Gender and Venture Capital Decision-Making: The Effects of Technical Background and Social Capital on Entrepreneurial Evaluations

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Running Head: Gender and Venture Capital Evaluations

Word Count (text, notes, tables, and references): 12,678

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This research was supported by the Michelle R. Clayman Institute for Gender Research at Stanford University and the National Center for Women and Information Technology. We would like to thank Myra Hart for feedback on study design and Cecilia Ridgeway and Shelley Correll for comments on article drafts.

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ABSTRACT

Research on gender and workplace decision-making tends to address either supply-side disparities between men's and women's human and social capital, or demand-side differences in the status expectations of women and men workers. In addition, this work often relies on causal inferences drawn from empirical data collected on worker characteristics and their workplace outcomes. In this study, we demonstrate how tangible education and work history credentials - typically associated with supply-side characteristics - work in tandem with cultural beliefs about gender to influence the evaluative process that underlies venture capital decisions made in high-growth, high-tech entrepreneurship. Using an experimental design, we simulate funding decisions by venture capitalists (VCs) for men and women entrepreneurs that differ in technical background and the presence of important social ties. We demonstrate the presence of two distinct aspects of VCs' evaluation: that of the venture and that of the entrepreneur, and find that the gender of the entrepreneur influences evaluations most when the person, rather than the venture, is the target of evaluation. Technical background qualifications moderate the influence of gendered expectations, and women receive more of a payoff than men from having a close contact to the evaluating VC. We discuss the implications for future research on gender and work.

Women's continued under-representation in the upper echelons of most high-status work environments constitutes a significant stall in progress towards gender equality. In this article, we focus on the evaluative context in which decisions are made about men and women workers, using the particular case of high-growth, high-technical entrepreneurship. Research on high tech entrepreneurs finds that women founded only 3% of technology firms and 1% of high-tech firms between 2004 and 2007 (Robb and Coleman 2009). In addition, women entrepreneurs are less likely than men to acquire venture capital. An extensive study of high-tech entrepreneurs in 2001 reveals that only 5% of venture capital investments went to women-owned high-tech firms (Brush et al. 2001).

Considerable attention has been paid to women's lower likelihood of entry into and success in high-tech entrepreneurship. Some of the most prominent explanations focus on the effects of human and social capital (see Robb and Coleman 2009 for a review), in which the scarcity of women entrepreneurs reflects the shortage of women with education and experience in science and technology (Greene et al., 2003; Menzies et. al., 2004), or the absence of women in strategic entrepreneurial networks (Brush et. al., 2006; Mitchell 2011). These supply-side arguments are similar to those that have focused on other areas of women's underrepresentation in the workplace, such as high-level and executive management (Adams and Funk 2012), senior-level academia and science careers more generally (NRC 2010 (Appendix 3-2); Eklund, Lincoln and Tansey 2012).

At the same time, a largely separate research vein shows that gendered practices infuse the structural organization of work (Acker 1989; Smith-Doerr 2004, Whittington and Smith-Doerr 2008), the physical embodiment of workers in jobs (Acker 1990; Britton 2000), and the expectations that define the ideal worker (Kelly et al. 2010; Benard and Correll 2010), scientist and engineer (Long and Fox 1995; Wajcman 2010, Moss-Racusin et. al 2012) and entrepreneur (Gupta, Turban and Bhawe 2008; Thébaud 2010). This work stresses that gender appears to provide a background from which evaluators make decisions about employees and candidates. Like hiring, venture capitalists' decisions operate in an evaluative context that necessitates a decision where limited information about candidates exists.

Whereas attention to the presence of human and social capital directs attention to the qualifications and characteristics of the workers themselves (e.g. England 2010) and the nature of the available candidate pool (Fernandez and Abraham, 2011), research on gendered processes examines discrimination in the evaluation or perception of women workers (see, for example, Gorman and Kmec 2009, and Moss-Racusin et. al 2012).[1] Both theoretical perspectives provide insight into the process by which workers are hired, sorted, or selected into jobs, but we know relatively little about how supply side

[1] Although sex differences in supply side characteristics can also include factors like one's interest in acquiring (or the pursuit of) venture capital, in this work we specifically focus on supply side dynamics related to one's educational and work experience credentials and strong social ties.

characteristics may be interpreted in the eyes of job evaluators differently for men and women (although see England and Folbre 2005, Murray and Graham 2007). For example, women and men may not necessarily receive the same returns on their education and career history credentials, or their social connections.

Recent work by Ding, Murray and Stuart (2013) focuses on related demand and supply arguments in the context of women's differential participation in scientific advisory boards using a sample of academic life scientists. Using statistical modeling of career history data and other personal characteristics, they find strong evidence for demand-side processes in governing board participation (as opposed to women's preferences in becoming involved). However, like many other studies of workplace inequities, the archival basis of their dataset does not allow them to *directly* observe the perceptions of board evaluators, and they are only able to draw inference about these underlying relationships from their model results. The correlation is there, but the causal mechanism is not tested. They suggest, as do others, that more information is needed about the role of gatekeeper perceptions in the hiring and evaluation process (Fernandez and Abraham 2011, Fernandez-Mateo and King 2011). We address this gap in the literature directly by employing an experimental design to explicitly examine whether and how gendered expectations by venture capitalists shape their evaluations of men and women entrepreneurs who have either technical or non-technical educational and work history credentials, and the presence of an important social connection (versus no such tie). Unlike Ding, Murray and Stuart, we do not examine men's and women's *preferences* for this type of involvement, per se; instead, we argue that our understanding of human and social capital processes is incomplete without also accounting for how employers interpret these characteristics differently for men and women. Although studies of similar design appear in previous literature on other types of workplace decision-making (Benard & Correll, 2010; Correll, Benard, & Paik, 2007, Moss-Racusin et. al 2012), to our knowledge, this is the first study on women high-technical workers to employ an experimental design able to draw implications about the gendered patterns in the science and technology entrepreneurial workforce.

Drawing from our exploratory interviews and focus groups with venture capitalists in Silicon Valley, we designed our study to focus on the initial stage of the VC decision-making process that begins when an entrepreneur's proposal finds its way to the desk of a venture capitalist, before any initial contact or funding relationship is established. In this context, the decision-making process may resemble that of a highly competitive hiring decision in which limited information is available before the initial interview stage. Unlike previous experimental studies, we do not use undergraduate students to assume the role of the evaluators. Instead, we draw our participations from a unique and case-applicable sample of Stanford University MBA Entrepreneur Club members. We develop an expansive view of the venture capital evaluative context by considering two focal outcomes upon which decision-making occurs – that of the

venture and that of the entrepreneur. While previous research typically focuses on understanding how evaluators rate candidates on their presumed abilities and fit with the workplace, VCs may simultaneously consider the novelty, quality, and marketability of the entrepreneur's product as well as the entrepreneur's assumed capabilities and competence. Accounting for this, we examine gendered dimensions of evaluation in the context of both evaluations of the venture as well as the entrepreneur.

We utilize status characteristics theory and its applications to gender (Ridgeway 2009) to form our predictions about how gender enters into decision-making in the professional context. Specifically, our design evaluates 1) whether having the "right" credentials matters differently for women and men entrepreneurs; 2) whether having social ties to the investor influences the evaluations of women and men entrepreneurs differently; and 3) whether gender effects, if found, differ in strength depending on what is being evaluated (the venture or the entrepreneur).

THE CASE

Research on gender inequality in the professional/managerial labor market has focused on a variety of different work domains, including law firms (Gorman 2006; Gorman and Kmec 2009), large, bureaucratically-organized consumer firms (Fernandez and Abraham 2011), scientific advisory boards in the life sciences (Ding , Murray, and Stuart 2013), fortune 500 board memberships (Skaggs, Stainback and Duncan 2012), and contract IT work (Fernandez-Mateo and King 2011), among others. Each setting is distinct, but shares in common an underrepresentation of women in positions with the most authority and pay. In our attention to high tech, high growth entrepreneurial activity, we focus primarily on technical workers, and specifically, the subset of technical workers who take the initial step to turn their creative ideas into a business venture. Women have been historically underrepresented in high technology firms and start-ups (McIlwee and Robinson 1992; Baron, Hannan, Hsu, and Kocak 2002). In addition, a long history of research on academic scientists finds gender disparities in career attainment, productivity, and attrition rates among members of STEM fields (for reviews of the literature see Long and Fox 1995; Xie and Shauman 2005; Long 2001). There are also gender differences in the extent to which academic scientists are involved in commercial activity such as scientific and technical consulting (Corley and Gaughan 2005), patenting activity, licensing, and company founding (Ding, Murray and Stuart 2006; Lowe and Gonzalez Brambila 2005; Thursby and Thursby 2005; Whittington and Smith-Doerr 2005, 2008). Across these dimensions, women's involvement has been significantly less than men's, and appears to follow a "pipeline" dynamic (Berryman 1983) in which the gender gap in participation increases as the level of commercial activity intensifies and becomes more directed (i.e. consulting vs. patenting vs. founding a company, etc.).

In the field of entrepreneurship more generally, there is a significant gender gap regarding the rate of company founding, and men are twice as likely to found a company than women (US SBA, 2001, Mitchell 2011, Ding, Murray and Stuart, 2013). High-tech entrepreneurship is even more notable because it represents an area where women's participation is exceptionally low (Baron, Hannan, Hsu, and Kocak 2002). As of 2004, women represent less than 5% of high-tech entrepreneurs, and less than 5% of venture funds go to women-owned firm (Reynolds et al. 2004).

The nature of the gender gap in high-tech entrepreneurship is important to address for several reasons. First, it has implications for the nature of the gender stall, which appears concentrated at the highest echelons of the workplace. To the extent that entrepreneurs frequently (though not always) assume high-level positions in the companies they found, understanding the process by which decision-making occurs for men and women in these roles can shed light on women's participation in key corporate positions and executive ranks. Second, as the high-tech industry represents a significant component of contemporary economic activity (Mitchell 2011), women's participation in entrepreneurship has implications for overall national economic development and competitiveness. Third, for these reasons, it is also relevant to the extensive academic and policy making efforts that aim to boost women's participation in technical work through training and social networking programs. A better understanding of the influence of human and social capital on the decision-making process sheds light on the importance of these criteria in helping to determine the gender gap in involvement.

BACKGROUND AND FRAMEWORK

Status Characteristics Theory and Double Standards

We draw on status characteristics theory and its application to gender (Ridgeway 2009) to consider how the nature of men's and women's education/work history and social ties may be interpreted differently in the venture capital context. Gender is a status characteristic, an attribute to which widely held cultural beliefs (i.e., status beliefs) attach greater competence and esteem to one category of the attribute over another (Berger et al., 1977). Studies show that contemporary cultural beliefs in the U.S. describe men as generally more competent than women in tasks with the highest social value, especially if they require traits such as aggressiveness, assertiveness, agency and instrumentality (Fiske et al. 2002; Spence and Buckner 2000). These beliefs have power because, as explained by status characteristics theory (Berger et al. 1977), in situations where gender is salient, cultural beliefs about gender influence what individuals expect from each other and, in turn, how individuals treat each other (Dovidio et al. 1988). Importantly, gender beliefs may affect behavior even when men and women consciously endorse gender equality and are motivated to behave in unbiased ways, simply because people are aware that

others believe men are generally more competent than women (Ridgeway and Correll 2004). In the venture capital context, for example, if the venture capitalist personally believes that a female entrepreneur is a good candidate for CEO, the fact that *most* people don't think women are as competent as men in this position may still bias the VC's evaluation.

The venture capital industry is one where, above all, good ideas are emphasized, and investment decisions are more or less perceived to be gender-blind (Brush et al. 2006). However, recent research indicates that perceptions of meritocracy in an occupational culture can actually obscure (Castilla 2008) and even encourage gender-biased decision-making (Castilla and Benard 2010). In addition, the industry is one in which we might expect gender to be highly relevant since high-tech entrepreneurship is a stereotypically masculine career in Western society (Lewis 2006; Wajcman 2010), and cultural beliefs hold masculine characteristics to be essential for successful entrepreneurship (Gupta, Turban and Bhawe 2008; Thébaud 2010). We can expect, then, that gender bias plays a role in how male and female entrepreneurs are evaluated in the venture capital process. Performance expectations should, at the outset, advantage men over women entrepreneurs in the evaluative process.

Additionally, it is likely that such expectations create a higher standard for competence for women entrepreneurs. As Foschi (2000) has shown, status-based expectations, under certain conditions, create stricter standards for competence for the lower-status group. In male-typed tasks, a man's success reinforces the belief that men are more competent at the task, while a woman's success is inconsistent with performance expectations. Thus, women's success may be attributed to factors such as luck rather than ability, while failure confirms expectations for women, but not for men (Wagner, Ford and Ford 1986). A double standard hence emerges, as women must demonstrate greater success and make fewer errors in order to be seen as equally competent as men. Support from this theory has emerged from studies of both experimental (e.g., Biernat and Fuegen 2001) and non-experimental designs (e.g., Lyness and Heilman 2006). We expect that gendered double standards influence VC decision-making. In particular, we expect that the presence (and absence) of human capital and social ties differentially influence evaluations of female and male entrepreneurs.

The Influence of Human Capital Credentials and Social Connections

Widely discussed explanations for gender gaps in high-tech entrepreneurship focus on human and social capital – i.e., women have less success in entrepreneurship because they are less likely than men to have education and experience in technology (Greene et al. 2003; Simard et al. 2008), and/or ties to strategic entrepreneurial networks (Brush et al. 2006). However, research showing gender differences in the effects of education, experience, and social networks on career outcomes suggests that background characteristics and social capital may be necessary but not sufficient conditions for explaining women's

differential access to venture capital (Burt 1998; Long and Fox 1995; Fox 2001). We ask whether having relevant education/experience, or not having it, confers the same advantage or disadvantage to women and men entrepreneurs; and further, whether having a social tie to an investor matters differently for women and men entrepreneurs.

Variations in Human Capital

We focus on a particular dimension of candidates' human capital - the presence (or absence) of a technical degree and related work experience. While these dimensions of a candidate's background are not the only relevant characteristics of their human capital, a number of studies have found that relevant education and industry experience of the entrepreneur positively predicts venture investment (Smart 1999; Carter et al. 2003) and venture survival and success (Colombo and Grilli 2005; Cooper, Gimeno-Gascon and Woo 1994). Further, studies have shown that the more specific an entrepreneur's human capital is to the venture, the more likely the business will be successful (Cooper, Gimeno-Gascon and Woo 1994; Pennings, Lee and van Witteloostuijn 1998). We anticipate that a technical background is therefore one signal to investors regarding the potential for success.

Since performance standards in high-tech entrepreneurship advantage masculinity, double standards theory would suggest that women entrepreneurs are held to higher standards of competence. At the same time, while culturally shared gender beliefs provide guidelines for how to act, they provide only abstract and diffuse instructions, and how gender stereotypes influence judgments and behaviors depends on the particular situation at hand (Ridgeway 2009; 2011). Research shows that gender stereotypes disadvantage women in the workplace most when there is a perceived lack-of-fit between a women's attributes and the attributes believed to be necessary for success in traditionally male occupations and top positions (see Heilman 2012 for a review). For example, research has shown that women with personal attributes that are culturally associated with femininity (e.g., being sexual attractive or a mother) are evaluated more negatively than men *as well as* women who do not have those personal attributes (Heilman and Stopeck 1985; Correll, Benard, and Paik 2007; Fuegen, Biernat, Haines and Deaux 2004). The implication is that perceived lack-of-fit, and the resulting disadvantage, may be more if the woman has attributes that confirm stereotypes, and less if the woman has attributes that are inconsistent with and challenge those stereotypes.

One mechanism through which gatekeepers may perceive (or not perceive) a lack-of-fit between workers and jobs is performance information. Research has shown that gender beliefs are less important to performance evaluations when there are measurable qualities, such as relevant educational credentials and work history, readily available – i.e., when performance information is present. For example, when given explicit information that a candidate for a masculine-typed job achieved high ratings in a past

performance review, evaluators have been shown to rate female and male candidates similarly in terms of competence (Heilman et al. 2004). However, in the same study, female candidates were rated as less competent than similar men when prior performance information was unclear. In the context of venture capital, and considering the significance of technical credentials, not having a technical background may make performance information less clear and confirm a woman entrepreneur's lack-of-fit with entrepreneurship, while having a technical background may be a strong indicator of performance ability and in turn, limit (and even reverse) perceived lack-of-fit.

Indeed, a survey of women business owners in 2000 found that having an advanced degree positively predicts acquisition of equity funding (Carter et al. 2003), and a recent study found that successful women entrepreneurs – those who have founded high-tech companies – are similar to their male peers in their education and experience (Cohoon, Wadhwa and Mitchell 2010). On the other side of the same coin, Brophy (1992) suggests that investors appear to undervalue women entrepreneur when they have less industry experience. The causality of these relationships goes untested in this prior work, but status characteristics and lack-of-fit theories suggest an explanation we can examine empirically.

In this study, we anticipate that the extent to which double standards influence evaluations of the entrepreneur depends on the human capital that the entrepreneur possesses – in this case, whether or not the entrepreneur has a technical background. We therefore expect that when a woman has task-relevant skills (e.g., a technical background), gender bias should be a less important factor in decision-making made about the entrepreneur. Furthermore, not having a technical background may heighten the salience of gender and confirm performance ambiguity and perceived lack-of-fit between women and entrepreneurship. As cultural beliefs assign greater competence in technical and entrepreneurial domains to men, the lack of technical background may not be as disadvantageous to men. Gender may therefore interact with technical background in that having such credentials helps women gain footing with men, while not having them disadvantages women more than men. We thus hypothesize a double standard in which

> ***Hypothesis 1****: Women and men entrepreneurs who have the same technical background will be evaluated as having similar entrepreneurial potential.*
>
> ***Hypothesis 2****: Women entrepreneurs who do not have a technical background will be evaluated as having less entrepreneurial potential than men who do not have a technical background.*

Variations in Social Capital

In addition to human capital, one's social connections can also serve as a source of inference for an entrepreneur's potential for success – or at least to help one get one's foot in the door. Social ties - especially strong relations – are an important mechanism by which interpersonal feelings of cohesion,

trust, and obligation are generated among parties (Coleman 1988, Reagans &McEvily 2003). Scholars of gender and work highlight the relationship between social ties and women's underrepresentation in the upper echelon's of organizations. In her classic portrait of corporate culture, Kanter (1977) suggests that women face the greatest barriers at the higher levels of management where there is considerable ambiguity about the types of qualifications and characteristics needed by job candidates to generate positive leadership results. Faced with uncertainty, managers tended to look to people "like themselves" to fill open positions, and they emphasized trust embedded in informal relationships as a key component of their decisions. Research has shown that candidates in possession of relevant social ties in the employment context are perceived by job evaluators to be more trustworthy and potentially more competent than those without (Seidel, Polzer, and Stewart 2000). Positive influences from social ties have been shown to generate benefits across a wide variety of workplace outcomes, extending from the point of hire (Petersen, Saporta, and Siedel 2000; Fernandez, Castilla, and Moore 2000) to promotion opportunities (Burt, 1998) and enhanced worker output and creativity (Castilla 2005; Fleming, Mingo, and Chen 2007).

In technical work settings, women's limited access to influential mentor and career networks has been posited to be an important reason for their differential gains in career opportunities and attainment (Long and Fox 1995; Etzkowitz et al. 2000; Long 2001). Research suggests that the origins of gender differences in networks are largely structural – that is, women and men with similar occupations, education, and organizational rank tend to have comparable network positions and locations (Brass 1985; Ibarra 1992; Moore 1990). However, women's differential status complicates our traditional notions of the ways in which networks operate. For example, research reveals that women are often excluded from the most resourceful networks despite their career location, and there appears to be a greater ability among men to leverage their positions and credentials (e.g. hierarchical rank, existing network contacts, educational degrees) into centralized network positions (Miller, Lincoln, and Olson 1981; Miller 1986; Ibarra 1992). Similarly, in their study of academic commercialization, Murray and Graham (2007) find that men and women experience different "network pathways" to the commercial realm – women from strong, close ties, and men from more diffuse referral networks. Lastly, some studies suggest gender differences in the rewards for social capital (Ibarra 1997; Burt 1998). For example, Burt (1998) finds that women are more likely to be promoted when in possession of many close, strong ties to superiors rather than diverse, weak ties from which men typically benefit. Burt suggests that that close ties provide a sense of legitimacy to women's ability to assume leadership positions.

In this study, we evaluate whether women and men receive similar or different compensation for the same type of tie to their evaluators. In the venture capital context, research shows that social connections in the industry can help one gain access to the industry and obtain favorable impressions and

funding decisions from venture capitalists (Shane and Cable 2002). Especially in the early stage of screening business plans, social ties may provide investors with additional information and confidence in the promise of the entrepreneur and venture (Shane and Cable 2002). Having a tie that can vouch for the entrepreneur may increase VC confidence in an entrepreneur's ability and potential, mitigating the level of uncertainty in the funding decision at hand. Moreover, in the high-tech entrepreneurial context where women's capabilities may already be influenced by gendered "lack-of-fit" assumptions, having a social tie to the venture capitalist may increase the assumed legitimacy of women entrepreneurs (Flynn and Anderson n.d.). While there is considerable suggestive evidence to support this implication (i.e. recent inferential work by Ding, Murray and Stuart, 2013, Burt 1998), there has been no direct experimental test in the literature to show that women being evaluated for leadership positions or promotions benefit more than men from close ties. Thus, in this study, we examine the hypothesis that while both men and women may benefit from social capital,

> *Hypothesis 3: Having a social tie to the venture capitalist is more important for evaluations of women entrepreneurs than for evaluations of men entrepreneurs*.

The Multidimensional Evaluative Process: Evaluations of the Entrepreneur versus the Venture

In this work we explore whether gendered double standards apply to the multiple foci of the venture capital evaluative process. Work superiors and job gatekeepers often formulate multiple assessments when making these decisions about who to hire or whether to promote a worker. Previous experimental work on status expectations has investigated respondents perceptions across a variety of individual attributes (sociability, likeability, competence, leadership potential, etc.), and as these relate to different outcomes (such as hiring *and* salary recommendations, for example). The VC evaluative process is one in which the venture capitalist must simultaneously weigh the assumed qualities of the entrepreneur (e.g., background qualifications and capabilities) with assumed qualities of the proposed venture (e.g., uniqueness and marketability of the product) (Kollmann and Kuckertz 2010). It is important to consider how gender bias may play into both of these dimensions – evaluations of the entrepreneur and evaluations of the venture. Although at later stages in the venture capital process the person and product may become divorced (investors may continue to support an entrepreneur while leaving behind the product, for example, or vice versa), at least at this initial stage the two are tightly coupled. In addition, most social psychological research on gender bias has focused on the consequences of bias on evaluations of *people* rather than their *products.* While studies have shown that women are often viewed as less competent or are held to higher standards of competence, particularly in high-level and leadership positions (see Heilman 2012 for a review), less is known regarding how gender bias may or may not influence evaluations of the *work that men and women produce*. VCs may make different

judgments about the venture and the person who founded the venture. A study of start-ups in Silicon Valley showed that compared to start-ups not financed by venture capital, venture-backed companies are more likely and faster to replace the founder with an outside CEO (Hellman and Puri 2002). VCs may make different calculations about the venture and the entrepreneur, especially given the high level of competitiveness and profit orientation in the VC context (venture capital funds only 1% of companies with investments ranging in the millions).

While we anticipate that gender bias influences evaluations of the entrepreneur at this initial stage, there is less a priori evidence of the ways in which we can expect such bias to influence evaluations of the entrepreneur's product, and as mediated by technical credentials and important social ties that can provide promise to the product. On the one hand, one could argue that there is less ambiguity about a product (as described on paper) than a person (whose interaction style, sociability and charisma are all unknown), and that gender is most salient in evaluations of the entrepreneur. On the other hand, venture capitalists may feel most able to work off of entrepreneurs' backgrounds and qualifications, and less clear about the cues they should use to vote on the venture. To account for this potentially important difference, we explore both evaluations of the entrepreneur and evaluations of the venture in the study.

DATA AND METHODS

Study Overview

We interviewed and conducted focus groups with Silicon Valley entrepreneurs and venture capitalists in 2006 to understand the VC funding process. These conversations focused on the process by which evaluative decisions are made about prospective entrepreneurs, informing the experimental manipulation and the questions that constituted participant's evaluations of the entrepreneur and venture. VCs have strict parameters in their investment and screening strategies, and invest in very few companies each year (about 10 for every 1,000 proposals). Further, initial investments in portfolio companies range from approximately $500,000 to $15 million (Gompers and Lerner 2000; Zacharakis and Meyer 2000). To test our hypotheses, we employed a vignette design in which study participants evaluated an executive summary of a business plan for a mobile communications platform. Participants were randomly assigned to one of four conditions in which we crossed the entrepreneur's sex (male or female as indicated by the entrepreneur's name – David or Amy) with his or her technical background (history major with no software engineering work experience or computer science major with some software engineering experience).[2] The executive summary was identical across all four conditions. After reading the executive summary, participants evaluated the entrepreneur and the venture on a number of measures, and

[2] Hereafter, male or female "tech" refers to a male or female computer science major, respectively, while male or female "non-tech" refers to a male or female history major, respectively.

were asked questions about the influence of having social ties to the entrepreneur on their decision-making.

Participants

Participants were male Masters of Business (MBA) students recruited from the Stanford Graduate School of Business Entrepreneur Club to complete an online survey.[3] MBA clubs of this sort are a highly competitive group; more than just representing students who display interest in a particular topic, they serve as venues for targeted training and for sharing industry-specific knowledge. All of the participants, by virtue of their membership, had received training in the process of obtaining VC funding and access to Silicon Valley VC networks, and additionally, about half of our sample indicated direct personal experience with VC funding. The members also displayed comparable backgrounds to VCs in the high-tech arena. A 2008 survey of VCs found that 86% are male, 36% earned technical degrees, 28% began their careers as entrepreneurs, and 42% graduated from Harvard, Stanford, University of Pennsylvania, Duke, and MIT (NVCA 2008). In this study, the mean age of participants was 29 years. Fifty-four percent had undergraduate degrees in science or engineering, 45% had experience seeking venture capital, and 14% had worked in a VC firm.

Club members were first randomly assigned to one of our four conditions and recruited through an email disbursed by the president of the club. They were offered up to $15 and an opportunity to win a $250 gift card in exchange for their participation. Our final sample has 114 males with a cell size per condition of 43 in the male tech, 18 in the male non-tech, 29 in the female tech, and 24 in the female non-tech conditions.

Procedure

We sent an introductory email to all members of the Entrepreneur Club inviting them to participate in a study about decision-making processes behind recognizing talent. Participants were told the researchers had collected numerous business plans reviewed by at least one Silicon Valley VC firm, with some having secured venture funding, and a few having become successful companies. Participants were asked to evaluate one business plan by reading an executive summary of the plan and completing an

[3] We were unable to recruit enough female entrepreneur club members to reach an adequate sample size to statistically control for this group, but hope that future research examines differences in women's and men's decision-making. Nonetheless, our sample is fairly reflective of the notable gender imbalance in the VC industry. While the NVCA (2008) reports that 86% of VCs are men, this number underestimates the proportion of men who make funding decisions since managing directors and general partners, who are almost all men, make the funding decisions.

online questionnaire. Participants were informed that they would receive 3 times the pay ($15 instead of $5) if their evaluation matched that of top Silicon Valley VCs. In reality, all participants read the same business plan and were paid the same amount.

The design included a monetary incentive to participants whose evaluations matched that of top VCs for two important reasons. First, to simulate the high stakes context of venture capitalism, the promise of higher pay motivated participants to prioritize profit maximization. Without the financial incentive, we could not rule out the possibility that subjects' evaluations of the female entrepreneur were artificially inflated (either to balance women's underrepresentation in the industry or to appear non-sexist). While such a bias would be positive evidence that subjects want to fund women entrepreneurs, it would only simulate VC decision-making to the extent that subjects balanced their gender egalitarian ideals with their motivation to make the most money.[4] Second, since the power of status beliefs to reinforce unequal relations lies in people's tendency to behave according to their perceptions of what referential others think - and not necessarily what they personally think (Troyer and Younts 1997) - we better approximate VC behavior by incentivizing evaluative behavior that is similar to what participants perceive VCs would do. While it would be interesting to have the opinions of venture capitalists without such an incentive, the findings of numerous social psychological studies suggest that people take into account how others behave when determining their own course of action. In addition, the social validity of others' beliefs has been shown across a variety of contexts to influence people's willingness to act according to status beliefs (Berger, Ridgeway, and Zelditch, 2002; Seachrist and Sangor, 2001). While we qualify our results as relevant to the perceived dominant expressions of the industry, we believe such perceptions are as if not more important guides to behavior than the beliefs respondents would admit to personally holding.

The executive summary was taken from an actual mobile communications start-up company that had recently secured $6 million in VC investments after $1 million in angel investment. Thus, we placed participants in a position of evaluating a company that had many of the characteristics of a promising company. The executive summary provided unambiguous information that the entrepreneur and the venture were promising, but given high competition for funding, we still expected considerable variation in evaluations of the founder and his/her company. The company name and entrepreneur biography were changed to insure that participants did not recognize the company. The business summary included information on the technology, competition, marketing approach, and entrepreneur. The two-page

[4] Pilot tests with and without the increased pay incentive provided evidence of social desirability bias, that is, a desire to appear non-sexist; when participants were promised greater pay for making evaluations that matched those of industry insiders, evaluations of the female versus male entrepreneurs were less positive than when there was no such pay incentive.

summary also included on the first page the name and educational background of the entrepreneur, the founding date, funding history, total amount sought, and the three-year revenue forecast.[5] In all conditions, the entrepreneur was described as having a Bachelor's degree from the University of Michigan, an MBA from University of California-Berkeley, and a few years of industry experience. Because the high-tech industry tends to provide different job tracks to those with technical degrees versus those without technical degrees (Simard et al., 2008), the entrepreneurs with technical degrees were described as having experience in software engineering and product management, in addition to marketing and sales expertise (described in all conditions).

Dependent Measures

Evaluation of the Entrepreneur

We measured evaluations of the entrepreneur on three dimensions that our focus groups revealed to be important entrepreneurial traits - the entrepreneur's assumed level of 1) leadership capability, 2) competence, and 3) sociability[6]. Since leadership is particularly relevant for a founder's performance and gender stereotypes hold women to be ill suited for leadership, we examine the leadership dimension separate from competence. To measure leadership capability, we asked participants to mark where they would rank the founder on 7-point scales of powerful/powerless, high status/low status, leader/follower – and also mark on 7-point scales their confidence in the entrepreneur's "ability to manage the start-up's founding team", and "ability to penetrate the market". We constructed a composite scale of leadership ability from these five items (α=.67). Competence and sociability scales were constructed from the following semantic differential items: (1) competence: *competent/incompetent, knowledgeable/unknowledgeable, capable/incapable* (α=.63)*;* (2) sociability: *considerate/inconsiderate, pleasant/unpleasant, likable/unlikable, cooperative/uncooperative* (α=.79). For all scales, higher scores indicate a better evaluation of the entrepreneur.

Evaluation of the Venture

To measure evaluations about the venture's potential for success, we asked participants, on a 6-point scale, "how unique is the company's product?", "how interested would you be in buying the company's product?", and "how likely would you be to schedule a meeting with the company's founder

[5] We consulted with venture capitalists and entrepreneurs to make sure that the funding information was believable and indicative of a promising venture.

[6] The interdependent relationship between a VC and an entrepreneur may make an affable personality uniquely attractive. Ridgeway et al. (2009) refers to the "sociability" scale as a measure of considerateness. This measure is also theoretically and empirically associated with status; high-status actors tend to be more instrumental and agentic, while low-status actors tend to be more expressive and communal (Berger, Ridgeway and Zelditch 2002).

to learn more about the venture?". We constructed a composite "optimism for the venture" scale of the combined question set by averaging these items (α=.70). We also measured the amount participants would invest by asking, "The founder has asked you to be the lead investor. If you agree to be the lead investor, you have the option of investing a majority or a smaller proportion of the total amount being sought. What percentage of the $6M would you choose to invest?" Investment amount choices ranged on an 11-point scale between 0-100 percent.

Importance of Social Capital

There are many dimensions of social capital that can be mobilized or put into use in the venture capital setting. Because the industry is so over-subscribed, and our focus groups emphasized women's lack of connections as an explanation for their underrepresentation in the industry, we designed the study to directly measure how a strong tie to the venture capitalist may influence decision-making. VCs were asked to respond to the following question on a 6-point scale: "We are interested in whether the ability to recognize talent is influenced by others' opinions. How much would having a trusted colleague who can vouch for the entrepreneur influence your decision-making?"

There are various reasons why social endorsements from strong ties advantage entrepreneurs. A trusted colleague or friend who is willing to vouch for an entrepreneur can reduce uncertainty in a high-risk environment, lend legitimacy to the venture and the entrepreneur, and also remind VCs of their social obligations. In this study, our measure does not allow us to identify the precise reasons why social ties affect evaluation, but because we compare the relative effects of a strong social contact across conditions, we can examine whether its influence varies according to the sex and technical background of the entrepreneur.

After collecting data on all measures, we asked participants to provide information on various demographic characteristics, including their age, race/ethnicity, college major, experience seeking venture capital, and experience working as a VC. We also included questions designed to confirm that subjects read and recalled the sex and technical background of the entrepreneur.

Analytic Approach

We present mean differences across conditions in the tables and text below. We used the statistical software package, SPSS, to conduct all analyses. To account for the unbalanced design (the unequal cell sizes across conditions), we estimated Type III sum of squares Analysis of Variance (ANOVA)[7]. All significance tests were conducted using 2 (sex of entrepreneur) x 2 (technical background

[7] There is some debate among statisticians about whether unbalanced ANOVAs should be based on Type II or Type III sums of squares (Langsrud 2003). We analyzed the data using both Types II and III and found results to be the

of entrepreneur) ANOVA in which F statistics and significance levels of main effects were calculated while controlling for the other main and interaction effects. Where we find significant interaction effects, we conducted simple effects tests to evaluate the significant differences in marginal means (unweighted means that assign no additional weight to cell sizes with larger Ns) across the four conditions. So as not to over-state the meaning behind non-significant findings, we also present effect sizes using Cohen's *d* where appropriate. Effect sizes provide an additional way to assess the magnitude of the condition effects, and can be interpreted according to Cohen's (1988) standards (.2 for small, .5 for moderate, and .8 for large effects).

RESULTS

Bias Analyses

Before testing our hypotheses, we examined whether there were any substantively meaningful biases introduced by the experimental design. Since we randomly assigned participants to conditions before recruitment, we introduced the possibility that the entrepreneur's sex or technical experience unique to each condition could influence participants' willingness to complete the survey after they had viewed the business plan[8]. To examine whether the attrition rate was comparable across conditions, we conducted a chi-square test and found that among those who followed the link to the study, 80% of the participants assigned to the male tech condition completed the survey compared to 51% in the male non-tech condition, 68% in the female tech condition, and 70% in the female non-tech condition ($p<.01$). We suspect that because the cover story promised three times the pay to participants whose evaluations matched that of top VCs, the response rate was biased toward the condition in which uncertainty was minimized. Since a man with a technical degree represents the prototypical entrepreneur, participants in this condition may have been more confident than participants in other conditions about matching the evaluations of top VCs. If our interpretation is correct, this suggests that all else equal, men with technical backgrounds may have an advantage over women and non-tech men in getting attention "over the transom." There may be a layer of gender bias even prior to evaluating the entrepreneur's dossier and business plan.

To examine whether the non-random attrition rate led to substantively different participant samples, we compared participants' age, race/ethnicity, college major, entrepreneurial experience, and

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same. To further insure that our results are not an artifact of the unbalanced design, we also estimated OLS regression equations and found results to be the same as the ANOVAs that we report in tables and text.

[8] While randomly assigning participants to conditions after recruitment would have led to more equal cell sizes, difficulty gaining access to the sample, and the small size of the sample from which we recruited made it imperative that we maximize the number of willing subjects by recruiting and offering the link to the survey-experiment in one email.

VC experience across conditions. The only difference we found was that there were significantly fewer participants with entrepreneurial experience in the female non-technical condition compared with other conditions. To account for any potential bias related to the participants' background, we estimated OLS regression models to examine the main and interaction effects of sex and technical background while controlling for participant's entrepreneurial experience, college major, VC experience, and age. Results from the regression models do not differ substantively from those presented below (they yielded the same main and interaction effects and comparable significance levels). Since unequal cell sizes can cause collinearity, we also examined variance inflation factors from the regression models and found no evidence of multicollinearity (VIFs < 5).Tables are available upon request.

In addition, the results presented in tables and text below do not include data from 32 participants who made manipulation check errors (i.e., incorrectly recalled the sex and technical background of the entrepreneur). Just as the attrition rate suggests that participants may have had more confidence in male technical entrepreneurs, our analysis of manipulation check errors also reveal the extent to which participants expect the prototypical entrepreneur to be male, and technically-trained; seven of the nine sex recall errors involved subjects in female entrepreneur conditions incorrectly reporting the entrepreneur to be male, and twenty-three of the twenty-seven tech recall errors involved subjects in the non-tech conditions misreporting the entrepreneur as having a technical background. In light of these errors, we conducted two different sensitivity analyses to insure the validity of results. First, since the subjects who made the errors may have held more stereotypic assumptions about the sex and technical background of entrepreneurs than those who did not, we had to be sure that eliminating their data would not non-randomly bias the sample. To rule out this possibility, we reassigned subjects who made manipulation check errors to conditions based on their incorrect recall of the entrepreneur's sex and technical background (rather than the actual condition they were exposed to), and re-conducted all analyses. We found the substantive results to be exactly the same as results in which we omit their data. To further rule out bias in the sample, we estimated binary logit models in which we regressed the likelihood of making an error on demographic characteristics, controlling for the condition that participants were assigned. We found no significant demographic predictors that varied across conditions. In sum, our bias analyses give us confidence in the results we present below, and are substantively important for illuminating the extent to which the prototypical entrepreneur is perceived to be male and to have a technical background.

Evaluations of the Entrepreneur

Variations in Technical Background and Gender

We expected to find no gender differences in the evaluations of entrepreneurs with technical backgrounds (Hypothesis 1). However, when technical background is absent and prior performance

information is more ambiguous, we expected that female non-technical entrepreneurs would be evaluated less favorably than male non-technical entrepreneurs (Hypothesis 2). Thus, we hypothesized no significant main effects for the entrepreneur's technical background or sex, but a significant interaction between the two, i.e., the effect of gender varies by technical background.

We evaluate our hypotheses across three dimensions reported in our focus groups to be important evaluative criteria to venture capitalists – leadership ability, competence, and sociability. Consistent with our hypothesis, Table 1 shows that we find significant two-way interactions for leadership ability ($p<.05$). Simple effects tests show support for Hypothesis 1: we find no significant differences in rated leadership ability for male and female technical entrepreneurs (Cohen's d=.40; n.s.). We also find support for Hypothesis 2: the male non-tech entrepreneur was evaluated as having more leadership ability than the female non-tech entrepreneur (Cohen's d's =.55; $p<.05$ one-tailed).[9] In addition, simple effects tests show that participants evaluated the male non-technical entrepreneur as having significantly more leadership ability than the male technical entrepreneur (Cohen's d=.53; $p<.05$).

[TABLE 1 ABOUT HERE]

As for competence ratings, we find no significant differences in means across conditions. For sociability ratings, we find a main effect of technical background, with the non-technical entrepreneurs viewed as more affable than their technical counterparts (Cohen's d's >.45; $p<.01$). The fact that both men and women technical entrepreneurs are seen as less sociable may be reflective of the common "nerd" stereotype that associates technical expertise with a lack of social skills (Kendall 2011). It is noteworthy that the male non-technical entrepreneurs were rated higher in both leadership ability and sociability than male technical entrepreneurs, a finding we discuss in more detail below.

Research on women business leaders suggests that women are generally seen as better at energizing and building a team, but less able at envisioning – at sensing opportunities, setting strategic directions, and inspiring constituents (Ibarra and Obodaru 2009). Thus, while women may be seen as capable and more communicative, they are nonetheless seen as weaker leaders than men. Here as well, we did not find double standards with respect to women's rated competence and sociability. Instead, our results suggest the strongest double standards apply to non-technical women with respect to indicators of power, authority and "know-how." These results suggest that the gender gap in venture capital (and likely other similar male-typed professional arenas) may be more rooted in biased perceptions about women's *legitimacy as leaders* than about women's competence. These findings resonate with feminist

[9] All reported significance tests are two-tailed except for simple effects tests of directional hypotheses, which are one-tailed.

theories of science and technology; in strong masculine cultures like high-tech entrepreneurship, hegemonic forms of masculinity are strongly associated with technological prowess and power (Wajcman 2004; 2010). In situations where women lack documentation of some form of technical expertise (i.e. through a degree), they are deemed less compatible in their ability to assume leadership roles in technological venues.

Taken together, these findings suggest that the technical degree signifies something different for men and women. Whereas the technical degree provides legitimacy to women and helps them overcome a perceived lack of fit, it is not necessary for providing legitimacy to men, and actually *disadvantages* them in perceptions about their sociability and leadership skills. Given the emphasis on "standing out" in the high-tech entrepreneurial arena, it may be that non-technical men and technical women benefit from being unique, counter-stereotypical, and not "what one would expect". Indeed, as research shows, status-inconsistent information affects evaluations of people more than status-consistent information (Berger, Wagner and Zeldtich 1992).

Evaluations of the Venture

Variations in Technical Background and Gender

Table 1 reports means of 2 (sex) x 2 (technical background) between-subjects ANOVAs on rated optimism for the venture and percentage equity participants were willing to invest. We find a main effect of technical background, and no significant main or interaction effects of sex. Participants in both male and female tech conditions evaluated the venture more favorably ($P<.05$) and comparisons of effect sizes show that the technical degree effect is considerably larger for females (Cohen's d=.73) than it is for males (Cohen's d=.38). This suggests that even though the evaluation of the venture does not differ by the sex of the entrepreneur, the credibility gains afforded by technical experience may be larger for women than men.

As for investment percentage, mean investment amounts are significantly higher in the tech than in the non-tech conditions (female Cohen's d =.51, male Cohen's d=.45; $p<.05$). The means are also higher in the male than in the female conditions, though the differences are not significant and small in effect size (tech and non-tech Cohen's d=.26; n.s.). While we find no significant effect of the entrepreneur's sex, it is worth noting that despite the male technical entrepreneur being evaluated as less sociable and less leader-like than his non-technical counterparts, participants nonetheless invested a significantly higher percentage in his venture than the other entrepreneurs (male tech M=24.19; others' M=14.65, $p<.05$). In contrast, the female non-technical entrepreneur (who is also evaluated as having less leadership ability than her counterparts) received significantly less percentage invested when compared to

the mean percentage of the other entrepreneurs (female non-tech M=10; others' M=20.44, p<.05). Given that the investment percentage is arguably the most direct indicator of a VC's support for the entrepreneur, these results suggest that personal characteristics like sociability and leadership ability may be less important in determining VC support when the entrepreneur is prototypical, that is, male and technically trained.[10] When the entrepreneur is neither male nor technically trained, she receives the least investment from VCs.

Variations in Social Capital and Gender

We hypothesized that given the possible uncertainty reducing effects of social capital, women entrepreneurs would gain more from social ties than men entrepreneurs, regardless of technical background (Hypothesis 3). Table 1 provides the findings of our analysis, and suggests support for Hypothesis 3. We conducted a 2 (sex) x 2 (technical degree) ANOVA on the measure of how influential a trusted colleague's support of the entrepreneur would be to the participant's decision-making with respect to recognizing entrepreneurial talent. We find a main effect of sex, with the presence of a contact being more important for women than men. The average level of importance participants assigned to having a close contact vouch for the entrepreneur was significantly higher in the female entrepreneur conditions than in male entrepreneur conditions (Cohen's *d* technical=.44, non-technical=.56; p<.05). We find no significant main effect of technical degree or interaction effects. Thus, a double standard operates whereby women appear to benefit more from having close ties than men.

DISCUSSION

This study considers how gendered double standards may be applied in venture capitalists' evaluations of business proposals. While a substantial body of research has shown that gender disparities persist in scientific careers even when human and social capital factors are statistically controlled, most of the evidence is inferential with respect to the relationship between gender bias and inequality, and the nature of the gender bias has been even more difficult to capture. Our findings lend credence to earlier inferential work but also suggest that gender bias in the VC evaluative context is subtle. We find, in line with past research (e.g., Heilman et al. 2004), that the effects of gender on entrepreneur evaluations

[10] In analyses not reported in the paper, we examined whether participants' (gendered) evaluations of the entrepreneur might also influence their evaluation of the venture by estimating multiple regressions that included controls for the entrepreneur's sex along with participants' evaluations of the entrepreneur. While the two evaluative dimensions are correlated, there were no mediating effects. Still, future research could investigate the possibility of *indirect* effects of the venture/entrepreneur evaluative relationship. (i.e. gender may influence (simultaneously) evaluations of the entrepreneur, and indirectly through this, that of the venture as well).

appear to depend on the presence/absence of clear performance information – specifically, double standards disadvantage women without technical backgrounds. Women without technical backgrounds were evaluated as having less leadership ability than their men counterparts, and also received significantly less of a capital investment than technical women, technical men, and non-technical men entrepreneurs. In addition, we found that a key factor in minimizing uncertainty - having a trusted social tie between the entrepreneur and the evaluator – is more important for evaluations of women than men. Our results suggest that women more so than men need certain indicators of potential – connections to key players, and also technical background in this context – to achieve legitimacy as entrepreneurial leaders and instill confidence in their evaluators about their abilities.

It is additionally interesting that women with technical backgrounds and men with non-technical backgrounds seem to have an advantage in leadership and sociability. This pattern may indicate the benefits of non-conformity in settings where "standing out" is valued. In the case of high-tech entrepreneurship, whereas women with technical backgrounds undermine stereotypes, men with technical backgrounds conform to stereotypes that imply competence but perhaps a lack of sociability. Men without technical backgrounds, however, may be seen as socially savvy, and they also do not have to contend with the stereotype that they are not technically competent (for example, men without technical credentials are well-known in the high-tech entrepreneurial world, e.g., Steve Jobs of Apple, Michael Dell of Dell Computing, Reid Hoffman of LinkedIn). It may be that in certain settings where being unique and having the "X" factor is emphasized, gendered double standards serve to advantage those who violate stereotypes.

While being non-prototypical seems to advantage technical women and non-technical men in evaluations of their entrepreneurial qualities, being prototypical, that is, male and technically trained, improves evaluations of the venture (and our analyses of the study attrition rates and manipulation check errors also show advantages for technically trained men). In contrast, the female non-technical entrepreneur, who is non-prototypical on sex and technical background, is evaluated least favorably on nearly all variables (except sociability). Given the different ways in which gender influences evaluations of entrepreneurs and their ventures, our findings may foreshadow the extent of gender's impact on VCs' later decisions in the entrepreneurial pipeline. While reputation, experience and contacts can help entrepreneurs gain access to venture capitalists, it is often the VC's impression of the entrepreneur, drawn from face-to-face interactions, that ultimately determines the entrepreneur's success (Baron and Markman 2000). As we found gendered double standards in evaluations based solely on business plans, we can expect gender to play a significant (and perhaps even larger) role in evaluations at later stages when entrepreneurs meet VCs and pitch their ventures. Further downstream in the process, VCs also make decisions about whether to replace the original founder with a new CEO or director (Wasserman 2003).

Future research should examine the VC decision-making process in subsequent funding stages and beyond.

Insofar as our findings suggest barriers to venture capital for women, they also suggest practical implications for addressing gender disparities in venture capital funding. For one, given the advantages that technical background and social capital confer to women, encouraging technical education and expanding women's networks may improve women's success in garnering venture capital. At the same time, we caution that framing the outcome as a supply-side issue can obscure the complex ways in which gender delivers biasing effects. Given our findings, educating VCs about bias in decision-making is imperative. Furthermore, as entrepreneurial ties are often homophilic (Ruef, Aldrich and Carter 2003) and prior research has shown that VC firms with women partners are more likely to fund women-founded start-ups (Brush et al. 2006), increasing the proportion of women in the venture capital world may help women entrepreneurs build strategic connections.

Though high-tech entrepreneurship is unique in its archetypal masculine culture, and may be a site where gendered cultural beliefs have a particularly strong effect on decision-making, our findings may also be applicable to evaluations in other workplaces where a distinctive combination of the candidate's "fit" and previous or proposed work are relevant to employment criteria (for example, faculty hiring at colleges and universities (Steinpreis, Anders & Ritzke, 1999). Similar processes may also be in effect in evaluations for promotion at the highest levels of organizations, where advancement requires more than just an established record, but also some combination of ambiguous (and often intangible) worker qualities believed to be predictive of success (the process of promotion to partnership in law firms or CEO of a company, for example). Additionally, our finding that social contacts yield greater rewards for women than for men in the VC context is an important expansion on the effects of social networks, and warrants study in different work environments and network arrangements.

In all, this research underscores the intricate ways in which gender remains involved in the venture capital decision-making process, and also provides clues to why science and engineering, particularly in the commercial and entrepreneurial arena, remain significantly gender imbalanced. If we assume that healthy and thriving economies are built, in part, on the development of innovations that require VC support, then we should attend to how men and women become differentially involved in entrepreneurship, and to the implications for the quality and diversity of new companies and ventures on the market. Greater diversity among designers of science and technology leads to better knowledge and products (e.g., Jehn, Northcraft, and Neale 1999). If entrepreneurship is disproportionately stifled for women, this is detrimental not just for individual careers, but for the general economy as well.

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Table 1. Condition Means from 2x2 ANOVA on Evaluations of the Entrepreneur, the Venture, and the Importance of Having Social Ties

	Evaluation of the Entrepreneur			Evaluation of the Venture		Social Capital
	Leadership Ability	*Competence*	*Sociability*	*Optimism in Venture*	*Percent to Invest*	*Importance of close contact*
Conditions						
Female						
No technical background (N=24)	3.98	5.15	4.93	2.94	10.00	5.08
	(.58)	(.65)	(.69)	(.80)	(16.94)	(.58)
Technical background (N=29)	4.21	5.46	4.63	3.57	18.62	5.10
	(.56)	(.90)	(.67)	(.92)	(16.63)	(.72)
Male						
No technical background (N=18)	4.33	5.24	4.88	3.04	14.44	4.56
	(.69)	(.72)	(.92)	(1.07)	(16.88)	(1.29)
Technical background (N=43)	3.94	5.43	4.38	3.44	24.19	4.74
	(.78)	(.89)	(.69)	(1.03)	(25.93)	(.93)
ANOVA F's						
Sex	.12	.04	1.10	.11	1.50	6.41*
Tech background	.37	2.39	7.68**	3.58*	5.05*	.35
Sex*Tech background[1]	5.47*	.12	.50	.33	.02	.23
Variable Range	1 to 7	1 to 7	1 to 7	1 to 6	0 to 100	1 to 6

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

[1] Simple effects tests used for interpreting the interactions show significant marginal mean differences between female and male non-techs at p<.05 (one-tailed) for leadership ability. Mean differences in leadership ability between male techs and male non-techs are also statistically significant at p<.05 (two-tailed).