column measures the proportion of cohort/team members with an online business networking profile, the second column measures the proportion of female students, the third column measures the mean GMAT score, the fourth column measures the proportion of international students, and the fifth column measures the proportion of U.S. racial minority students. We include year fixed effects in the cohort-level analysis and cohort fixed effects in the team-level analysis. We use \* to denote significance at the 10% level, \*\* to denote significance at the 5% level, and \*\*\* to denote significance at the 1% level.

**Panel A: Cohort Level**

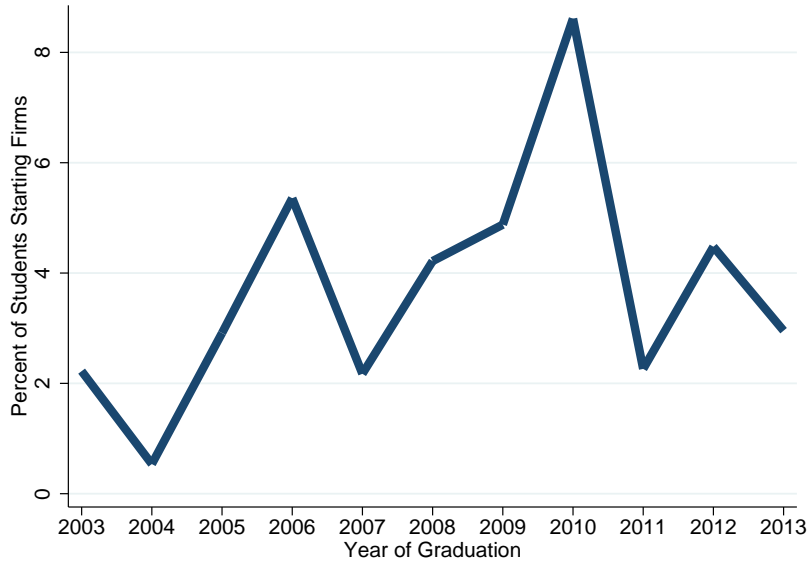
	Cohort Size	Female	GMAT Score	International	U.S. Minority
Above Median	0.120 (0.07)	0.010 (0.62)	-4.181 (-1.03)	-0.016 (-0.80)	0.025 (1.09)
Constant	60.384*** (63.10)	0.245*** (26.38)	654.727*** (289.77)	0.334*** (29.43)	0.200*** (15.86)
Year FE	Yes	Yes	Yes	Yes	Yes
N	36	36	36	36	36
R-squared	.95	.84	.8	.89	.7

**Panel B: Team Peer Effects on Firm Creation**

	Team Size	Female	GMAT Score	International	U.S. Minority
Above Median	-0.083 (-1.28)	-0.015 (-1.15)	-0.474 (-0.20)	-0.017 (-1.21)	0.007 (0.45)
Constant	3.890*** (83.10)	0.256*** (28.14)	652.939*** (384.69)	0.331*** (32.05)	0.208*** (18.54)
Cohort FE	Yes	Yes	Yes	Yes	Yes
N	566	566	566	566	566
R-squared	.35	.13	.16	.2	.084

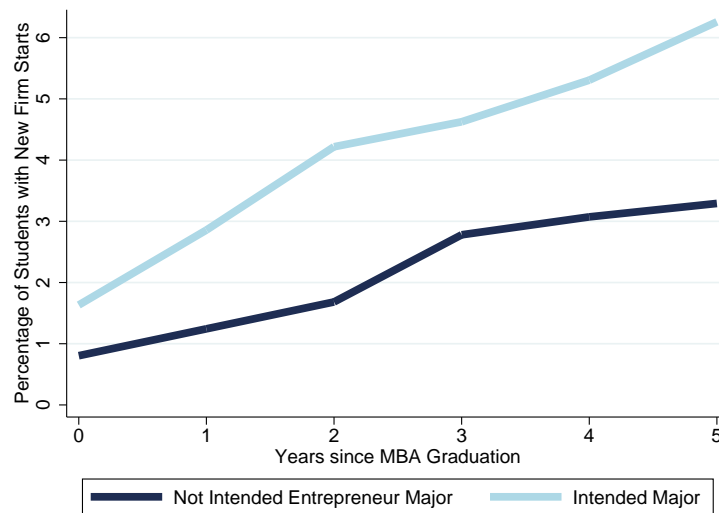
**Figure 1: Firm Creation by MBA Graduation Year**

This figure illustrates the rate of firm creation by MBA Graduation year. We consider any firm created by an MBA student within 3 years after graduation.



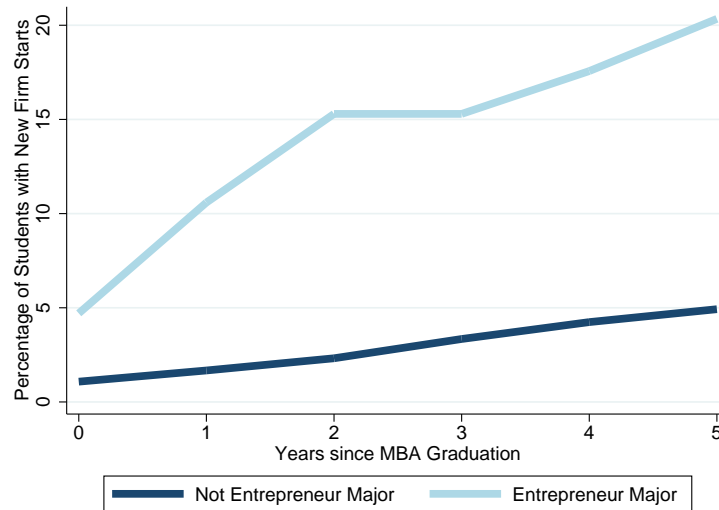
**Figure 2: Cumulative Firm Creation By Intention to Major in Entrepreneurship**

This figure illustrates the rate of firm creation for students intending and not intending to major in entrepreneurship. The light blue line reports the rate for students intending to major in entrepreneurship, and the dark blue line for students intending to major in any other majors.



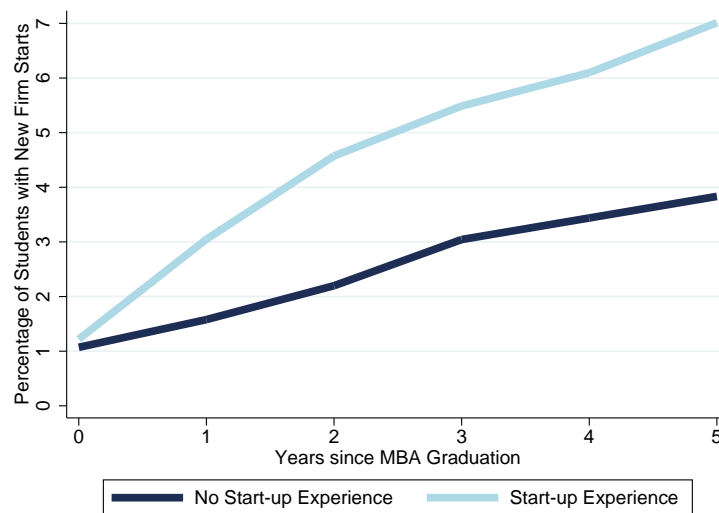
**Figure 3: Cumulative Firm Creation By Major in Entrepreneurship at Graduation**

This figure illustrates the rate of firm creation for students graduating with a major in entrepreneurship and graduating without a major in entrepreneurship. This figure differs from the prior figure by using actual graduation majors instead of intended majors declared in the application process.



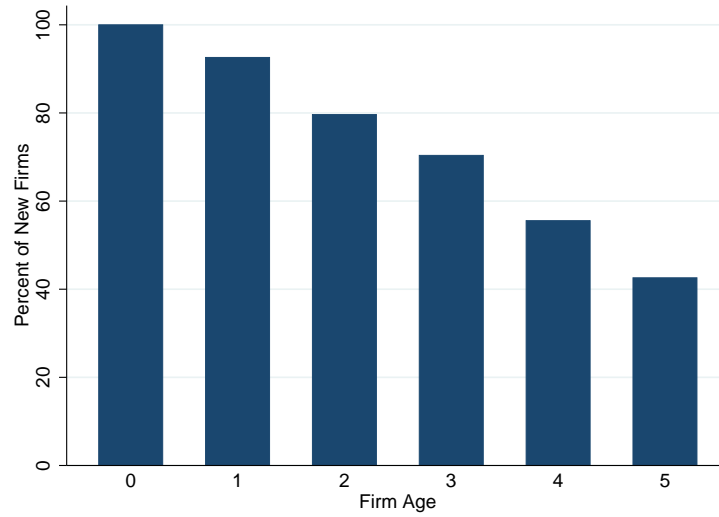
**Figure 4: Cumulative Firm Creation By Start-Up Experience at Graduation**

This figure illustrates the rate of firm creation for students who choose to work at a start-up at graduation versus students that choose to work at other established companies. A start-up is defined as a firm that is small (10 or fewer employees) or young (founded after the year of MBA graduation).



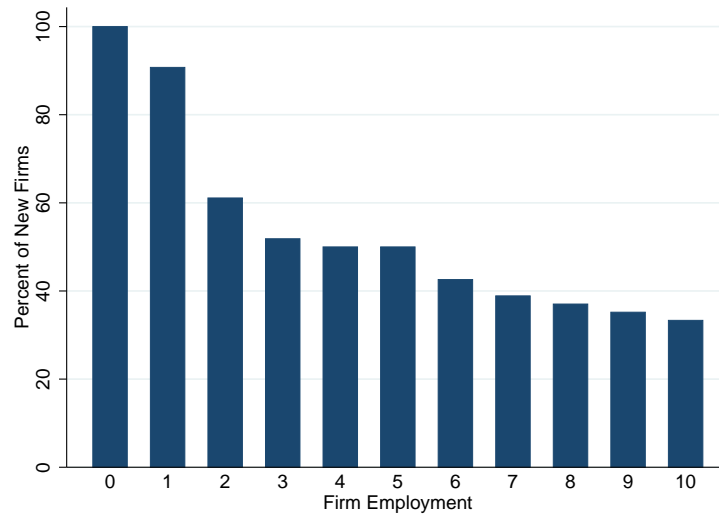
**Figure 5: Age of New Firms**

This figure illustrates the percent of firms, which were founded by entrepreneurs in the sample, that survive zero to five years after creation.



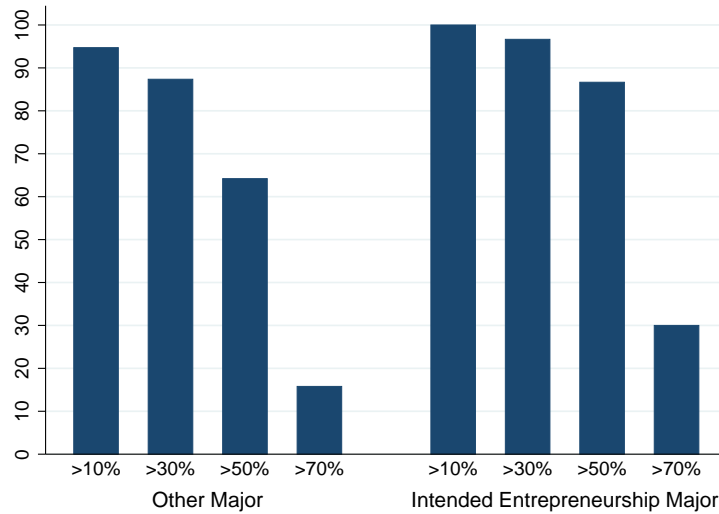
**Figure 6: Employment of New Firms**

This figure illustrates the percent of firms, which were founded by entrepreneurs in the sample, that employ zero to ten employees (not including founder).



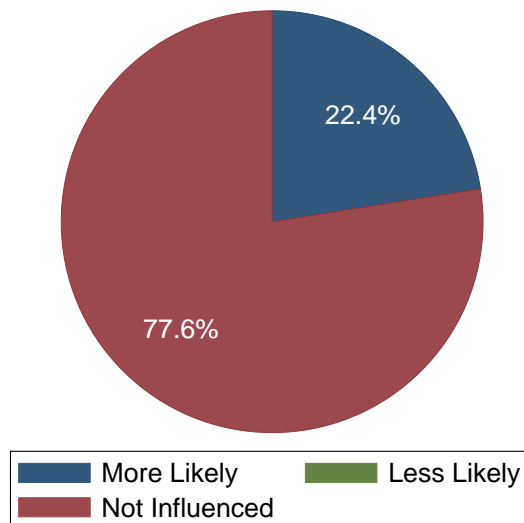
**Figure 7: Overconfidence of Intended Entrepreneurs**

This figure illustrates the survey responses to question Q1 (described in section 4.2) of current MBA students. Students are asked to report their expected entrepreneurial ability relative to other MBA students. We distinguish between students intending to major in entrepreneurship according to the MBA application and all other students. The first columns measure the percent of students that report being in the bottom 10% of the distribution. The second columns measure the percent of students that report being in the 10-30th percentile of the distribution. The third columns measure the percent of students that report being in the 30-50th percentile, while the fourth columns report the percent of students that report being above the 50-70th percentile. The fifth columns are the percent of students reporting their ability above the 70th percentile.



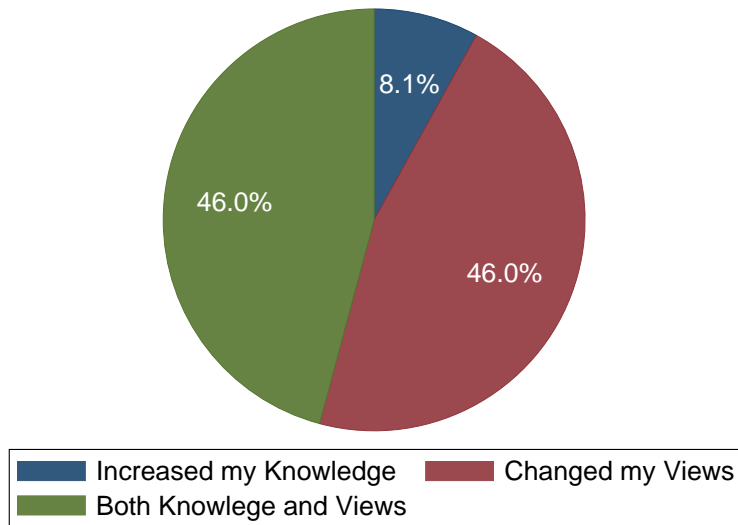
**Figure 8: Likelihood of Entrepreneurship from Survey**

This figure illustrates the survey responses to question Q1 (described in section 5.3) of treated students. Students with a positive team member are asked whether the team member increased/decreased the likelihood of firm creation.



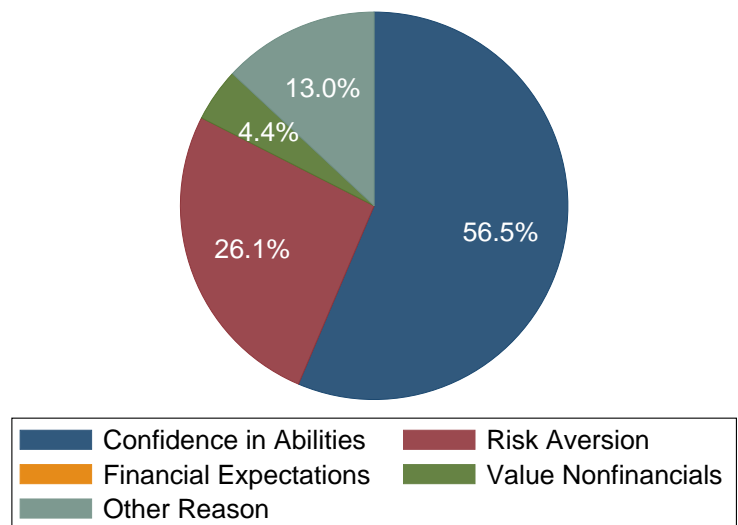
**Figure 9: Behavioral Traits vs. Learning from Survey**

This figure illustrates the survey responses to question Q2 (described in section 5.3) of treated students. Students reporting a positive effect from a team member are asked whether the effect is driven by a change in views towards entrepreneurship or learning about entrepreneurship.



**Figure 10: Behavioral Channels from Survey**

This figure illustrates the survey responses to question Q3 (described in section 5.3) of treated students. Students reporting a change in views towards entrepreneurship are asked how their views changed and offered five potential responses: (i) confidence in entrepreneurial ability, (ii) willingness to take risk in starting a business, (iii) increased expectations of the rewards of starting a business, (iv) greater appreciation for non-monetary benefits, or (v) other.



## Appendix

### Relationship between Intended Major and Entrepreneurial Confidence.

This section describes how we model the relationship between an individual's intention to major in entrepreneurship and entrepreneurial confidence. For the purpose of this discussion, assume confidence is one of many factors that predict an individual's intention to enter entrepreneurship—based on prior literature including [Åstebro et al. \(2007\)](#)—and that the relationship is linear:

$$Intended\ Entrepreneur_i = \beta \times Confidence_i + \gamma \times Controls_i + \varepsilon_i$$

where *Intended Entrepreneur* measures the intention of individual *i* to start a firm and *Confidence* measures an individual's confidence in their entrepreneurial abilities. In addition, we consider there are a range of conditioning variables *Controls* that also influence the decision; for simplicity we assume these variables also relate to the decision in a linear fashion. Last,  $\varepsilon$  captures any unobserved heterogeneity in the relationship unobservable to the econometrician. Then, assuming our estimation yields estimates  $\hat{\gamma}$  and  $\hat{\beta}$ , we can define imputed *Confidence* by inverting the relationship assuming  $\beta$  is not equal to 0:

$$\widehat{Confidence}_i = \hat{\beta}^{-1} \times Intended\ Entrepreneur - \hat{\gamma} \times \hat{\beta}^{-1} \times Controls$$

Therefore, we are able to develop an estimate of entrepreneurial confidence as a linear regression model where  $\phi = \beta^{-1}$  and  $\theta = -\gamma/\beta$ . Of course, this estimation is still subject to measurement error, leading to issues in our methodology. Assuming the specification above, measurement error is of the form:

$$\widehat{Confidence}_i = \hat{\beta}^{-1} \times (\gamma - \hat{\gamma}) \times Controls + \hat{\beta}^{-1} \times \beta \times Confidence_i + \nu_i$$

### Discussion of Survey Questions.

Our analysis includes two separate surveys. First, we survey the Indiana University MBA classes of 2020 and 2021 during the summer of 2019. Of the 339 students contacted across both classes, we received a total of 179 responses, or a response rate of 53%. Second, we survey past alumni that were previously

connected to a team member intending to major in entrepreneurship. Among the 495 prior students contacted from the classes of 2003-2013, we received 185 responses, or a response rate of 37%. We outline the questions and potential multiple choice options for each survey below.

### **Survey of Current Students.**

Q1: How confident are you in your ability to start a company?

- a) Not confident
- b) Not very confident
- c) Somewhat confident
- d) Confident
- e) Very confident

Q2: Do you believe you would be worse, equal, or better at starting a company relative to the other MBA students at Kelley?

- a) Bottom 10% of students
- b) Better than 10% of students
- c) Better than 30% of students
- d) Better than 50% of students
- e) Better than 70% of students
- f) Better than 90% of students

Q3: Among past IU graduates that started a firm, only 5 to 10% employ 10 or more workers within the first year. What is the likelihood you personally start a firm that employs 10 or more workers within the first year?

- a) 0-1%
- b) 1-2%



- c) 2-5%
- d) 5-10%
- e) 10-15%
- f) 15-20%
- g) 20-30%
- h) 30-50%
- i) >50%

Q4: Over the past 90 years, the US stock market has observed an average return of 9% a year. What will be the average annual US stock market return over the next ten years?

- a) 2-4% each year
- b) 4-6% each year
- c) 6-8% each year
- d) 8-10% each year
- e) 10-12% each year
- f) 12-14% each year
- g) 14-16% each year
- h) above 16% each year

Q5: Among people born in the US in 1919, 1.4% are still alive in 2019. What is the likelihood you live to age 100?

- a) 0-1%
- b) 1-2%
- c) 2-5%
- d) 5-10%
- e) 10-15%

- f) 15-20%
- g) 20-30%
- h) 30-50%
- i) >50%

Q6: How much would you pay for a lottery ticket that gives you a 50% probability of winning \$500 and 50% of winning nothing?

- a) Less than \$50
- b) 50-\$100
- c) 100-\$150
- d) 150-\$200
- e) 200-\$250
- f) More than \$250

Q7: How much would you pay for a lottery ticket that gives you a x% probability of winning \$500? (x is between 25% and 75%)

- a) Less than \$50
- b) 50-\$100
- c) 100-\$150
- d) 150-\$200
- e) 200-\$250
- f) More than \$250

Q8: How important is it for you to be in control of your daily schedule?

- a) Not at all important
- b) A little important

- c) Somewhat important
- d) Important
- e) Very Important

Q9: How important is it for you to have a job providing a variety of different tasks?

- a) Not at all important
- b) A little important
- c) Somewhat important
- d) Important
- e) Very Important

**Survey of Former Students.**

Q1: In your first-year at IU-Kelley, one of your teammates was interested in becoming an entrepreneur and wanted to choose entrepreneurship as his/her MBA major. Did the team member impact the likelihood that you would started (or already started) a company?

- a) Yes
- b) No

Q2: If so, how did he/she affect your likelihood?

- a) I learned from my team member about entrepreneurship
- b) I changed by views towards entrepreneurship
- c) Both a change in views and learning

Q3: If he/she changed your views of entrepreneurship, in what what way?

- a) He/she influenced my confidence about my abilities
- b) He/she changed by views about the risk of business ownership

- c) He/she changed my views about the financial benefits
- d) He/she changed my views about the non-monetary benefits
- e) Other