

# Mind the gap: The role of gender in entrepreneurial career choice and social influence by founders

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## Abstract

**Research summary:** Women continue to be disproportionately underrepresented in new venture creation. We investigate whether and how founders can differently influence future entrepreneurial career choices of their male and female joiners. Using a large sample of startup firms with personnel where founders interact closely with joiners, we demonstrate that founders have a strong influence on a joiner's entrepreneurial career choice if both are female. We find empirical support for role modeling as a key underlying mechanism, accounting for alternative explanations such as selective matching based on gender and push-driven factors. These findings increase our understanding of the roles of socialization and organizational context in shaping the career outcomes of employees, and provide evidence of a multiplier effect of female entrepreneurs.

**Managerial summary:** Women are less likely to be entrepreneurs than men. We investigate whether working in a startup founded by a woman instead of a man influences individuals' decision to become an entrepreneur later. We find this to be the case for women. This result is best explained by female founders acting as role models for their female employees in male-dominated domains. Female founders able to break gender stereotypes seem to have an influence on the career choices of their female employees, especially among those who have lacked contact with entrepreneurs. Moreover, this

influence is stronger if the female founder and employee have similar backgrounds. These findings confirm the importance of social interactions at work and suggest new ways to inspire more women to launch startups.

#### KEYWORDS

entrepreneurship, female leadership, gender gaps, organizations, role models

“Mathilde (Cazenave) is actually the reason I started Aurate in a way (while working at Marc Jacobs)... The emotional part and the management part is what I grew to ask Mathilde about the most; I look up to how she’s done it in those roles.”  
(Sophie Kahn, founder of Aurate)

## 1 | INTRODUCTION

Understanding why entrepreneurial activities and behaviors unfold differently for different individuals, and how they can be promoted, has been at the center of attention of many scholars, including in strategy (e.g., Campbell et al., 2012; Carnahan, Agarwal, & Campbell, 2012; Lyons & Zhang, 2018). A deeply-rooted stream of research (Miller & Swanson, 1958) demonstrates that socialization—with peers (e.g., Eesley & Wang, 2017; Kacperczyk, 2013), parents (e.g., Lindquist, Sol, & van Praag, 2015), or coworkers (e.g., Nanda & Sørensen, 2010)—can shape individual preferences for entrepreneurship. A parallel line of inquiry has shown how certain organizational contexts (e.g., bureaucratic work environments or different corporate cultures) can spawn new entrepreneurs among employees (Dobrev & Barnett, 2005; Sørensen, 2007a; Sørensen & Fassiotto, 2011).

Despite the scholarly and policy interest in the topic, which has increased the understanding and promotion of entrepreneurial career choices, women remain a minority in new venture creation, even in countries where gender equality is relatively high (Tonoyan, Strohmeier, & Jennings, 2019). Scholars in various fields have studied this persistent female underrepresentation in entrepreneurship (e.g., Markussen & Røed, 2017; Shahriar, 2018; Thébaud, 2010), and multiple (not mutually exclusive) explanations have been proposed.

First, the gendering of labor market positions prevents women from acquiring entrepreneurship-relevant resources and limits their exposure to opportunities for new venture creation (Tonoyan et al., 2019). Second, stereotypes and social norms generating gender-specific role expectations are internalized by individuals and often discourage women from engaging in entrepreneurship by anticipation of negative stereotype threats (Kossek, Su, & Wu, 2017; Thébaud, 2010). Indeed, these threats are observed in critical stages of the entrepreneurial process such as VC funding (Guzman & Kacperczyk, 2019). Third, and as a consequence, men and women might develop distinct career preferences and opt-out of certain occupations due to perceived misfit (Kossek et al., 2017). In fact, evidence suggests that men and women have different preferences for specific careers and job attributes (Barbulescu & Bidwell, 2013), and heterogeneous preferences may, in turn, lead individuals to select (Greenberg, 2014; Roach & Sauermann, 2015; Sauermann, 2018) and stay (Carnahan, Kryscynski, & Olson, 2017) in

different occupations and firms. All these explanations apply not only to female underrepresentation in entrepreneurship, but also to other male-dominated positions where women remain underrepresented, such as CEO and other management roles (Cook & Glass, 2014; Dezsö, Ross, & Uribe, 2016; Kogut, Colomer, & Belinky, 2014), advisory board membership (Ding, Murray, & Stuart, 2013), and patenting (Ding, Murray, & Stuart, 2006).

Identifying settings, solutions, and interventions that promote female inclusion in male-dominated careers has thus been urged (Kossek et al., 2017). We analyze if and how startup founders can influence their employees to become a founder themselves. We do so by integrating sociological and organizational perspectives and by building on prior work about the influence of workplace relationships on employees' career advancement (e.g., Colbert, Bono, & Purvanova, 2016)—especially mentoring and role modeling for career socialization (Kossek et al., 2017; Lyons & Zhang, 2018). We posit that social interactions at work, namely exposure to female founders who break stereotypes, can encourage female employees to pursue entrepreneurship and reduce the gender gap. We theorize that the mechanism underlying this influence of female founders is role modeling in its broad sense, which includes providing mentoring, knowledge, and inspiration. Prior evidence indicates that role modeling promotes entrepreneurship (Bosma et al., 2012) and partly explains why the children of entrepreneurial parents have a higher entrepreneurial propensity (Lindquist et al., 2015; Sørensen, 2007b). We demonstrate that startup founders can be even more influential role models than parents for particular individuals.

We use startups as an empirical setting, where employer–employee (founder–joiner) interactions are likely to be direct and intense, possibly providing entrepreneurial career previews that can demystify the entrepreneurship process, update beliefs, and change preferences (Pryor et al., 2016; Sørensen & Fassioto, 2011). Employers can steer the development of their employees by providing motivation, incentives, information, and knowledge (Artz, Goodall, & Oswald, 2017; Dezsö & Ross, 2012; Lazear, Shaw, & Stanton, 2015; Lyngsie & Foss, 2017). Drawing on social identity theory, we expect this to be more likely within same-gender pairs and stronger among minorities, such as women in entrepreneurship, *via* role modeling mechanisms.

Based on register data for Denmark, we analyze the occupational transitions of around 89,000 full-time joiners hired by about 14,000 startup founders. We find overall support for our theory: Employees joining a founder of the same gender are more likely to become entrepreneurs later; this finding is particularly prominent among women and is stronger than the effect of other social interactions observed in our data. We theorize and confirm that the influence of female founders is magnified in particular settings such as where women tend to be disproportionately underrepresented or lack prior contact with entrepreneurship. This suggests a broadly defined role modeling function of female founders for female joiners. Alternative explanations such as selection and push mechanisms are considered and tested, but not supported empirically.

Our study contributes to multiple debates. First, we add to the discussion on the value of mentoring, especially for underrepresented groups (e.g., Lyons & Zhang, 2017, 2018), as an intervention to help reduce certain barriers such as stereotype threats. Role models and mentors seem to affect the education and occupational choices of minorities by helping them update their beliefs about their abilities, and changing their preferences for particular career paths (e.g., Eble & Hu, 2019; Kofoed & McGovney, 2019). We find that female founders can influence the career choices of their female joiners *via* a broadly defined role modeling function.

Second, by focusing on a social influence stemming from the workplace, we contribute to organizational and strategic management research that demonstrates how different

organizational contexts can stimulate particular employee behaviors and career choices, namely entrepreneurship and innovation (Carnahan et al., 2012; Dobrev & Barnett, 2005; Lyngsie & Foss, 2017; Sørensen, 2007a; Sørensen & Fassiotto, 2011).

Third, our study relates to the literature on early team formation and its organizational impacts (e.g., Beckman & Burton, 2008; Beckman, Burton, & O'Reilly, 2007). Founders are known to imprint their team composition through path dependence and homophily preferences (Beckman & Burton, 2008, 2011). Organizational and sociological research in turn posits that an organization's demography—namely the presence of women in top ranks—can shape the careers of female versus male employees in the firm (e.g., Cohen, Broschak, & Haveman, 1998; Cohen & Huffman, 2007). Drawing on theory implying that homophily between employees and work superiors might promote social identification and role modeling (Gibson, 2004; Shapiro, Haseltine, & Rowe, 1978), especially if both belong to underrepresented groups such as women in business environments (Cohen & Broschak, 2013; Ely, 1994; Ibarra, 1992, 1997; McGinn & Milkman, 2013), we contribute to this inquiry and provide results from a different setting: new ventures where female founders and female joiners work together.

Finally, our findings add to the debate on how female representation in top ranks can affect firm outcomes (e.g., Dezsö et al., 2016; Dezsö & Ross, 2012; Kogut et al., 2014; Lyngsie & Foss, 2017). Female representation in top management is suggested to improve firm performance and innovation outputs, depending partly on how it influences the motivation and commitment of other women at lower levels in the organization (e.g., Dezsö & Ross, 2012; Lyngsie & Foss, 2017). Women in top ranks can act as agents of change able to transform social norms, narrow gender gaps, and break the so-called “glass ceiling” (e.g., Abraham, 2017; Cohen & Broschak, 2013; McGinn & Milkman, 2013). Our finding that female founders can be role models for their female joiners might help unpack new channels through which female representation at the top ultimately impacts firm performance and other milestones.

## 2 | THEORETICAL BACKGROUND AND HYPOTHESES

### 2.1 | Individual heterogeneous preferences and the value of mentoring

Individuals differ in their preferences for certain job and firm attributes. This heterogeneity partly explains differences in sorting into certain occupations (Roach & Sauermann, 2015) and firms (Sauermann, 2018), as well as in retention (Carnahan et al., 2017), effort, and productivity (Sauermann, 2018; Sauermann & Cohen, 2010). Entrepreneurship is a career choice in which preferences play a key role (Greenberg, 2014), given the high entry barriers (e.g., in the form of resources required) and the risks involved compared to working in an existing organization (Amit et al., 2001). Individual disposition, such as risk attitude and taste for autonomy, certainly shapes one's preferences for an entrepreneurial career (e.g., Halaby, 2003).

Career preferences can also be influenced by one's context. Social norms, shared cultural beliefs, and institutionalized labor market practices set expectations about certain career paths, leading to an underrepresentation of some groups in some roles. Preferences for jobs and organizations are based on a mixture of opt-out and push-out forces (Barbulescu & Bidwell, 2013; Thébaud, 2015; Tonoyan et al., 2019). Identifying effective interventions to counteract these forces is encouraged, and role modeling and mentoring are considered promising strategies to increase career socialization and job participation equality (Kossek et al., 2017).

Role models—defined as cognitive constructions based on individual perceptions to be similar to others in particular roles, and the desire to increase this perceived similarity through emulation of attributes and achievement of identical goals (Gibson, 2004; Shapiro et al., 1978)—have been shown to counterbalance stereotypes and change preferences in different settings over an individual's life or career. Access to mentoring, often *via* role models, seems to influence academic achievement (Eble & Hu, 2019; Gershenson et al., 2018), education and occupational choices (Kofoed & McGovney, 2019; Lyons & Zhang, 2018; Porter & Serra, in press), job performance, and advancement (Blau et al., 2010; Lyle & Smith, 2014). It seems that, at least in the short-term, exposure to role models affects preferences, aspirations, and beliefs (Kram & Isabella, 1985), especially among underrepresented groups such as gender and race minorities (Gershenson et al., 2018; Kofoed & McGovney, 2019). Information and perceived ability updates can be greater for these groups and (partially) offset their lower disposition to engage in settings where they feel vulnerable to social identity threat (Murphy, Steele, & Gross, 2007).

Workplace relationships can offer mentoring, shape preferences and allow employees to flourish (Colbert et al., 2016), and also legitimize opportunities identified through experience, observation, and communication (Nanda & Sørensen, 2010; Pryor et al., 2016). Employees' satisfaction, performance, retention, and mobility are found to be molded by others at work, most often hierarchical superiors with more authority, seniority, and experience (Abraham, 2017; Artz et al., 2017; Artz & Taengnoi, 2016; Lazear et al., 2015; McGinn & Milkman, 2013), sometimes perceived as role models (Gibson, 2004). These can provide employees with information, benchmarks, and professional identities they can compare to (Ibarra, 1999), besides the encouragement, inspiration, emotional support, and guidance that might increase their motivation to follow certain career paths (McGinn & Milkman, 2013; Shapiro et al., 1978).

An important source of role modeling or mentoring, which has been overlooked by scholars concerned with the gender gap in entrepreneurship, is the exposure to startup founders in the work environment. We argue that work interactions with founders can influence employees' future entrepreneurship choices through a variety of channels. Working with a founder might demystify the entrepreneurial process, by providing entrepreneurial career previews (Tonoyan et al., 2019) and career socialization processes (Kossek et al., 2017), able to shape one's preferences and confidence in the ability to follow a similar path. At a deeper level, exposure to a founder might transfer knowledge, provide contacts or other resources that may build employees' networks and skills (Sørensen, 2007b). We posit that these processes are components of (broadly defined) role modeling (Gibson, 2004; Kram & Isabella, 1985; Shapiro et al., 1978) provided by startup founders to those individuals who join their ventures.

## 2.2 | Gender homophily and social identification in founder–joiner interaction

Role models are deemed critical for individual development (Eble & Hu, 2019; Gershenson et al., 2018) and career success (Blau et al., 2010; Lyle & Smith, 2014). Role models serve various functions based on individual needs and ambitions (Shapiro et al., 1978), and their influence is contingent on (often gender-based) self-categorization and social comparison processes (Kofoed & McGovney, 2019; McGinn & Milkman, 2013). People tend to connect with similar others (McPherson, Lynn, & Cook, 2001), also at work (Ibarra, 1992, 1997) with both peers (Kleinbaum, Stuart, & Tushman, 2011) and superiors (McGinn & Milkman, 2013), making the intensity and value of social interactions a function of homophily.

First, in line with similarity-attraction theory, resemblance among individuals can increase communication and valuation of the knowledge transmitted by others (Reagans, 2011). Second, network psychosocial benefits such as role modeling tend to be stronger in interactions between demographically similar individuals (Ibarra, 1992, 1997). Third, the conveying of competence and confidence is often gender-typed, and the transmission of values, attitudes, knowledge, and motivation is often conditional on social identification processes (Ibarra, 1999). Consequently, social influence driven by either exposure or learning channels (Sørensen, 2007b) might be amplified in same-gender interactions. In sum, we conjecture that gender homophily between founders and joiners improves social identification and strengthens the founder's influence on employees' choice to follow a similar career path.

**Hypothesis 1** *The propensity to start an entrepreneurial career will be greater for joiners working with a founder of the same rather than a different gender.*

However, same-gender founders may play different roles and fulfill different needs for male and female joiners. Gender and workplace network theories suggest that men and women access different resources *via* homophilous relationships (Ibarra, 1992, 1997; Moore, 1990). While men seem to prefer men for both instrumental career objectives and social support, women derive greater support and inspiration from other women, though possibly at the expense of career-enhancing resources such as network and status returns that could possibly be better obtained from participation in male networks and male-typed jobs (Chatman & O'Reilly, 2004; Ibarra, 1992). Still, we have reasons to argue that women joining startups are more influenced than men by same-gender founders in relation to the decision to become an entrepreneur.

First, female founders can provide larger information updates, narrow the void in inspiration, and counteract the low predisposition for entrepreneurship among their female joiners, more than male founders can do in relation to male joiners. Facing negative gender norms and stereotype threats, women might perceive themselves as lower-ability groups in male-dominated spaces (e.g., Eble & Hu, 2019; Koellinger, Minniti, & Schade, 2013; Thébaud, 2010). Women also tend to score lower in several dispositional characteristics often correlated to preferences for entrepreneurship, such as risk-taking and taste for autonomy (Halaby, 2003).

Second, individuals less familiar with entrepreneurship tend to be influenced more strongly by peers or mentors with entrepreneurial experience (Eesley & Wang, 2017; Lyons & Zhang, 2017, 2018; Nanda & Sørensen, 2010). Women are less likely than men to have (direct or indirect) experience in entrepreneurship (Koellinger et al., 2013), leaving them at a disadvantage in the relatively lengthy process of opportunity conceptualization (Pryor et al., 2016). Social interactions with entrepreneurs with whom they identify could alert them to opportunities or legitimize opportunity spaces they might otherwise ignore.

Third, while numerical underrepresentation induces perceptions of vulnerability to social identity threat (Murphy et al., 2007), social ties tend to be stronger among minorities. Female founders could then be relatively more influential due to activist choice homophily (Greenberg & Mollick, 2017) and greater demand for, or openness to, the benefits from social identification among female employees (Cohen & Broschak, 2013; Ely, 1994; Ibarra, 1992, 1997; McGinn & Milkman, 2013; Moore, 1990). Finally, although women might sometimes face a trade-off between support from female ties and strategic resources more often derived from male interactions (Chatman & O'Reilly, 2004; Ibarra, 1992), the potential returns from heterophyllous relationships might be weaker in the absence of some degree of social identification (Ibarra, 1999). Therefore, based on the above, we hypothesize that:

**Hypothesis 2** *The positive influence of a same-gender founder on a joiner's propensity to start an entrepreneurial career will be stronger in the case of women than men.*

### 2.3 | Heterogeneities in female founders' social influence

We conjecture that role modeling (broadly defined) is the mechanism underlying the previous hypothesized relationship. However, the influence of role models can be increased by different cognitive and structural dimensions such as the type of attributes, skills, and behaviors perceived as worth imitating, and the (geographic or social) proximity to the role model (Gibson, 2004). We theorize that female founders will be more influential as role models in certain conditions, depending on (a) their performance (which may signal reputation and legitimacy), (b) the social proximity (identification) between them and the focal joiner, and (c) joiner's entrepreneurship-relevant experience gaps.

First, high-performing role models or mentors can be especially influential in the career development of more junior individuals (Blau et al., 2010; Lyle & Smith, 2014). However, role congruity theory suggests that gendered expectations about men's and women's competence in male-dominated roles often put female leaders at a disadvantage, due to greater scrutiny and distorted assessment of their abilities (Eagly & Karau, 2002; Lee & James, 2007; Th  baud, 2010; Yang & Triana, 2019). We argue that female founders able to counteract these mental models (e.g., via high performance or industry selection) can legitimize female entrepreneurship to a greater extent and be a more important source of mentoring for other women.

Second, while similarity in demographic characteristics reinforces interpersonal attraction and tie strength (Ibarra, 1992, 1997; McPherson et al., 2001; Reagans, 2005, 2011), social identification tends to increase if individuals have multiple attributes in common and their social category is made more salient by means of numerical cues. Mentoring functions are often more effective with increased social identification between mentor and mentee, due to a possibly stronger perception of in-group status and cohesion (McGinn and Milkman, 2013), greater openness to communication (see Reagans, 2011 for peer interactions), and reduced competition for mentor's attention (see Lindquist et al., 2015 for evidence within families).

Finally, having access to mentoring from role models can have a particularly strong impact for individuals not yet exposed to (in)direct entrepreneurial career previews which could have changed their beliefs about or preferences for entrepreneurship (Greenberg, 2014; Lentz & Laband, 1990; Lyons & Zhang, 2018; Tonoyan et al., 2019). We expect the existence of such gaps to leave more room for role models to provide information and create awareness of the different phases involved in entrepreneurship (Pryor et al., 2016). We therefore hypothesize that:

**Hypothesis 3** *The positive influence of a female founder on a female joiner's propensity to embark on an entrepreneurial career will increase with the (a) performance of the founder as an entrepreneur, (b) intensity of social identification between founder and joiner, (c) joiner's entrepreneurship-relevant experience gaps.*

We acknowledge that role modeling encompasses functions that can be categorized as social exposure and learning processes (S  rensen, 2007b). Both are plausible and likely to occur. We (tentatively) test their validity and relative strength in post hoc analyses.

## 3 | DATA AND METHODS

### 3.1 | Data sources and sample

Our analysis is based on the Integrated Database for Labor Market Research (IDA), maintained by Statistics Denmark. IDA provides detailed yearly data for every legal resident in Denmark. Moreover, by being a longitudinal matched employer–employee dataset, it allows us to construct workers' career histories, identify transitions between occupations and workplaces, and distinguish between employees and their employers at the workplace level.

We start by identifying new ventures hiring personnel and their respective founders. We exclude new organizations created as separations from other firms or mergers of existing firms. We also exclude part-time founders with no registered business address and new firms with no employees other than the founder. This likely excludes most necessity-driven, less committed, and less growth-oriented founders, who are less likely to be entrepreneurial mentors.

Our analysis also requires clear definitions of founders and joiners (Roach & Sauermaann, 2015). We draw on the yearly classifications of individuals' primary occupations and define founders as employers in a newly created venture that employs personnel. Joiners are defined as employees (who are not family members—parents, spouses, or children) hired by the startup founder at entry or at a later date. To accurately distinguish founding team members from early joiners (see Sørensen, 2007a), we focus on startups with single founders and distinguish between early and late joiners, restricting our main analyses to the latter. We include all startups founded between 2003 and 2007 with at least one employee by the entry year, and use data prior to 2003 to track the careers of founders and joiners. We focus on full-time joiners who are more likely to interact closely with and be affected by the founder. Those joining part-time may intend to start their own firm as a hybrid entrepreneur, possibly raising selection concerns.

We follow employees from the moment they join the firm until they leave or until the last year of data (2012). We track their subsequent occupation and classify them as entrepreneurs according to a broad and a strict definition. The broad definition includes all joiners who become founders of new firms with or without personnel (i.e., both self-employed and employer categories). The strict definition considers only joiners who found a firm with personnel, which excludes potential independent contractors (Sørensen, 2007a, 2007b).

Our core sample includes 13,931 startups with a unique full-time founder, 29% of whom are female. We identify a total of 89,189 full-time joiners with no other primary occupation; 54,523 were hired after the startup year and are labeled “late joiners.” About 2000 full-time joiners become entrepreneurs (broad definition) immediately after leaving the firm, and 32% of these hire personnel (strict definition). The share of women among those who become founders varies between 29 and 31% depending on the definition.

Table 1 presents descriptive statistics at the joiner-level and distinguishes joiners who became founders (Column 1) from those who did not switch to an entrepreneurial career during the period observed (Column 2). Column 3 reports the difference between groups. We also compare future founders with those who leave the firm for some other reasons than entrepreneurship (Columns 4 and 5).<sup>1</sup> We observe a negative relationship between joiners' propensity to become founders and female representation in the startup—measured either by the presence of a female founder or by the share of women among coworkers. However, we observe the opposite if we analyze women separately: Female joiners who become entrepreneurs more often worked in a female-founded firm and had a larger share of female coworkers (Table S2). These

**TABLE 1** Summary statistics for full-time joiners according to their decision to enter entrepreneurship

	(I) Future founders (N = 1,966)	(II) Nonfounders (N = 87,223)	Difference (I–II)	(III) Movers (not to e-ship; N = 44,368)	Difference (I–III)
<i>Joiner characteristics</i>					
Female joiner	0.319	0.516	–0.197 (.000)	0.522	–0.203 (.000)
Age	35.20	33.08	2.129 (.000)	31.41	3.799 (.000)
≤Secondary Education	0.436	0.548	–0.112 (.000)	0.573	–0.137 (.000)
Vocational Education	0.394	0.306	0.088 (.000)	0.289	0.105 (.000)
Short-medium higher education/Bachelor	0.122	0.110	0.013 (.049)	0.103	0.019 (.000)
Master or PhD	0.048	0.036	0.012 (.011)	0.035	0.014 (.003)
Married	0.397	0.303	0.094 (.000)	0.272	0.125 (.000)
Number of children	1.012	1.041	–0.028 (.289)	1.089	–0.077 (.005)
Number of different workplaces in the past <sup>a</sup>	6.447	6.015	0.432 (.000)	5.546	0.901 (.000)
Years in unemployment (cumulative sum)	1.876	1.580	0.296 (.000)	1.511	0.365 (.000)
Worked in a young firm (previous 5 years) <sup>b</sup>	0.427	0.335	0.091 (.000)	0.337	0.090 (.000)
Worked in a micro firm (previous 5 years) <sup>b</sup>	0.699	0.571	0.128 (.000)	0.589	0.114 (.000)
Worked in a large firm (previous 5 years) <sup>b</sup>	0.122	0.171	–0.049 (.000)	0.169	0.047 (.000)
Later joiners (entering after startup year)	0.500	0.614	0.114 (.000)	0.517	–0.017 (.129)
<i>Workplace characteristics</i>					
Firm size (log of employment)	1.825	2.785	–0.960 (.000)	2.734	–0.909 (.000)
Share of female workers in the workforce	0.385	0.512	–0.127 (.000)	0.513	–0.128 (.000)
<i>Founder characteristics</i>					
Founder age	39.47	42.19	–2.720 (.000)	41.52	–2.054 (.000)
Female founder	0.275	0.320	–0.045 (.000)	0.317	–0.042 (.000)
Number of different workplaces in the past <sup>a</sup>	7.720	8.339	–0.619 (.000)	8.233	–0.513 (.000)
Years in unemployment (cumulative sum)	1.524	1.572	–0.047 (.359)	1.554	–0.030 (.557)
Number of different workplaces as an employer	2.396	2.744	–0.348 (.000)	2.588	–0.192 (.000)

*Note:* All variables are measured at the time of joiner's entry into the firm. "Future founders" refer to joiners entering entrepreneurship according to the broader definition (founders of new ventures with or without personnel).

<sup>a</sup>All workplaces, including those with short-term and part-time jobs.

<sup>b</sup>Young/micro/large firms: Firms up to 10 years old/up to 10 employees/100+ employees. *p* values in parentheses.

**TABLE 2** Share of female and male employees entering entrepreneurship in male- and female-led startups

	Female founders	Male founders
Share of female employees	0.659	0.340
Share of female employees becoming entrepreneurs	0.032	0.023
Share of male employees becoming entrepreneurs	0.054	0.062
Difference (gender gap in entrepreneurship entry rate)	-0.022	-0.039

Note: Statistics based on all full-time joiners; similar patterns are observed when restricting the analysis to late full-time joiners.

patterns are unlikely to be driven by differences in education or experience levels across male and female founders, since these tend to be rather similar (Table S3, panel A). These figures may be explained at least partly by the different industry distributions of female and male founders (Table S3, panel B), so all estimations will include industry controls.

Table 2 presents statistics for the outcome variable and provides initial evidence in line with Hypothesis 1: Joiners working with same-gender founders seem more likely to become entrepreneurs. Interestingly, gender gaps in entrepreneurship rates are evident even among employees who selected into startups, but significantly smaller in ventures founded by women. The data further show that both male and female founders tend to hire a greater share of same-gender employees, possibly due to the gender composition in their industry, or to a preference for same-gender matches. To mitigate selection concerns, we use an econometric method which considers the correlation between joiners' and founders' unobserved traits and perform several robustness checks to account for selective matching based on gender by employing inverse probability treatment weights (IPTW), instrumental variables, and a two-stage model which takes into account the endogeneity of matching as in Azoulay, Stuart, & Liu (2017).

### 3.2 | Methods

Both joiner's and founder's unobserved characteristics might (partly) drive a joiner's decision to become an entrepreneur. Joiners differ from each other in several unobserved aspects such as innate ability, entrepreneurial talent, and preferences for certain work environments and social interactions. Likewise, founders likely differ in various unobserved attributes such as leadership style, mentoring skills, and entrepreneurial talent which might affect a joiner's probability to pursue an entrepreneurial career. Furthermore, joiners may choose to work for certain founders and not for others, while founders select specific types of joiners they prefer. Therefore, the influence of founders on joiners might be different according to several features driving their match. In other words, the unobserved traits of founders and joiners are possibly correlated, and their match is unlikely to be random (see also Eesley & Wang, 2017; Lazear et al., 2015).

We leverage the longitudinal and hierarchical structure of our data to partially address these issues. Since joiners are "nested" (or clustered) within founders, we employ multi-level mixed-effects models (Abowd, Kramarz, & Woodcock, 2008; Lazear et al., 2015; Woodcock, 2015) which allow us to measure two kinds of effects: (a) fixed effects, that is, standard regression coefficients (intercepts and slopes) describing the population as a whole, as in ordinary regressions, and (b) random effects in the form of intercepts that can vary across individuals to account for unobserved heterogeneity at various levels.<sup>2</sup> By having heterogeneous joiners nested within heterogeneous founders, we can add founder-level and joiner-level intercepts

while still accounting for the fact that joiners are clustered within founders. In so doing, we control for heterogeneous founders and organizational contexts, and allow each founder to have a unique influence on each joiner depending on the correlation between their unobserved traits.

We estimate multi-level mixed-effects models for discrete-time duration data. The probability of a joiner  $i$ , with founder  $b$ , leaving to become an entrepreneur in year  $t + 1$ , is modeled as a function of different joiner–founder gender combinations, while controlling for joiner and founder characteristics (Table 1), year, region, and industry fixed effects, and both founder and joiner-by-founder unobserved heterogeneity. The baseline model is modeled as:

$$\Pr(E_{ibt+1} = 1) = H(\beta_1 FM_{ib} + \beta_2 MF_{ib} + \beta_3 FF_{ib} + X_{it}\alpha + Z_{bt}\delta + \tau_t + \gamma_y + \mu_j + \lambda_r + \zeta_{ib}^{(2)} + \zeta_b^{(3)} + \varepsilon_{ib}) \quad (1)$$

where  $FM_{ib}$  is equal to 1 if the joiner is a woman and a founder is a man;  $MF_{ib}$  is 1 for the opposite gender combination; and  $FF_{ib}$  is 1 if both joiner and founder are female. The coefficients of these three variables measure the influence of different gender combinations on the probability of a joiner becoming an entrepreneur after leaving the firm, relative to the baseline group of male joiners with a male founder. The vectors  $X_{it}$  and  $Z_{bt}$  represent joiner and founder characteristics that can vary over time;  $\tau_t$  are year dummies for joiner tenure;  $\gamma_y$ ,  $\mu_j$ , and  $\lambda_r$  are year, industry (2-digit), and region fixed effects;  $\zeta_{ib}^{(2)}$  and  $\zeta_b^{(3)}$  are the joiner-by-founder and founder-level random effects with zero mean and variances  $\psi^{(2)}$  and  $\psi^{(3)}$ , respectively;  $\varepsilon_{ib}$  is the level 1 error term; and  $H(\cdot)$  is the inverse complementary log-logistic function.

We concede that this method does not account fully for selection in the founder–joiner match and conduct various robustness checks to alleviate this concern. Besides estimating this model in subsamples potentially less plagued by selection, we use IPTW, instrumental variables, and a two-stage model to account for partially deliberate matching (see Azoulay et al., 2017).

## 4 | RESULTS

### 4.1 | Same-gender founders and joiners' future transition to entrepreneurship

We start by estimating Equation (1) for all the joiners in our sample. Table 3 shows the main results for both the broad and strict definitions of joiner transition to entrepreneurship. Columns 2 and 4 distinguish the subsample of late joiners, that is, employees hired at least 1 year after firm foundation, which more precisely differentiates joiners from co-founders.

The estimates confirm that women are less likely than men to become entrepreneurs. However, this gap is significantly reduced for startups set up by joiners working with a female founder. This difference is caused by a *higher* likelihood of becoming a founder for women employed by a female rather than a male founder, and not by a *lower* probability of men becoming founders when working for a female rather than a male founder (the coefficients in the second row are negative, but at most marginally significant). These results provide partial support for Hypothesis 1—for female but not male employees—and strong support for Hypothesis 2. Based on the average marginal effects for the subsample of late joiners, the predicted female

**TABLE 3** Founder-joiner gender match and joiners' future transition to entrepreneurship

	Broad e-ship definition		Strict e-ship definition	
	All FT joiners	Late FT joiners	All FT joiners	Late FT joiners
F Joiner & M Founder	-1.2223 (.000)	-1.3683 (.000)	-1.2983 (.000)	-1.3055 (.000)
M Joiner & F Founder	-0.0966 (.444)	-0.2755 (.057)	-0.2343 (.200)	-0.0515 (.817)
F Joiner & F Founder	-0.7620 (.000)	-1.0271 (.000)	-0.5660 (.005)	-0.6182 (.012)
Observations	154,590	92,605	151,452	91,352
Log Likelihood	-8,012.5	-4,003.5	-2,934.9	-1,467.6
Wald test of equality of coefficients (F Joiner & M Founder = F Joiner & F Founder)	14.04 (.000)	4.45 (.035)	15.51 (.001)	7.26 (.007)
Founder Intra-Class Correlation	0.1306	0.0830	0.1326	0.1167
Joiner Founder Intra-Class Correlation	0.6381	0.5690	0.7772	0.6541

Notes: Three-level mixed complementary log-logistic models. *p* values in parentheses. All the models control for workers' demographic and family characteristics, tenure, previous labor experience (including characteristics (size and age) of previous workplaces), current workplace characteristics (size, share of female employees), founder's characteristics (age, previous unemployment spells, experience in employment and as employer), as described in Table 1. Industry, region, and year fixed effects included.

Abbreviations: F (M), Female (Male); FT, full-time.

**TABLE 4** Summary of robustness checks and sensitivity analyses to baseline results

Robustness check/sensitivity analyses	Reported in
Estimations including startups with multiple founders	SA.6
Alternative measure for joiners' exposure to same-gender founders	SA.7
Alternative sub-samples:	
Including part-time joiners	SA.8-a
Joiners coming from closed or downsizing firms	SA.8-b
Excluding startups whose founder left and was replaced by another employer	SA.8-c
Startups surviving until the end of the observation period	SA.8-d
Analysis of non-random (gender) selection	SA.9
Applying Inverse Probability Treatment Weights accounting for gender sorting in the founder-joiner match	SA.10

Note: All these robustness checks are provided in Supporting Information.

entrepreneurship probability is 30% higher if the founder is also a woman compared to if the founder is a man (89% higher using the stricter entrepreneurship definition). The coefficients of the control variables (provided in the Supporting Information S4) are largely in line with prior evidence (see for instance Koellinger et al., 2013).

The last two rows in Table 3 show significant intra-class correlations, meaning that joiners working for the same founder are usually more similar to each other than joiners working for different founders. Using a method that accounts for the nested structure of the data and the dependence among observations is thus recommended and likely to be more conservative than more standard methods. Nevertheless, OLS would produce consistent findings (see Table S5).

## 4.2 | Robustness checks

Table 4 summarizes several robustness checks. Our results hold when we (a) include team-founded startups, (b) measure founder influenced by the time spent with a same-gender founder at work, (c) include part-time joiners, (d) focus on joiners more randomly matched with founders (e.g., joiners coming from closed firms), and (e) restrict the sample to surviving startups.

We next revisit founder–joiner gender sorting concerns. We regress each firm's share of same-gender employees on founder gender, controlling for industry, year, firm age, size, and skill composition, and find that female founders still have a slightly greater preference for same-gender joiners compared to men founding firms with similar skill structures in similar industries. Yet, the difference is moderate and unlikely to create major selection concerns: female founders are 15% more likely than male founders to hire same-gender employees, corresponding only to one-quarter of a standard deviation of the share of same-gender joiners in the sample. Our results hold if we apply IPTW to account for this slightly stronger gender sorting among women.

## 4.3 | Same-gender founder influence compared to other social interactions

Before investigating the underlying mechanisms, we compare same-gender founders to other sources of influence such as peers, parents, and spouses with entrepreneurship experience.<sup>3</sup> Employers are likely to differ from parents or peers because they share professional traits with the employee, have some authority based on life experience and professional knowledge, and

**TABLE 5** Comparing same-gender founders, with same-gender peers, spouses, and parents in entrepreneurship

	Women		Men	
	Broad e-ship definition	Strict e-ship definition	Broad e-ship definition	Strict e-ship definition
Same-gender founder	0.2202 (.002)	0.4818 (.000)	0.0842 (.149)	0.1331 (.414)
% Female coworkers with e-ship experience	0.0506 (.364)	0.0024 (.982)	0.0131 (.752)	0.0413 (.691)
% Male coworkers with e-ship experience	0.0931 (.167)	0.0785 (.483)	0.0853 (.029)	0.1422 (.046)
Spouse entrepreneur	0.0019 (.975)	0.0491 (.587)	−0.0247 (.717)	0.1231 (.204)
Mother ever entrepreneur	0.0917 (.079)	0.0681 (.442)	0.0519 (.152)	0.0649 (.380)
Father ever entrepreneur	0.0820 (.150)	0.1204 (.168)	0.1014 (.002)	0.1443 (.015)
Observations	49,426	47,448	43,179	42,540
Log likelihood	−1,472.0	−508.0	−2,604.6	−959.4

*Note:* Z-standardized coefficients; late full-time joiners. *p* values in parentheses. Control variables as in Table 3. Entrepreneurship experience by peers, spouses, or parents includes any spell in self-employment or employer categories as a primary occupation, for at least 1 year.

have the ability to become a mentor (Kram & Isabella, 1985; Lazear et al., 2015). We compare the relative strength of each of those social interactions by estimating our baseline models separately for male and female joiners, and extending them with (a) the share of (female and male) coworkers with entrepreneurship experience, (b) a dummy variable for spouses with entrepreneurship experience, and (c) two dummy variables for parental entrepreneurship (mother and father). Table 5 reports z-standardized coefficients to make size effects comparable.

We find remarkable gender differences: For female joiners, the strongest influence on their entrepreneurship choice is clearly the female founder. This influence is more than twice as strong (using the broader definition) as the influence of entrepreneurial mothers, which is previously found to be substantial too (Greene, Han, & Marlow, 2013; Lindquist et al., 2015).<sup>4</sup> Female founders turn out to have the strongest influence for women, especially for those founding a startup with personnel where entry barriers and gender stereotypes might be more pronounced. For male joiners, we confirm that both a father and male peers with entrepreneurial experience influence future entrepreneurship transitions most strongly (see also Kacperczyk, 2013; Lindquist et al., 2015), with comparable effect sizes.<sup>5</sup>

## 5 | MECHANISMS: ARE FEMALE FOUNDERS ROLE MODELS FOR THEIR FEMALE JOINERS?

### 5.1 | Heterogeneities in female founders' social influence

The higher entrepreneurship propensity of female joiners working with a female (vs. male) founder is a necessary but not sufficient condition to support role modeling as a mechanism. If female founders are meaningful role models, their influence must be amplified in particular settings. First, we test how the influence of female (vs. male) founders varies with their relative performance in the industry (Table 6). We find that joiners' entrepreneurial choices are influenced more strongly by female founders running relatively high-performing firms. Second, we test whether the female founder influence changes depending on the numerical representation of women in the firm or industry (Table 7). Female founders are most influential if they lead male-dominated teams (Columns 1 and 2). We find similar patterns across industries

**TABLE 6** Heterogeneous influence of female founders on female joiners' entrepreneurship choices, depending on firm performance relative to the industry

	Broad e-ship	Strict e-ship	Broad e-ship	Strict e-ship
Female founder and above mean sales	0.9921 (.000)	2.2779 (.000)		
Female founder and below mean sales	0.3364 (.018)	0.9847 (.002)		
Female founder and above mean productivity			0.9345 (.002)	2.1501 (.000)
Female founder and below mean productivity			0.3447 (.042)	1.0390 (.001)
Observations	33,402	32,275	33,402	32,275
Log likelihood	-1,197.4	-429.8	-1,183.1	-430.3
Wald test of equality of coefficients	6.10 (.014)	6.95 (.008)	4.09 (.043)	5.99 (.014)

*Note:* *p* values in parentheses. Control variables included. Labor productivity is measured as the logged ratio between sales level and total employment. Results are robust when using the median performance as a threshold. Further tests splitting performance variables into four quartiles lead to similar conclusions.

**TABLE 7** Heterogeneous influence of female founders on female joiners' entrepreneurship choices: (fe) male-dominated versus gender-balanced workforces and industries

	Broad e-ship	Strict e-ship	Broad e-ship	Strict e-ship
Female founder and male-dominated workforce	1.4917 (.000)	2.4364 (.000)		
Female founder and gender-balanced workforce	0.4514 (.011)	1.1877 (.001)		
Female founder and female-dominated workforce	0.2296 (.068)	0.4520 (.115)		
Female founder and male-dominated industry			0.7771 (.073)	1.2911 (.019)
Female founder and gender-balanced industry			0.4109 (.002)	0.9640 (.000)
Female founder and female-dominated industry			0.3279 (.111)	0.6111 (.115)
Observations	49,426	48,978	49,426	48,978
Log likelihood	-1,476.8	-495.5	-1,484.1	-497.2
Wald test of equality of coefficients (1 = 2)	8.18 (.004)	3.77 (.052)	0.69 (.405)	0.35 (.557)
Wald test of equality of coefficients (2 = 3)	1.64 (.200)	4.98 (.026)	0.16 (.691)	0.87 (.352)
Wald test of equality of coefficients (1 = 3)	13.68 (.000)	10.19 (.001)	0.91 (.341)	1.04 (.308)

Note: *p*-values in parentheses. Estimations restricted to female full-time late joiners. The results are consistent in the full sample of female joiners. Male-/female-dominated workforces [industries] are defined as firms [industries] where the average share of female employees is smaller (larger) than or equal to 25% (75%). The results are robust to alternative thresholds. Control variables included, in addition to firm performance.

(Columns 3 and 4): Although the coefficients are not statistically different, the female founder influence is evident in male-dominated and gender-balanced—but not in female-dominated—industries.<sup>6</sup>

These results resonate with the idea that women in male-dominated roles can be stronger sources of influence on other women if they can break gender stereotypes and biased expectations about their competence (Eagly & Karau, 2002), for instance by exhibiting high performance (Dezsö & Ross, 2012; Yang & Triana, 2019), in line with Hypothesis 3a. Also, in environments with pronounced numerical underrepresentation, cohesion among minorities and social identification are stronger, which can facilitate interpersonal connections, and thus communication (Reagans, 2005, 2011) and mentoring (McGinn & Milkman, 2013).

We next check the moderating role of joiner-founder social identification. Table 8 shows that female founders have a stronger influence on female joiners if both are similar in other attributes besides gender, namely, age, education background, birthplace and motherhood status. We find that women are 60–90% more likely to pursue entrepreneurship after working with a female (vs. a male) founder who is similar to themselves in any of these characteristics, compared to up to 30% when employed by female founders dissimilar in age, educational background, or birth place. This gives strong support for Hypothesis 3b.

Finally, poor contact with entrepreneurship might increase an individual's entrepreneurship-relevant resources gap (Tonoyan et al., 2019) and leave more room for a role model to provide mentoring and valuable information updates (Kossek et al., 2017). We test whether female joiners

**TABLE 8** Heterogeneous influence of female founders on female joiners' entrepreneurship choices: Similarity on other individual attributes (broad definition of entrepreneurship)

	Age rank	Education background	Birth place	Motherhood status
Female founder with same status	0.6865 (.000)	0.8941 (.000)	0.7672 (.000)	0.5989 (.000)
Female founder with different status	0.2848 (.024)	0.3235 (.014)	0.3043 (.017)	0.1801 (.213)
Observations	49,426	46,777	49,229	49,385
Log likelihood	-1,507.7	-1,420.1	-1,493.2	-1,506.2
Wald test of equality of coefficients	8.72 (.003)	11.96 (.000)	8.12 (.000)	9.50 (.002)

Note: *p* values in parentheses. Control variables included. Results for the stricter definition of entrepreneurship are qualitatively similar. Similarity in age rank means an absolute age difference not greater than 5 years. Similar education means the same level and field of education. Similarity in motherhood status means either that both are mothers, or that none of them have children.

who (a) previously worked in a mature firm, and (b) do not have an entrepreneurial mother are more strongly influenced by a female founder than other women in the startup. First, mature firms are less likely than young firms to promote entrepreneurial behavior among employees (Dobrev & Barnett, 2005; Sørensen, 2007a; Sørensen & Fassiotto, 2011). Second, an entrepreneurial parent can provide a career preview which instills a preference for a similar occupation (Greenberg, 2014; Lentz & Laband, 1990), especially within same-gender pairs (Greene et al., 2013; Lindquist et al., 2015). Table 9 shows that the female founder influence is stronger when female joiners lack exposure to entrepreneurship *via* those two channels, as theorized in Hypothesis 3c. Taken together, our findings provide consistent support for role modeling (broadly defined) as the mechanism explaining the influence of female founders.<sup>7</sup>

## 5.2 | Alternative mechanisms

Female founders might *push* their female employees towards entrepreneurship if female employers somehow favor male employees by acting as “queen bees” or “cogs in the machine,” creating a hostile environment for other women in the firm (e.g., Srivastava & Sherman, 2015). If so, female joiners who leave might become entrepreneurs to escape wage inequality, risk of displacement, or a dissatisfying work environment. However, Table 10 indicates that female joiners are relatively more protected when working with female founders: they are less likely to move to another firm or to unemployment, and face a smaller wage differential relative to their male counterparts in the firm. Men, in contrast, are about 17% (22) more likely to move to another employer (unemployment) when working with a female, rather than a male, founder. We therefore discard the alternative explanation that female joiners become entrepreneurs to escape less friendly or more discriminatory firms led by female founders.

We still have not fully excluded the possibility that the female founder influence is due to selection instead of treatment effects. In the case of selection effects, female employees who join female founders may have a greater (unobservable) preference for entrepreneurship *ex ante*. Treatment effects would instead be the prevalent explanation in case female joiners working

with female founders experience a change in preferences for entrepreneurship (e.g., *via* role modeling). Our results so far (in Tables 6–9) seem to be indicative of stronger treatment than selection effects. Nevertheless, we run additional tests to mitigate selection concerns.

If selection explains our results, female employees deliberately leaving prior jobs to join a female founder should be more likely to become entrepreneurs later than those joining for exogenous reasons. While we cannot measure motivations, we can distinguish joiners who lost their job due to prior firm closure from those previously employed in a relatively stable firm. We deem it likely that people who have lost their job accept more random job offers than people who have the choice of staying at their previous employer. The results show that “forced” and “voluntary” joiners of a female founder's venture (as we define them) are equally likely to become entrepreneurs later (Model 1 of Table 11). Next, we consider joiners' prior contact to female employers in startup settings, which might reveal a preference for working with female entrepreneurs. We find that female founders play a role only for those lacking such exposure (Table 11, Column 2). Both tests suggest that selection is unlikely to fully drive our findings.

Finally, we address the endogenous gender sorting in two ways. First, we instrument gender-match with two variables: Whether founder and joiner were born in the same region,

**TABLE 9** Heterogeneous influence of female founders on female joiners, depending on their previous exposure to entrepreneurship

	Broad e-ship	Strict e-ship	Broad e-ship	Strict e-ship
FF and previously young firm	0.4720 (.105)	0.7264 (.183)		
FF and previously mature firm	0.6435 (.001)	1.0610 (.004)		
Previous firm was young	0.0073 (.978)	0.0170 (.973)		
FF and Entrepreneurial mother			0.9016 (.124)	1.1578 (.053)
FF and No entrepreneurial mother			0.3989 (.012)	0.9517 (.006)
Entrepreneurial mother			0.1665 (.745)	0.2950 (.604)
Observations	36,917	36,372	49,426	47,448
Log likelihood	−1,045.00	−363.8	−1,438.2	−495.1
Wald test of equality of first and second coefficients	0.270 (.605)	0.290 (.592)	0.710 (.399)	0.100 (.757)

Note: FF stands for “Female Founder”. *p* values in parentheses. The first two columns are restricted to female late joiners who were employed immediately before joining the startup. Control variables included.

**TABLE 10** Founder gender, joiners' exit, and current wages

	Probability of moving to another job	Probability of moving to unemployment	Hourly wages (log)
Female joiner	0.1551 (.000)	0.0328 (.754)	−0.0849 (.000)
Female founder	0.1874 (.000)	0.2435 (.069)	−0.0099 (.502)
Female joiner × Female founder	−0.2287 (.000)	−0.4569 (.004)	0.0317 (.019)
Observations	92,771	92,771	52,870
Log likelihood	−38,160.0	−7330.3	−34,970.9

Note: *p* values in parentheses. Control variables included. Last column restricted to individuals reporting non-missing wages.

**TABLE 11** Heterogeneous influence of female founders, depending on female joiners' (possibly) deliberate selection into the firm

	(1)	(2)
FF and Previous firm closed down	0.8449 (.005)	
FF and Previous firm did not close down	0.5272 (.000)	
Previous firm closed down	-0.8284 (.001)	
FF and Previous female employer in startup		0.2766 (.470)
FF and Previous male employer in startup		0.5715 (.003)
Previous female employer in startup		0.3665 (.261)
Observations	36,917	32,958
Log Likelihood	-1,434.4	-1,177.4
Wald test of equality of first and second coefficients	1.00 (.316)	0.51 (.474)

Note: FF stands for "Female Founder". *p* values in parentheses. Broad definition of entrepreneurship, and estimations restricted to late joiners. Model 1 is restricted to female joiners who were employed immediately before joining the current firm. Model 2 is further restricted to joiners whose previous employer can be identified in the data. Control variables included.

**TABLE 12** Addressing endogeneity in founder-joiner same-gender match

	Broad e-ship	Strict e-ship	Broad e-ship	Strict e-ship
	IV	IV	Two-stage Selection model	Two-stage Selection model
Female founder	0.0819 (.022)	0.0797 (.004)	0.0739 (.050)	0.1547 (.011)
Observations	49,229	48,783	353,066	353,066
F-test relevant instruments	15.751 (.000)	14.012 (.000)	-	-
$\chi^2$ test of over-identifying restrictions	2.470 (.116)	0.837 (.360)	-	-
Rho			0.020 (.631)	0.068 (.302)

Notes: *p* values in parentheses. Estimations restricted to female late joiners. The instruments in the first two models are (a) whether joiner and founder share the same birthplace and (b) whether both joiner and founder (or none of them) are mothers. The last two models use the method proposed by Azoulay et al. (2017) to correct for possibly deliberate matching between mentees and mentors. We use the instruments of IV estimations as exclusion restrictions in the two-stage (Heckit) selection model. The second stage is a Probit model for the decision to become an entrepreneur after leaving the current firm. The respective average marginal effects are 0.0021 (.046) and 0.0016 (.016; *p*-values in parentheses), corresponding to a 15% increase in the average rate of future entrepreneurship using the broad (39% using the strict) definition.

and whether both have (or none has) children. Both variables increase social identification and significantly predict gender sorting, being unrelated to joiners' future choices of entrepreneurship (and thus valid instruments, also according to the Sargan test of overidentifying restrictions: Table 12, Columns 1 and 2). Second, we admit that we only observe the realized matches, which are possibly driven by individuals' unobserved preferences. We follow Azoulay et al. (2017) and estimate a two-stage model that considers the observation of only actual (vs. potential but never realized) matches as a case of sample selection. We use the two instruments described above as exclusion restrictions in the first stage, given they predict founder-joiner pairing, but not joiners' future entrepreneurial career choices. In constructing the set of

counterfactual ties between each joiner and eligible founders, we consider startups in the same two-digit industry and year that hired at least one employee living in the same municipality as the focal joiner. On average, each joiner has 18 counterfactual startups (and founders) which they could have joined instead. We then jointly estimate the selection equation (Probit model for realized versus counterfactual matches) and the outcome equation (entrepreneurship). Table 12 (Columns 3 and 4) reports the estimated coefficient of *Female Founder* obtained from the outcome equation.

Both methods still result in significant differences in joiners' propensities to become entrepreneurs depending on founder gender. Selection is thus unlikely to fully drive our results.

### 5.3 | Narrowing down the role modeling mechanism

We have so far employed a broad definition of role modeling that includes providing mentoring, knowledge, and inspiration. It would be interesting to identify which aspect of role modeling explains why female joiners in startups with female founders are more prone to become entrepreneurs. We describe tentative findings from two explorative tests using our data.

We first explore whether role models transfer knowledge and skills. We test how the performance of female joiners who start their own firms depends on the gender of their previous employer. We find no differences in early performance between joiners who had worked with a female versus a male founder besides a greater probability of hiring personnel, which might be a signal of stronger commitment or higher growth aspirations (Table S13). Neither sales nor survival in entrepreneurship is significantly affected by founder gender.

We next consider whether role models might convey industry-specific human or social capital. If so, joiners should be more likely to start a new firm in the same industry as their role model (see also Sørensen, 2007b). However, we find the female joiners' decision to start up in the same industry to be independent of previous employer gender (Table S14).

Although these insignificant results might be driven by the small sample size, they hint at the transmission of skills or industry-specific knowledge not being the main function of female founders. Female founders seem to mostly transmit intangible assets such as preferences for certain job attributes or awareness of entrepreneurship as a viable career path, more than affect entrepreneurial skills (see also Greenberg, 2014 on entrepreneurial parents and their children).

## 6 | DISCUSSION AND CONCLUSION

Role congruity and stereotype threat theories suggest that female underrepresentation in male-dominated roles is partly driven by women's lack of identification with occupations that are stereotypically masculine, and poor confidence in their abilities and success (Barbulescu & Bidwell, 2013; Eble & Hu, 2019; Kossek et al., 2017; Thébaud, 2010). This inevitably shapes women's preferences for particular career paths such as entrepreneurship. By acknowledging that both social interactions (Nanda & Sørensen, 2010) and organizations (Sørensen & Fasiotto, 2011) shape individual preferences for entrepreneurship, and integrating theories of gender inequality in career choices (Kossek et al., 2017) with evidence on the value of workplace relationships for career advancement (Colbert et al., 2016; McGinn & Milkman, 2013), we posit that startup founders can influence joiners' preferences for entrepreneurship. Drawing on social

identification theory, we predict this influence to be more pronounced in same-gender matches and stronger for women based on (broadly defined) role modeling mechanisms.

We find a strong influence of female founders on the future entrepreneurship decisions of female joiners, which is surprisingly greater than other social interactions, such as peer effects and parental role models. Female founders are particularly influential when their businesses perform and are run in male-dominated settings (which might grant them greater legitimacy as entrepreneurs), if there is strong social identification between founder and joiner (by virtue of belonging to a minority and sharing other characteristics than gender), and for joiners with wider entrepreneurship-relevant resource gaps due to lack of exposure to entrepreneurial career previews. Female founders seem to have an effect on female joiners that resembles role modeling in a broad sense, including functions such as mentoring, teaching, motivating, and acting as an example (Bosma et al., 2012; Shapiro et al., 1978). While we cannot fully disentangle these specific functions, our tests suggest that female founders provide inspiration that updates other women's beliefs and information, more than transfer knowledge or resources.

We provide several theoretical contributions. First, by extending our understanding of the role of organizational context in shaping individual preferences for entrepreneurial careers, we contribute to career dynamics theory more broadly and to entrepreneurship theories specifically (Carnahan et al., 2012; Sørensen & Fassiotto, 2011). We study the role of a particular feature of the organizational context: the exposure to certain types of employers in startup settings and their capacity to act as role models. This capacity varies for different combinations of employees and employers, consistent with social identification and organizational demography theories. This study therefore responds to calls for research on "how working side by side with the organization's founders affects the propensity of other employees to consider starting their own ventures" (Burton, Sørensen, & Dobrev, 2016, p. 242), and helps explain why "two people working for the same firm may have different risks of becoming entrepreneurs if they have been exposed to different work conditions" (Sørensen & Fassiotto, 2011, p. 1328).

By identifying pathways to encourage female entrepreneurship, our study contributes also to theories of gender inequality in entrepreneurial careers and to debates on the value of social networks, role models, and mentors as interventions to help women "lean in" more often, shape their preferences and mitigate gender bias and stereotypes (Kossek et al., 2017). Although entrepreneurship involves more risk and requires different resources than other occupations or individual decisions, our study might have implications for other settings involving minorities, given the evidence on the value of role models for underrepresented groups through their life-cycle (Blau et al., 2010; Eble & Hu, 2019; Gershenson et al., 2018; Porter & Serra, in press).

This study has links also to theories suggesting that women in top management roles can contribute to changing social norms and reducing the relative disadvantages which often block female workers' career progress in organizations (Abraham, 2017; Cohen & Broschak, 2013; McGinn & Milkman, 2013). Although we study a rather specific setting (new ventures in which female founders and female joiners work together), our findings are aligned to those theories and concur with the assumption that one potential mechanism through which female representation in top management impacts firm performance might be their influence on employees' preferences and motivation (e.g., Dezsö & Ross, 2012; Lyngsie & Foss, 2017). Understanding whether and how female leaders can sway employees' motivations and commitment, and how this mediates their impact on organizational outcomes, might be a promising research avenue to unpack the multifaceted role of female representation at the top.

Finally, this study adds to a rich research stream on early team formation and the so-called founder imprinting effect (Beckman et al., 2007; Beckman & Burton, 2008, 2011). We confirm

that homophily preferences may partly drive the match between founders and joiners and shape an organization's demography. Besides possibly affecting several firm milestones (e.g., Beckman et al., 2007), we show that founders and their firm's demographic composition can also imprint the future of individuals in them through mechanisms not uncovered before.

Our findings have practical implications as well, particularly for current debates on role models as policy tools. The historical lack of female entrepreneurs—and role models—is deemed a key cause for the paucity of women in entrepreneurship (Markussen & Røed, 2017). Female role models might attenuate gendered perspectives, stereotypes, and biases (e.g., in VC funding—see Guzman & Kacperczyk, 2019), and at the same time inspire other women (Thébaud, 2010; Yang & Triana, 2019). If so, female role models can have a multiplier effect by narrowing the entrepreneurship gender gap both directly and indirectly.

Additionally, our study indicates that entrepreneurial role models may fulfill different functions for men and women. First, the demand for and openness to entrepreneurial role models may be greater among women due to their lack of exposure to entrepreneurship and their perception of belonging to a low-status group due to gender stereotypes (Yang & Triana, 2019). Second, the supply of role models might be greater among women due to activist choice homophily according to which members of minority groups choose to support each other given their perceptions of common group-level barriers (Greenberg & Mollick, 2017). While we cannot disentangle these demand and supply effects, we hope to encourage research on this topic.

We acknowledge some other limitations of our study. First, while startups provide an appropriate setting to investigate whether and how founders affect joiners' future entrepreneurship transitions, we recognize that joiners of young firms may differ from employees in established companies (e.g., Sauermann, 2018). This issue is mitigated by the fact that we do not look only at early hires but also include employees joining the firm later. However, more research in other settings is needed to verify the external validity of our findings.

Second, our data limit our ability to infer the motivations of both joiners and founders driving their match. We have addressed the issue in multiple ways, and we are confident that selection is not the main driver of our findings. Role modeling is likely to be a crucial mechanism underlying female founder influence, and we can only provide tentative evidence of a narrower definition of role modeling with our data. We avoid any causal interpretations and invite future research to delve deeper into the functions of role models in entrepreneurship.

Another concern in our setting is that founders might be perceived by joiners as peers. However, we found similar effects for later joiners who are less likely to perceive the founder as a peer. Moreover, we found real peers (co-workers) with entrepreneurial experience to have virtually no influence on female joiners' decision to embark on entrepreneurship.

Finally, our findings do not offer conclusive answers on how role models might narrow the gender gap in venture performance. We found no significant association between founder gender and female joiners' entrepreneurial performance in the short run. It might be that any learning effects possibly accruing from role models take longer to realize or are conditional on some circumstances (e.g., industry similarity). Future research could try to identify which factors improve joiners' chances of learning from role models and perform better in their own ventures.

On a related note, it would be crucial to analyze the implications of joiners' exit decisions for the source firm. Employee entrepreneurship might harm firm performance (Campbell et al., 2012) and, if so, being a role model could be a double-edged sword for female entrepreneurs if joiners' exits are detrimental to their own venture success. This

might help explain the gender gap in entrepreneurial performance. We hope to pave the way for more research on these topics.

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## ENDNOTES

- <sup>1</sup> Comparable statistics for the subsample of late joiners are provided in the Supporting Information S1.
- <sup>2</sup> The traditional random and fixed effects (RE, FE) estimators are not suitable for our analysis. RE would provide inconsistent estimates since we likely violate its strict assumptions. FE is not feasible since founder gender is time-invariant for most joiners. Multi-level mixed-effects models account for unobserved heterogeneity at both joiner and founder levels, but with less restrictive identification assumptions than RE (Abowd et al., 2008; Woodcock, 2015).
- <sup>3</sup> Note that we focus on employees who have joined an entrepreneurial firm, whereas earlier studies analyzed broader samples of individuals less exposed to an entrepreneurial setting.
- <sup>4</sup> The paucity of entrepreneurial mothers in our sample might explain the low explanatory power here.
- <sup>5</sup> A standard deviation increase in each variable improves men's likelihood of becoming a founder with personnel by 0.14 standard deviations. The standard deviations of % *Male coworkers with e-ship experience*, *Father ever entrepreneur* and *Strict e-ship definition* are, respectively, 0.19, 0.14 and 0.06 in the sample used for estimation.
- <sup>6</sup> If same-gender founders are stronger role models in a (gender) minority context, then male founders should have a stronger influence on male joiners in female-dominated settings too. We find this to be the case (Table S11).
- <sup>7</sup> We further tested whether the influence of female founders is contingent on the length of time spent in the firm. We found a significant link between founder gender and a joiner's future entrepreneurship only for joiners who worked with a female founder for two or more years, but not just 1 year (Table S12). This aligns with the role modeling explanation which requires some exposure and interaction to produce significant changes in preferences. Moreover, it gives us additional confidence that selection is not the main driver of our results.

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## SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section at the end of this article.

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