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Entrepreneurs-as-Scientists and entrepreneurial team formation strategies: A randomized control trial experiment

Daniele Battaglia [a], Alessandra Colombelli [b], Andrea Panelli [b], Emilio Paolucci [b,*], Elisabetta Raguseo [b]

[a] ESCP Business School, Via Andrea Doria 27, 10123, Turin, Italy
[b] Department of Management and Production Engineering (DIGEP), Entrepreneurship and Innovation Centre (EIC), Politecnico di Torino, Corso Duca degli Abruzzi 24, 10129, Turin, Italy

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ABSTRACT

This paper investigates whether a causal, theory-driven decision framework, such as the Entrepreneurs-as-Scientists (*E*-a-S) framework, influences how entrepreneurs reconfigure their entrepreneurial teams. We conducted a randomized controlled trial on 132 early-stage startups that participated in a pre-incubation program. During the pre-incubation program, we randomly assigned the early-stage startups to either a treatment group, which learned how to apply the *E*-a-S framework to make decisions, or a control group, which learned the same tools and skills as the treatment group, but without the *E*-a-S framework. For startups in both groups, we tracked the composition of the initial entrepreneurial team and its subsequent reconfigurations over 64 weeks. Employing a question-driven approach, we investigated whether *E*-a-S entrepreneurial teams evolved differently from those in the control group. Our analysis reveals that the entrepreneurs who learned the *E*-a-S framework composed their entrepreneurial teams differently from the other entrepreneurs: entrepreneurs who learned an E-a-S framework were more likely to use a resource-seeking strategy to compose their teams than those in the control group. Specifically, *E*-a-S entrepreneurs decreased the proportion of team members with technical backgrounds, while selectively adding individuals with managerial and industry-specific experience. These findings demonstrate that E-a-S not only shapes venture pivots and terminations but also influences the formation of entrepreneurial teams. The implications of the results are discussed for research, entrepreneurs, and investors.

1. Introduction

A growing body of research has highlighted how entrepreneurs make decisions under conditions of uncertainty, and it has often emphasized the importance of structured approaches to entrepreneurial decision-making (Camuffo et al., 2020; Felin et al., 2024b; Zellweger and Zenger, 2022, 2023). The Entrepreneurs-as-Scientists (*E*-a-S) framework, which proposes that entrepreneurs can improve the quality of decisions by acting like scientists, is central to this stream of research. This framework involves developing a theory of value, deriving testable hypotheses, iteratively validating those hypotheses through experimentation, and combining causal logic with experimental rigor (Ehrig and Schmidt, 2022; Felin et al., 2024a, 2024b; Wuebker et al., 2023; Zellweger and Zenger, 2022). It has been shown to enhance judgments in situations of uncertainty, particularly in early-stage ventures, by improving evaluations, facilitating more disciplined pivots, and enabling entrepreneurs to make timely project terminations (Camuffo et al., 2020; Camuffo et al., 2024; Coali et al., 2024; Gambardella and Messinese, 2025).

This body of work has primarily focused on venture-level outcomes, such as business model refinement and market strategies, termination, and pivot decisions (Camuffo et al., 2024; Novelli and Spina, 2024); little is known about whether and how a scientific approach to decision-making can influence organizational processes beyond the venture idea itself. However, recent theoretical work has suggested that theory-driven approaches such as the *E*-a-S framework might have an impact on how entrepreneurial teams are formed (Wuebker et al., 2023). This is relevant, given that entrepreneurial ventures are frequently built and

* Corresponding author.
E-mail addresses: dbattaglia@escp.eu (D. Battaglia), alessandra.colombelli@polito.it (A. Colombelli), andrea.panelli@polito.it (A. Panelli), emilio.paolucci@polito.it (E. Paolucci), elisabetta.raguseo@polito.it (E. Raguseo).

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developed by teams rather than by individual founders (Shah et al., 2019), and because the composition of a team is a well-documented predictor of entrepreneurial success (Boone et al., 2020; Jin et al., 2017; Kristinsson et al., 2016).

Accordingly, in this study, we investigate the effects that the *E*-a-S framework might have on the dynamics that regulate the entrepreneurial team composition of startups. To do so, we adopt a question-driven approach that examines whether and how the E-a-S framework influences the formation of entrepreneurial teams. First, we investigate whether the composition of teams formed by entrepreneurs trained in the *E*-a-S framework evolves differently from those formed by entrepreneurs who follow more intuitive or relational logics. Subsequently, we use two complementary analyses to examine whether E-a-S entrepreneurs follow more distinct patterns when restructuring their entrepreneurial teams than non–E-a-S entrepreneurs. Drawing on the resource-based view (Barney, 1991), we assess whether teams formed under the *E*-a-S logic rely on a more resource-seeking strategy, defined as an analytical process aimed at aligning team-level competencies with the evolution of a firm's business model (Lazar et al., 2022; Agarwal and Shah, 2014; Mosey and Wright, 2007), than teams formed by non–E-a-S entrepreneurs. Moreover, building on psychological and sociological perspectives (e.g., Frese and Gielnik, 2014), we examine whether *E*-a-S entrepreneurs are more likely to restructure their teams through an interpersonal attraction strategy, a relational mechanism by which teams are assembled on the basis of homophily, social ties, and/or interpersonal affinity among members (Aldrich and Kim, 2007; Zellmer-Bruhn et al., 2021), than non–*E*-a-S entrepreneurs.

From a methodological standpoint, we track changes in entrepreneurial teams in a sample of 132 early-stage startups participating in a pre-incubation program via a Randomized Control Trial (RCT). We randomly assigned startups participating in the program to two groups: a treatment group and a control group. During the program, both groups completed a series of activities focused on market validation and aimed at testing startups' business models by improving the desirability of a product or service concept for a potential target market. However, in line with previous RCTs focused on the *E*-a-S framework (e.g., Camuffo et al., 2020; Camuffo et al., 2024; Novelli and Spina, 2024; Coali et al., 2024), each group was taught to complete these activities using a distinct decision-making approach: The treatment group was taught the E-a-S framework and instructed to make decisions based on theory, hypotheses, and empirical testing; the control group was instead taught a heuristic approach. We then evaluated whether the learned approaches had an impact on the way early-stage startups shaped the composition of their entrepreneurial teams. Our findings indicate that the early-stage startups that were exposed to the *E*-a-S framework tended to form slightly larger teams and adjust their team compositions over time in ways that departed from those employed by the start-ups that had adopted a heuristic approach. Specifically, the E-a-S entrepreneurs reduced the proportion of team members with STEM backgrounds and selectively retained or added members with diverse, non-technical expertise.[1] Although their team members' average experience did not appear to change significantly, over time, the treated entrepreneurs were more likely to add members with managerial and industry-specific experience. Treated entrepreneurs also placed less emphasis on formal education as a selection criterion for new team members and, in some cases, increased the presence of women in their teams. Taken together, these patterns indicate that the *E*-a-S logic influenced how the entrepreneurs composed and reconfigured their teams.

Our research contributes to the literature on E-a-S (Camuffo et al., 2024; Felin et al., 2024b; Zellweger and Zenger, 2023) by showing that the E-a-S framework influences not only choices at the level of the venture, such as pivoting or terminating the business idea (Camuffo et al., 2020; Camuffo et al., 2024; Gambardella and Messinese, 2025), but organizational decisions concerning team composition. In doing so, we extend existing work by demonstrating how the *E*-a-S framework shapes the logic entrepreneurs apply when reconfiguring their entrepreneurial teams. In parallel, this study contributes to the literature on entrepreneurial team formation in early-stage startups (Jin et al., 2017; Gray et al., 2024; Lazar et al., 2020) by providing evidence on how different decision-making logics influence whether entrepreneurs rely on resource-seeking or interpersonal attraction strategies when forming their teams. Finally, we discuss implications for practitioners, investors, and entrepreneurs by illustrating how entrepreneurial training program focused on theory-driven decision-making approaches can guide team reconfiguration, informing founders' team formation choices (Buffart et al., 2020; Gray et al., 2024; Stojcic, 2024) and helping investors better interpret changes in team composition during early-stage venture development (Lazar et al., 2022).

2. Conceptual background

2.1. Entrepreneurs-as-Scientists

Recent research has paid increasing attention to the decision-making processes that underpin entrepreneurial success, focusing on startups' decisions regarding strategic pivots and the early termination of low-potential projects. The *E*-a-S framework has emerged as a means to understand how entrepreneurs deal with uncertainty by building and testing coherent theories of value (Camuffo et al., 2020, Camuffo et al., 2024; Felin et al., 2024a; Zellweger and Zenger, 2023). According to this perspective, entrepreneurs can improve their judgments by systematically developing a theory about the problems they have to face and specific hypotheses on such a theory, and then subjecting these hypotheses to rigorous testing (Camuffo et al., 2020; Camuffo et al., 2024; Ehrig and Schmidt, 2022; Felin et al., 2024b; Felin and Zenger, 2009, 2017; Zellweger and Zenger, 2022, 2023). In doing so, entrepreneurs combine elements of action-based learning with cognition-based reasoning (Ott et al., 2017), thereby effectively joining experimentation and theorization in a unified decision-making process that addresses business model validation. The *E*-a-S framework formalizes this integration by drawing on two major streams of the decision-making literature: action-based and cognition-based approaches. Whereas action-based approaches (e.g., Bingham and Eisenhardt, 2011; Ries, 2011) emphasize learning through fast cycles of trial-and-error during which entrepreneurs iteratively test different components of their venture, cognition-based approaches (e.g., Felin and Zenger, 2009; Csaszar and Laureiro-Martínez, 2018) emphasize the importance of developing mental representations and theories about the environment. The E-a-S framework merges these logics by encouraging entrepreneurs to begin with a well-specified theory of value that they then validate or adjust through experimentation (Felin et al., 2024a). This synthesis leads to a disciplined use of feedback and an alignment of beliefs, evidence, and action (Camuffo et al., 2024; Felin et al., 2024b; Zellweger and Zenger, 2022, 2023). Entrepreneurs who adopt the *E*-a-S framework are expected not only to gather data but also to interpret such data within a structured theoretical framework, and then to update their beliefs and adapt their course of action accordingly (Coali et al., 2024).

These features position the *E*-a-S framework within a broader theoretical conversation on entrepreneurial decision logics. Specifically, E-a-S can be understood as one of several alternative reasoning modes that entrepreneurs employ to operate under uncertainty (Sarasvathy, 2024; Felin et al., 2024a; Zahra et al., 2024). Sarasvathy's (2001) foundational work distinguished between causation and effectuation, two opposing ways of linking prediction and control in decision-making (Dew et al., 2009; Read et al., 2009). In causal reasoning, entrepreneurs define goals ex-ante and rely on prediction and planning to select the appropriate

[1] Throughout the paper, we refer to team members with STEM degrees (Science, Technology, Engineering, Mathematics) as having technical profiles, given the methodological and analytical skills that are typically associated with these fields.

means and actions to achieve their goals (Delmar and Shane, 2003; Brinckmann et al., 2010). By contrast, prediction is minimized in effectual reasoning (Sarasvathy, 2001): Entrepreneurs begin with the available means and attempt to achieve control through iterative stakeholder commitments and co-creation (Wiltbank et al., 2006; Sarasvathy and Dew, 2005). Sarasvathy (2024) has recently synthesized these logics within a prediction-control space, clarifying that while causal reasoning embodies a logic of predicting-to-control, whereby accurate predictions enable deliberate intervention, effectual reasoning often operates through controlling-without-prediction, emphasizing adaptive control when forecasting is impossible (Sarasvathy, 2024). As a form of causal reasoning, the *E*-a-S approach pushes entrepreneurs to generate predictive knowledge through systematic experimentation, rather than seeking control in the absence of prediction. However, unlike other causal approaches, such as the Lean Startup, prediction in the scientific approach is guided by a well-defined, structured framework that aims to guide the evolution of the idea (Felin et al., 2024a). By building and testing a "theory of value," *E*-a-S entrepreneurs construct causal understanding incrementally and use validated evidence to guide any subsequent action (Camuffo et al., 2020). This "theory of value" allows them to synthesize their beliefs, test the core assumptions of their idea, and understand the resources needed to exploit it (Felin et al., 2024a). In this sense, *E*-a-S extends the causal logic of entrepreneurship into contexts of high uncertainty by offering a method that can be used to embed prediction through learning. It therefore represents a disciplined, theory- and evidence-based decision logic that merges the intentionality of causal reasoning with the adaptive feedback of experimental inquiry (Agarwal et al., 2025).

Given these characteristics, the E-a-S approach has been linked to more efficient idea evaluation, more focused strategic pivots, and the earlier termination of low-potential projects in early-stage ventures (Camuffo et al., 2020, 2024; Coali et al., 2024; Gambardella and Messinese, 2025). Indeed, Camuffo et al. (2020) found that entrepreneurs trained in adopting the E-a-S framework were more likely to terminate underperforming projects, thereby demonstrating superior and faster responsiveness to negative signals than other entrepreneurs. In an even broader replication study, Camuffo et al. (2024) showed that these entrepreneurs did not terminate more because they were overly critical, but rather because they were more able to assess the quality of a project early on. Coali et al. (2024) extended this finding by demonstrating that scientific entrepreneurs outperformed their peers in terms of both venture survival and idea generation. Indeed, they were more likely to pivot in response to evidence and to adjust both the strategic core and operational components of their business model.

Despite growing empirical support for the E-a-S framework, the literature on this topic has primarily focused on venture-level decisions, such as idea validation, business model refinement, and go/no-go choices, as well as on its performance implications (Camuffo et al., 2024; Novelli and Spina, 2024; Agarwal et al., 2025). Much less is known about how the E-a-S approach can shape other critical areas of entrepreneurial action, such as the composition and reconfiguration of an entrepreneurial team. Given that most startups are built by teams rather than individuals (Shah et al., 2019), and that team composition is a well-established predictor of venture success (Boone et al., 2020; Jin et al., 2017; Kristinsson et al., 2016), it remains important to explore whether and how approaches that follow a predicting-to-control logic, such as the E-a-S framework, can also inform the processes by which entrepreneurial teams are formed and evolve.

2.2. Entrepreneurial team formation strategies

The composition and reconfiguration of entrepreneurial teams are of great importance in early-stage startups. Larger teams can draw from broader knowledge bases and provide more manpower to carry out the various functions necessary for venture development (Eisenhardt and Schoonhoven, 1990; Bell et al., 2011). The presence of specific educational backgrounds, experiences, and functional expertise enhances a team's ability to solve complex problems and drive innovation (Protogerou et al., 2017; Tzabbar and Margolis, 2017). However, these benefits should be weighed against any potential coordination challenges (Clarysse and Moray, 2004), interpersonal conflict (Brattström, 2024), and redundancy of skills (Jung et al., 2017; Ucbasaran et al., 2003). Hence, entrepreneurial teams should actively manage their composition and reconfiguration to balance size and to acquire the resources needed to support the evolution of their business model.

Entrepreneurs can manage this balance through two primary approaches: resource-seeking and interpersonal attraction (Lazar et al., 2020). Taking an economic perspective (Agarwal and Shah, 2014; Shah et al., 2019), the resource-seeking strategy views a team as a portfolio of capabilities. According to the resource-based view (Barney, 1991), entrepreneurs should add or remove team members on the basis of their venture's evolving resource needs such that their team composition always aligns with their emerging strategic and operational demands (Shah et al., 2019; Clarysse and Moray, 2004; Wasserman, 2012). Entrepreneurs who adopt a resource-seeking strategy in entrepreneurial team formation select or remove team members through a process aimed at incorporating the skills and competences necessary to advance the venture (Agarwal and Shah, 2014; Shah et al., 2019; Gray et al., 2024). In doing so, these entrepreneurs adjust their team composition on the basis of economic instrumentality, selecting and substituting members according to the resources and knowledge, such as prior experience or educational background, newcomers can bring to the venture (Lazar et al., 2022).

However, team formation is also a socially embedded process (e.g., Beckman et al., 2007; Frese and Gielnik, 2014) whereby affection and social compatibility between members play critical roles. Rooted in psychological and sociological literature (Frese and Gielnik, 2014; Simmel, 1955), the interpersonal attraction strategy thus emphasizes how entrepreneurial teams draw members from personal networks, often favoring homophily or personal ties (Aldrich and Kim, 2007; Vohora et al., 2004). This second strategy reflects a relational mechanism through which entrepreneurs add or remove team members on the basis of similarity, social ties, or interpersonal affinity (Gray et al., 2024; Lazar et al., 2022). Entrepreneurs following an interpersonal attraction strategy select or dismiss members according to homophily such as similarity in age, gender, or educational background (McPherson et al., 2001; Davidsson and Honig, 2003) or based on pre-existing personal relationships such as friendship, prior collaboration, or romantic ties (Aldrich and Kim, 2007; Parker, 2009). Entrepreneurs who follow this logic prioritize prior affiliation and trust as the main drivers of choice when taking new members onboard (Beckman et al., 2007; Shah et al., 2019).

Although resource-seeking and interpersonal attraction strategies reflect distinct underlying logics of entrepreneurial team formation and build on different strands of literature, empirical work suggests that entrepreneurs may in fact employ them in combination (Zellmer-Bruhn et al., 2021), pursuing a dual strategy that blends functionality and familiarity in a complementary manner (Lazar et al., 2020). However, although previous studies suggest that the simultaneous use of both strategies can enhance team performance (Lazar et al., 2022), this approach requires entrepreneurs to balance two distinct logics, an effort that is cognitively demanding and difficult to sustain over time (Gray et al., 2024). Indeed, existing evidence indicates that entrepreneurs are more likely to predominantly rely on one of the two strategies rather than consistently combining both (Lazar et al., 2022).

2.3. Entrepreneurs-as-Scientists and the logic of team formation

Entrepreneurs that follow the *E*-a-S framework derive decisions from a theory of value that identifies the key subdomains which drive the success of a venture (e.g., technological development, customer segments, value creation mechanisms, and resource requirements; Felin

et al., 2024a). By decomposing their venture into these elements, such entrepreneurs are more likely to gain awareness of the specific skills and competencies required to test their core assumptions and execute their plans. This focus on a theory of value not only supports decisions related to idea refinement and/or business model pivots (Camuffo et al., 2024); it may also shape how teams are composed and reconfigured over time. Many startups assemble their initial teams based on intuition, the initial availability of resources, and limited experience in team design (Forbes et al., 2006; Zellmer-Bruhn et al., 2021; Vohora et al., 2004). However, as the business model evolves during the initial stages of growth, entrepreneurs that follow the *E*-a-S approach may adopt a more analytical, resource-seeking logic in building their entrepreneurial teams, thereby aligning them with the notion of a resource-seeking strategy (Lazar et al., 2022; Lazar et al., 2020).

For instance, refinements to the venture's theory of value might lead to new assumptions or hypotheses that call for further testing. The need to carry out these assessments could in turn prompt entrepreneurs to add new team members who have the expertise necessary to develop the business model and/or to execute activities identified as being of key importance (Wuebker et al., 2023). Moreover, adopting a theory of value leads E-a-S entrepreneurs to forecast the resources needed to advance their ideas in the medium and long term (Felin et al., 2024a) and may also provide them with a structured lens to identify the types of activities, decisions, and expertise that are critical for the development of their venture. As the theory becomes more articulated over time (Camuffo et al., 2024; Felin et al., 2024b; Zellweger and Zenger, 2022, 2023), entrepreneurs might develop clearer views on where their own skill sets, or those of the current team, fall short. If refining the theory not only triggers new hypothesis testing but also increases the awareness of strategic blind spots or capability gaps, entrepreneurs may be prompted to adjust their team accordingly. Changes to an entrepreneur's theoretical understanding of their venture may thus affect not only their sense of what needs to be done but also who should execute specific tasks.

In practice, this evolving theory of value could result in an entrepreneurial team formation process whereby each member is selected on the basis of their ability to address specific hypotheses embedded in the theory and to contribute to the execution of the plan. However, this focus on resources may limit entrepreneurs' attention to other dynamics involved in entrepreneurial team formation (Lazar et al., 2020). Indeed, when E-a-S entrepreneurs are drafting and revising their theory of value, they may place less emphasis on relational dynamics within the team (Ruef, 2010; Carter et al., 1996). For instance, exclusive focus on the resources offered by an individual may overshadow considerations related to personal ties or interpersonal attraction when deciding whether to add or remove them from a team. Indeed, prior literature also suggests that reliance on one strategy for team evolution may hinder the use of an alternative strategy, given the substantial cognitive effort required to balance both simultaneously and the different goals of actors (Gray et al., 2024).

Whether the *E*-a-S framework leads entrepreneurs to systematically favor the use of a resource-seeking strategy in forming their teams, instead of or in addition to an interpersonal attraction strategy, remains an open question. By leveraging a question-driven approach (Graebner et al., 2023), the empirical analysis that follows investigates whether entrepreneurs exposed to the E-a-S framework are more likely to use a resource-seeking strategy or to rely on interpersonal attraction strategy in their team formation choices than entrepreneurs not exposed to the E-a-S framework.

3. Methods

3.1. Empirical setting

In this study, we have used data that were collected in an RCT embedded in a field experiment as part of a pre-incubation program. Like prior studies on entrepreneurial training (Kotha et al., 2023), the program, which was conducted in Italy, targeted early-stage startups engaged in market validation. The pre-incubation program was open to early-stage startups from all industries, and it was offered to participants free of charge.[2] It followed the design of previous studies on the E-a-S framework (e.g., Camuffo et al., 2020, 2024; Coali et al., 2024) and comprised eight three-hour lessons over a three-month period; additional events were organized to ensure participants remained engaged after the end of the training program. The early-stage startups were recruited via a two-month national call, using online and offline channels, which yielded a total of 159 valid applications. After excluding 14 startups, which were at advanced stages, having already started to gain revenues, and accounting for three withdrawals, the initial sample included 142 early-stage startups. Using simple randomization, the startups were assigned to either a treatment or a control group (71 each). *t*-tests on several covariates confirmed the absence of significant differences between groups, thus ensuring balance. However, 10 startups withdrew just before the beginning of the program, thus reducing the sample to 132 early-stage startups (67 in the treatment group and 65 in the control group). Rechecking the balance across the covariates again confirmed the robustness of the randomization. The final sample consisted of early-stage startups with an average team size of 2.3 members; an average team-member age of 30.5 years; and average entrepreneurial team experience, managerial team experience, and industry team experience of 1.76 years, 1.65 years, and 2.94 years, respectively. Finally, the early-stage startups operated in several industries. The most represented industries were: “Accommodation and food service” (30.3%), “Professional, scientific and technical activities” (14.3%), and “Transportation and storage” (13.6%). Appendix A reports the descriptive statistics and results of the t-tests used to compare the treatment and control groups, while Appendix B provides a detailed breakdown of the industry and the experience of the teams.

3.2. Design of the treatment

Our pre-incubation program was focused on market validation: a series of activities aimed at testing the desirability of a product or a service concept against a potential target market. Both the treatment group and the control group received the training through eight face-to-face sessions. The content and length of each session were the same for both groups, but the early-stage startups in the treatment group were taught how to make entrepreneurial decisions using the *E*-a-S framework (Camuffo et al., 2020, 2024), while the others were not.

Table 1 offers details on how the eight sessions were designed to provide entrepreneurs with tools and skills they could use to assess the feasibility of their entrepreneurial ideas and support the development of their business models. The training introduced practical instruments, such as the BMC, the Value Proposition framework, and A/B testing methodologies, which the participants then applied to identify any potential weaknesses, monitor the evolution of their ideas, and intervene throughout the entire venture development process. The participants in the control group proceeded in their market validation activities by means of trial-and-error and through heuristic approaches (Kerr et al., 2014; Vaghely and Julien, 2010). However, the entrepreneurs in the treatment group also received training on the *E*-a-S framework, which they used to implement the concepts and tools introduced in the program. In other words, the entrepreneurs in the treatment group learnt how to blend traditional entrepreneurial tools with the application of the different steps of the scientific approach, namely, how to define an

[2] The pre-incubation program was developed by two leading Italian universities. The program was designed specifically for the research project as a completely new initiative. This allowed the organizers to attract early-stage startups from across the entire Italian ecosystem, thereby avoiding a sample composed exclusively of university-affiliated ventures.

Table 1
Content of the sessions followed by the treatment group and by the control group.

Session	Main focus of the Treatment Group	Main focus of the Control Group
1 Business Model Canvas (BMC)	• BMC is the framework that is **used to build a theory** about a business. • Each section of the BMC **contributes to the theory** and **is linked to testable hypotheses**.	• BMC is a visual tool that is **used to give structure** to a business idea. • Each section of the **BMC helps refine the idea** and **can be tested separately to validate or improve it**.
2 Problem Validation	• The customers' journey and job-to-be-done concepts are **used to build a theory** on value creation for a customer. • Entrepreneurs use these concepts **to formulate hypotheses** aimed at **testing such needs**.	• The customers' journey and job-to-be-done concepts help **understand the customers' needs** and value. • Entrepreneurs observe the customers' behavior **to identify the possible customers' needs.**
3 Primary Research and Tests	• Interviews, surveys, and other sources of data are essential **to test the hypotheses** developed on the basis of the BMC. • The **analysis of these tests requires predefined thresholds** and **focuses on their falsification**, with effects on the BMC.	• Interviews, surveys, and direct observation are tools that help **explore the customers' problems and needs**. • **The results should be analyzed carefully to better define the customers' needs** or to eventually revise the BMC structure.
4 Evaluating Tests	• Start-ups receive detailed feedback from instructors **on the experiments** they conducted. • The feedback is also connected to the concept of pivot, with effects on both the BMC **and the underlying theory.**	• Start-ups receive feedback from instructors on the **tests they used** to verify the customers' problems. • The feedback is connected to the concept of pivot and to the BMC.
5 Solution Validation	• **Experiments are used to test** the effectiveness of the value proposition. • **Entrepreneurs design experiments on the basis of the revised theory** and **formulate hypotheses** about specific aspects of the offered value. • **Tests are run on appropriate samples**, using tools **to test each hypothesis.**	• After identifying the customers' problems, entrepreneurs **test the desirability** of their offer. • **Entrepreneurs use tools to link** value and specific features of their offer. • **Activation and acquisition metrics** help entrepreneurs **assess the offered value** and **interpret the test results.**
6 A/B testing and Experiments	• **A /B testing** is used **to test hypotheses.** • **During the experiments**, A/B testing helps identify products / service features that are able to generate the largest part of the customers' value.	• **A/B testing** is used **to validate the offered value.** • A/B testing is used to understand what product or service features are able to generate the largest part of the customers' value.
7 Data collection	• Data collection and data management	• Data collection and data management
8 Recap	Recap of the taught concepts and tools	Recap of the taught concept and tools

Note: Elaborated from Coali et al. (2024) and Camuffo et al. (2020).

overarching theory of value for their business, draft hypotheses, test them through experiments, evaluate the results of the experiments, and make decisions about their business idea (i.e., to pivot their business idea, terminate it if it was not promising, or proceed with its development). We use Lesson 2 as a vignette to provide further information on the intervention. This lesson focused on the main concepts and tools regarding problem validation. During this lesson, both the treatment group and the control group learnt about the main concepts and tools that were necessary to assess the problems of their prospective customers, as well as the value associated with such concepts and tools. The content of the lesson was the same for both groups, but the treatment group learnt how to proceed with the problem validation through the *E*-a-S framework, namely, how to define the customers' journey by building on the theory of value they had formulated. After identifying the customers' needs, the treated entrepreneurs were asked to draft hypotheses on those needs and to test whether they understood the real requirements of their customers. The control group instead approached their customers' journey through the common wisdom of traditional entrepreneurship courses, that is, they reflected on the possible characteristics of their prospective customers and identified any critical points that could result in the necessity to fulfil certain needs. The control entrepreneurs were then asked to reflect on those needs and to identify possible tests that could be used to better understand them. The core difference between how the two groups were taught about problem validation—and other tools and concepts related to the BMC—was thus related to the approach they used: the entrepreneurs in the treatment group learned to use theory to validate problems, and based their decisions on well-defined tests of that theory; the control group was instead left to their own devices, free to approach problem validation in whichever way they chose. Appendix B shows how internal validity of the experiment was ensured.

3.3. Data collection

We collected data on the 132 early-stage startups in two phases. During the application phase of the program, the entrepreneurial team leaders of each startup completed a survey regarding their prospective firms and their team members. This data collection included details on demographic and human capital, such as educational backgrounds, and revenue status. We used this data to check the randomization of the startups between the treatment and control groups and to create the variables necessary for the econometrics analysis conducted in this study. The second phase of the data collection concerned training and post-training. This phase started six weeks after the beginning of the program and lasted 64 weeks (the training program ended in week 12). Overall, 18 data points were generated, approximately every two weeks for the first six data collection points and every four weeks for the remaining eleven data collection points. Data collection was through phone interviews conducted by 17 Research Assistants (RAs), all of whom had received training on the course content and on the *E*-a-S framework to ensure the consistency of their work. The interviews followed a structured protocol and focused on the performance of each startup at each data point. The key aspects that were examined included revenue levels, the decision to abandon an entrepreneurial idea, and changes in the composition of a team. The RAs also collected demographic details about any new members that had been added to the entrepreneurial teams. Details on the interview protocol are available in Appendix B.

4. Empirical evidence

In the following sections, we investigate whether the entrepreneurial teams formed by entrepreneurs trained in the E-a-S framework are systematically different in composition from those of entrepreneurs following a heuristic approach. More precisely, we divide our investigation into three main sections. First, in Section 4.1, we examine

whether the E-a-S entrepreneurs overall reconfigured their entrepreneurial teams differently from the non–E-a-S entrepreneurs, in terms of characteristics of the entrepreneurial team (e.g., team size) and its members (e.g., experience, gender). Second, in Section 4.2, we assess whether the E-a-S entrepreneurs relied more on a resource-seeking strategy in reconfiguring their entrepreneurial teams than the non-E-a-S entrepreneurs. Finally, in Section 4.3, we examine whether the E-a-S entrepreneurs differed from the non–E-a-S entrepreneurs in their reliance on an interpersonal attraction strategy by looking at criteria related to homophily or personal ties when the entrepreneurs reconfigured their teams.

4.1. Do E-a-S entrepreneurs reconfigure their teams differently?

In this section, we investigate whether entrepreneurial teams led by entrepreneurs who have learned the E-a-S framework evolve differently from those led by entrepreneurs that have not learned the E-a-S logic. We focus on understanding whether *E*-a-S entrepreneurial teams differ from non-E-a-S teams in their overall composition in terms of team size, background, experience, educational level, average age, and gender composition.

4.1.1. Data and methodology

4.1.1.1. Independent variable. Our main independent variable (*Intervention)* is a binary variable that captures whether the entrepreneur was exposed to E-a-S training or not (Camuffo et al., 2024). The variable has a value of 1 if the startup was assigned to the treatment group and received systematic training in applying the E-a-S framework, and 0 if it was assigned to the control group.

4.1.1.2. Dependent variables. We constructed multiple dependent variables, inspired by prior work on entrepreneurial team composition (Jin et al., 2017) and on the evolution of entrepreneurial teams (Lazar et al., 2020) to investigate whether the entrepreneurs trained in the E-a-S framework developed their teams differently from those in the control group. The first variable is *Team Size*: the number of members in a team at each observation point. Second, we defined a group of variables to measure the educational background of team members. We thus identify, at each point in time, the proportion of team members with a STEM background (*STEM*), an economics background *(Economics*), or another background *(Other*). STEM includes backgrounds in scientific and technical fields (e.g., Engineering); economics includes business, management, and economics backgrounds; and "other" includes disciplines such as law, psychology, and humanities (Der Foo et al., 2005; Tryba et al., 2023). Third, we defined a further group of variables to measure the prior experience of team members. In this vein, we measured team members' average years of managerial (*Ave_Man_Exp*), entrepreneurial (*Ave_Ent_Exp*), and industry (*Ave_Ind_Exp*) experience. These variables capture team-level experiential capital (Gruber et al., 2012; Reese et al., 2021). Finally, we defined a set of variables by focusing on teams' social and demographic traits at each observation point. We measured the gender composition, namely the proportion of women in the team *(Women*); the average age of the team members (*Ave_Age*), measured in years; and the average level of education (*Ave_Edu_Level*) as proxies of educational attainment and access to social networks (Davidsson and Honig, 2003). As far as education is concerned, we created the average level of education as the average of the educational level of each member of an entrepreneurial team (Camuffo et al., 2020).[3] Table 2 summarizes the descriptive statistics of each of the variables.

4.1.1.3. Empirical strategy. We empirically investigated whether the entrepreneurs who had been subject to *E*-a-S training composed and reconfigured their entrepreneurial teams differently from the entrepreneurs in the control group. First, we examined, through descriptive statistics, whether the treated entrepreneurs exhibited different dynamics when composing and reconfiguring their entrepreneurial teams from the control entrepreneurs over the 64 weeks of observation. Second, we conducted panel analyses to assess the effect of learning the *E*-a-S framework on the evolution of the entrepreneurial teams over time. The dependent variables used in the panel regressions were calculated at each observation point, and this allowed us to analyze any potential differences between the treatment and control groups over the 64 weeks of observation. We used linear regression models and count regression models (Poisson). All the models included a vector of dummy variables to account for potential differences in the instructors' teaching styles, as well as a vector of time-fixed effects to control for exogenous events that could have uniformly affected all the startups over time. Finally, we clustered the standard errors at the instructor-intervention level, in line with previous literature (e.g. Camuffo et al., 2024).[4]

4.1.2. The evolution of team size over time

First, we investigated the evolution of team size over the 64 weeks of data collection. The data presented in Fig. 1 illustrate the trends in average team size for both the treatment and control groups over time.

Both groups had a similar and non-statistically different baseline team size (Treatment average: 2.54, standard deviation: 1.61; Control average: 2.18, standard deviation: 1.39; p-value = 0.173). After the pre-incubation program, which was conducted between the baseline point and the 12th week, both groups experienced a modest increase in average team size, converging to the same average size by week 20. After week 20, the average team size of the control group remained stable throughout the subsequent weeks. However, the average team size of the treatment group continued to grow, reaching a peak in the final week of observation. These trends suggest a divergence in the evolution of team size between the two groups, and they indicate a potential effect of the intervention over time.

4.1.3. Results

Table 3 reports the effects of the intervention on multiple dimensions of entrepreneurial team composition over a 64-week period. Across several models, consistent evidence can be observed that the entrepreneurs trained in the *E*-a-S framework built teams which differed from those of the entrepreneurs in the control group, in terms of both size and the internal composition of the needed resources.[5]

Model (1) shows that the treated entrepreneurs on average built slightly larger teams, with an estimated increase of 0.282 team members over time, which, on average, results in around 3 members per entrepreneurial team. This effect was statistically significant and remained robust in Model (2), which used a Poisson specification. Although modest in magnitude, this difference is meaningful and comparable with the context of early-stage startups, where entrepreneurial teams are typically small (e.g., average team size of 2.85 in Lazar et al., 2022; 2.79 in Camuffo et al., 2020; 1.85 in Novelli and Spina, 2024; 2.19 in

[3] We assigned a value, ranging from 0 to 4, to the highest educational title each member of each startup had obtained, where 0 was "no secondary school diploma," 0.5 was "secondary school diploma," 1 was "high school diploma," 2 was "bachelor degree," 3 was "master degree," 3.5 was "MBA," and 4 was "PhD."

[4] To verify whether the epistemological distinction between the treatment and control groups was effectively internalized, we conducted additional analyses of the entrepreneurs' scientific intensity, measured using a 16-item scale, aligned with prior *E*-a-S research (e.g., Camuffo et al., 2024). The results of these analyses, which showed a significantly higher scientific intensity among the treated entrepreneurs, are reported in Appendix C.

[5] We also re-estimated our analyses using mixed-effects models to account for potential nested structures in the data. These results are consistent with those presented in Table 3, and they are available upon request from the authors.

Table 2
Descriptive statistics.

		Treatment Group					Control Group				
Variable	Description	N	Mean	SD	Min	Max	N	Mean	SD	Min	Max
Team Size	Number of members on the team	852	2.672	1.749	1	9	965	2.494	1.367	1	8
STEM	Proportion of members with an STEM education on the team	852	0.254	0.343	0	1	965	0.433	0.438	0	1
Economics	Proportion of members with an Economics education on the team	852	0.208	0.324	0	1	965	0.201	0.322	0	1
Other	Proportion of members with another background on the team	852	0.536	0.407	0	1	965	0.364	0.396	0	1
Ave_Man_Exp	Average Year of Managerial experience of the team	852	1.944	2.865	0	12	965	1.974	4.398	0	22.5
Ave_Ent_Exp	Average Year of Entrepreneurial experience of the team	852	2.485	5.230	0	30	965	2.133	3.946	0	22.5
Ave_Ind_Exp	Average Year of Industry experience of the team	852	3.379	5.606	0	30	965	3.332	5.169	0	22.5
Woman	Proportion of Women on the team	852	0.313	0.372	0	1	965	0.282	0.332	0	1
Ave_Age	Average Age of the team	852	31.433	9.409	20.3	65.5	965	31.019	7.364	19	53.5
Ave_Edu_Level	Average Level of Education of the team	852	1.866	0.746	0.5	4	965	2.083	0.912	0.5	3.5

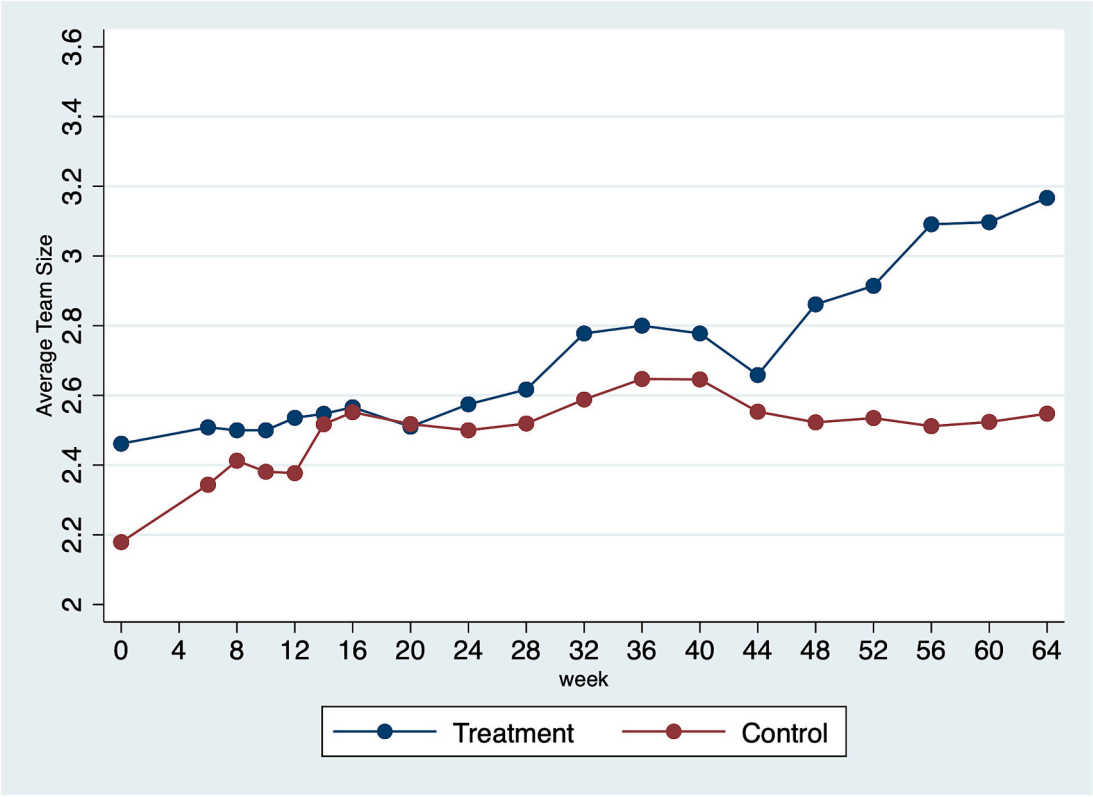


Fig. 1. Average Team size per week.

Gambardella and Messinese, 2025, 2.20 in Santamaria et al., 2024, and 2.51 in Leatherbee and Katila, 2020). However, this should not be interpreted as a mechanical increase. The additional growth instead appears to be selective and limited in scale, thus suggesting a purposeful adjustment rather than an indiscriminate expansion.

Models (3) to (5) examine changes in team composition by educational background. Model (3) reveals that the entrepreneurs that followed the *E*-a-S logic were significantly less likely to include STEM-trained members, while Model (5) shows an increase in the share of team members from "Other" backgrounds (non-STEM, non-economics). No significant difference can be observed regarding the economics background (Model 4). These results suggest that the *E*-a-S entrepreneurs did not simply favor more technical profiles; indeed, on average they have 16% fewer STEM members than the control group. Instead, E-a-S entrepreneurs appear to have reconfigured their teams by accepting more unconventional skill sets, resulting in teams with 14% more members with "Other" educational backgrounds than the non-E-a-S entrepreneurs.

Models (6) to (8) examine the average levels of managerial, entrepreneurial, and industry experience within the teams. None of these dimensions exhibit significant differences between the treated and control groups, thus indicating that the intervention did not shift preferences in terms of experience. However, other demographic characteristics were affected. Model (9) shows a negative and significant effect on the average level of education, thus suggesting that the *E*-a-S entrepreneurs may have placed less emphasis on formal credentials when selecting new team members, and potentially prioritized problem-specific fit over academic credentials. Model (10) indicates a small but significant increase, 5% on average, in the share of women on the E-a-S teams,[6] while Model (11) shows no effect on the average age.

Together, these findings indicate that the E-a-S entrepreneurs reconfigured their teams, and that the teams differed systematically from those in the control group. First, E-a-S entrepreneurs show a

[6] Readers should interpret the results on the proportion of women in entrepreneurial teams with caution, given that this model shows a statistical power that is below the recommended threshold of 0.80 (Duflo and Banerjee, 2017).

Table 3
Effect of the intervention on the dimensions of the entrepreneurial team.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Dependent variable	Team Size	Team Size	STEM	Economics	Other	Ave_Man_Exp	Ave_Ent_Exp	Ave_Ind_Exp	Ave_Edu_Level	Woman	Ave_Age
Model	OLS Panel	Poisson Panel	OLS Panel	OLS Panel	OLS Panel	OLS Panel	OLS Panel	OLS Panel	OLS Panel	OLS Panel	OLS Panel
Intervention	0.282**	0.105**	−0.161***	0.018	0.143***	−0.092	0.148	−0.031	−0.202***	0.054*	0.053
	(0.121)	(0.045)	(0.041)	(0.028)	(0.045)	(0.408)	(0.587)	(0.459)	(0.071)	(0.027)	(1.128)
Constant	2.323***	0.848***	0.426***	0.066	0.508***	1.328**	2.708*	3.058***	2.332***	0.400***	33.202***
	(0.103)	(0.049)	(0.035)	(0.057)	(0.085)	(0.520)	(1.389)	(0.303)	(0.163)	(0.023)	(2.164)
Observations	1817	1817	1817	1817	1817	1817	1817	1817	1817	1817	1817
Number of ids	132	132	132	132	132	132	132	132	132	132	132
FE for Instructors	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
FE for Interviews	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Clustered Errors	Intervention Instructor	Intervention Instructor	Intervention Instructor	Intervention Instructor	Intervention Instructor	Intervention Instructor	Intervention Instructor	Intervention Instructor	Intervention Instructor	Intervention Instructor	Intervention Instructor

Note: The early-stage startups that dropped out from the program, that is, terminated their idea, were labeled as missing after the week they dropped out. The clustered standard errors are reported in parentheses. *P*-values: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

slightly larger growth in their teams over time. Although these changes may not reflect radical team restructuring, they could be aligned with a more capability-oriented approach to team building. Indeed, E-a-S entrepreneurs appear to have adopted such an approach in a way that reflects a distinctive logic of team composition. First, it can be observed that the E-a-S entrepreneurs reduced their proportion of STEM team members and increased the number of team members with non-technical and non-economic backgrounds, compared to the non-E-a-S entrepreneurs. This pattern could suggest that E-a-S entrepreneurs have a specific preference for evolving their entrepreneurial teams by removing or adding new members on the basis of their educational background. This pattern resonates with the analytically oriented process of search used by entrepreneurs who evolve their entrepreneurial teams using a resource-seeking strategy (Lazar et al., 2022). On the other hand, our results also show that E-a-S entrepreneurs create entrepreneurial teams that display different patterns, in terms of education and gender, from those of non-E-a-S entrepreneurs. These results indicate a different selection pattern, in terms of social and demographic traits, when E-a-S entrepreneurs are evolving their teams vs. non-E-a-S entrepreneurs, thus resonating with the more relational team formation embedded in the interpersonal attraction strategy. We explore this issue in the following analysis.

4.2. *Do E-a-S entrepreneurs use a resource-seeking strategy to reconfigure their teams?*

Building on the observed differences in team evolution, we investigate whether the entrepreneurs trained in the E-a-S framework applied a resource-seeking strategy when they adjusted their teams. Specifically, we examine whether the treated entrepreneurs added or removed team members on the basis of their experience and educational background, which would signal resource value in early-stage ventures.

4.2.1. *Empirical strategy adopted to assess the use of a resource-seeking strategy*

We investigate whether entrepreneurs that use the E-a-S logic rely more on a resource-seeking strategy than those who do not when they evolve their entrepreneurial teams. We do so by analyzing the characteristics of the team members who were added or removed over our study's 64-week observation period. We focus on the background and prior experience of the newly added members when considering the additions. We also examine the original team members, that is, the members present before the intervention, and track which ones remained in the entrepreneurial team. This allows us to detect whether specific profiles were more likely to be retained or excluded (Gregori and Parastuty, 2021).

Building on previous literature on the resource-seeking strategy (Agarwal and Shah, 2014; Shah et al., 2019; Lazar et al., 2022), we included the proportion of team members with STEM, Economics, or "Other" backgrounds and the average years of managerial, entrepreneurial, and industry experience as the dependent variables for both the new team members and for the original ones who remained. The descriptive statistics pertaining to these variables are shown in Table 4.

4.2.2. *The evolution of additions and removals of members over time*

Figs. 2 and 3 illustrate the average cumulative number of members removed from and added to the entrepreneurial teams in the treatment and control groups, respectively. Regarding Fig. 2, the two groups display distinct patterns in terms of member removal. The treated entrepreneurs removed more members than those in the control group during the initial observation period, particularly immediately after the start of training. However, following this early peak, the member removal pace of the treated entrepreneurs slowed and, ultimately, fewer members were let go than in the control group. By contrast, the entrepreneurs in the control group began removing members later than the treated entrepreneurs, but they continued this activity consistently

Table 4
Descriptive statistics of the dependent variables.

		Treatment Group					Control Group				
Variable	Description	N	Mean	SD	Min	Max	N	Mean	SD	Min	Max
STEM New Members	Proportion of new members with an STEM background on the total number of new members at each time	852	0.139	0.306	0	1	965	0.125	0.315	0	1
STEM Remaining Members	Proportion of original members with an STEM background on the total number of remaining members of the original team	852	0.241	0.378	0	1	965	0.389	0.458	0	1
Economics New Members	Proportion of new members with an economic background on the total number of new members at each time	852	0.058	0.213	0	1	965	0.057	0.216	0	1
Economics Remaining Members	Proportion of original members with an economics background on the total number of remaining members of the original team	852	0.226	0.367	0	1	965	0.200	0.356	0	1
Other New Members	Proportion of new members with another background on the total number of new members at each time	852	0.082	0.232	0	1	965	0.075	0.247	0	1
Other Remaining Members	Proportion of original members with another background on the total number of remaining members of the original team	852	0.532	0.432	0	1	965	0.396	0.448	0	1
Av_Man_Exp New_Members	Average years of managerial experience of the new members	852	0.598	1.867	0	9.5	965	0.208	1.417	0	20
Av_Man_Exp Remaining Members	Average years of managerial experience of the original members still on the team	852	1.779	2.813	0	12	965	1.988	4.385	0	22.5
Av_Ent_Exp New_Members	Average years of entrepreneurial experience of the new members	852	0.554	2.488	0	17	965	0.437	1.996	0	13
Av_Ent_Exp Remaining Members	Average years of entrepreneurial experience of the original members still on the team	852	2.406	5.259	0	30	965	2.109	3.980	0	22.5
Av_Ind_Exp New_Members	Average years of industry experience of the new members	852	0.770	2.128	0	14	965	0.358	1.624	0	20
Av_Ind_Exp Remaining Members	Average years of industry experience of the original members still on the team	852	3.351	5.998	0	30	965	3.566	5.681	0	22.5

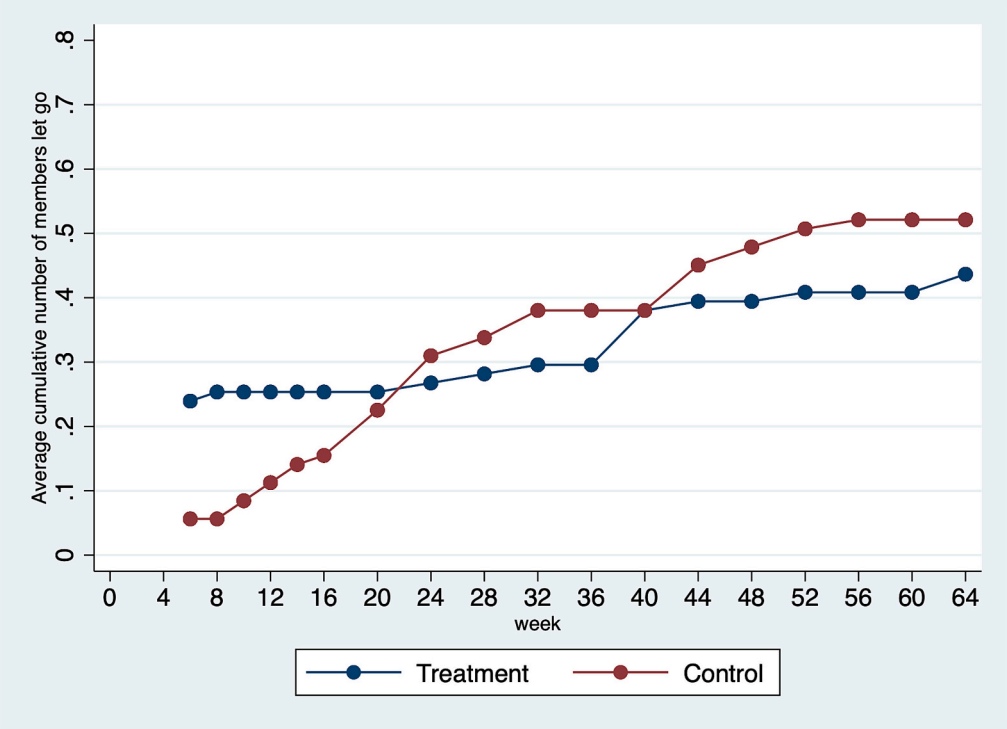


Fig. 2. Average cumulative number of team members let go during the 64 weeks of observation.

throughout the 64-week observation period, and on average let go more members than the treatment group. As shown in Fig. 3, the treated entrepreneurs ended the 64-week period with a similar cumulative number of added members to those in the control group. The treated entrepreneurs added more team members during the initial weeks, but, starting from around week 12, those in the control group began adding team members at a higher rate. From that point onward, both groups continued to increase the size of their teams, although the control group on average maintained a higher cumulative number of additions until week 64, when the treated group eventually caught up.

Taken together, the two graphs indicate that the entrepreneurs that adopted the *E*-a-S framework followed a distinct trajectory in the evolution of their team size, compared to the other entrepreneurs. The E-a-S entrepreneurs removed more members during and immediately after the training period—suggesting early reconfiguration—and only later did they add new members. Following these adjustments, their teams appeared more stable, with fewer removals and selective additions. The entrepreneurs in the control group displayed a more erratic pattern:

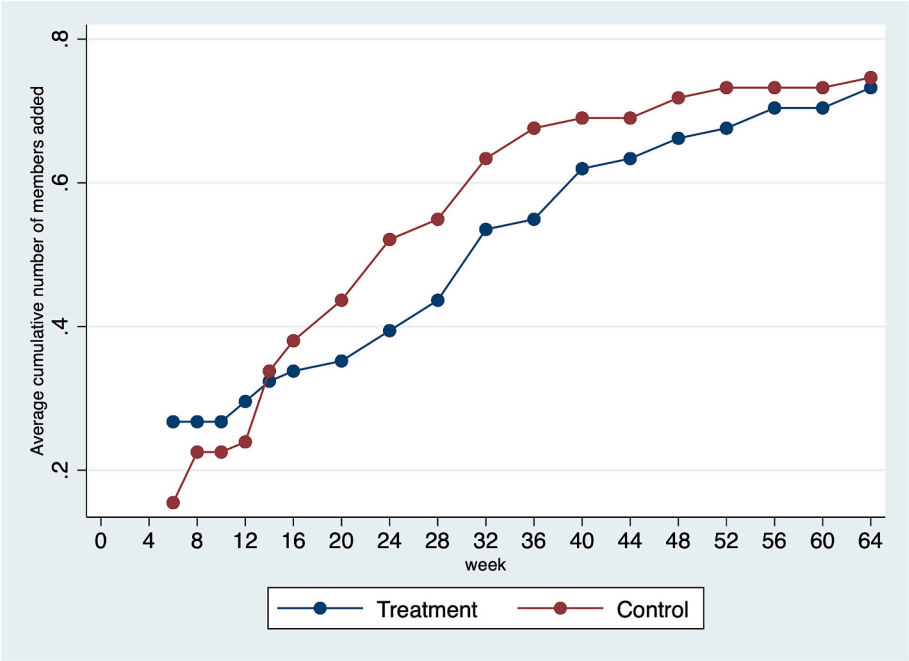


Fig. 3. Average cumulative number of team members added during the 64 weeks of observation.

although they ultimately added a similar number of members, they continued to remove members throughout the 64-week period, thus suggesting ongoing substitution and lower overall team stability.

4.2.3. Empirical results pertaining to the use of a resource-seeking strategy

Table 5 presents the regression results pertaining to the newly added team members. Models (12) to (14) show no significant differences between the treatment and control groups, in terms of educational background. However, Models (15) and (17) show that the treated entrepreneurs were significantly more likely to add members with greater managerial and industry experience. Indeed, despite the small effect size of 0.303 for the average managerial experience of new members and 0.310 for the average industry experience of new members, the *E*-a-S entrepreneurs seem to have systematically inserted more new members with experience as managers and in industry into their teams than the non-*E*-a-S entrepreneurs. No significant difference can be observed for entrepreneurial experience (Model 16).[7]

These results suggest that the *E*-a-S entrepreneurs prioritized the acquisition of experiential human capital and, in particular, managerial-related and industry-related capital. The absence of differences in educational background supports the interpretation that practical expertise, rather than formal credentials, drove the search for new members.

Table 6 reports the results on the nature of the original team members who remained in the startups. The treated entrepreneurs retained significantly fewer members with a STEM background (Model 18) and were more likely to retain those with "Other" backgrounds (Model 20) than the non-*E*-a-S entrepreneurs. No effect can be observed for managerial background (Model 19) or for experience levels (Models 21–23).

Taken together, these results suggest that decisions to remove team members were shaped more by background than by experience. The E-a-S entrepreneurs appear to have been more likely to remove original members with technical profiles, and this resulted, on average, in 13% fewer original members with technical backgrounds in those teams than in the non-E-a-S entrepreneurial teams. On the other hand, the E-a-S entrepreneurs appear to have retained original team members with broader or less conventional backgrounds, and this resulted in 10.5% more original members with this educational background than in the control group.

These findings provide additional evidence that the E-a-S entrepreneurs adopted a resource-seeking logic. Indeed, when they added members, E-a-S entrepreneurs selectively integrated individuals with greater managerial and industry experience. Conversely, when they adjusted their original team composition, they appear to have de-emphasized technical backgrounds, consistent with the market validation phase in which they were operating. The asymmetry between addition and removal criteria, the experience that drove the additions, and the background that drove the removals, suggest a targeted approach to team configuration that resonates with a resource-seeking strategy.

4.3. Do E-a-S entrepreneurs use an interpersonal attraction strategy to develop their teams?

Finally, we turn to the question of whether the E-a-S entrepreneurs developed their teams using an interpersonal attraction strategy. Prior literature suggests that such strategies involve selecting team members on the basis of homophily, namely similarities in social or demographic traits (Lazar et al., 2022) or personal ties, such as friendship, prior collaboration, or romantic ties (Aldrich and Kim, 2007; Parker, 2009). Building on this, we analyze whether the E-a-S entrepreneurs formed more homogeneous teams along such key dimensions as background, experience, education, gender, and age, or if they selected new member for their team on the basis of the personal ties they shared.

4.3.1. Empirical strategy used to assess the use of an interpersonal attraction strategy

As far as homophily is concerned, prior research on entrepreneurial team composition suggests that similarities between team members can be modeled using the standard deviation of their individual characteristics (Harrison and Klein, 2007). Indeed, the standard deviation of a given characteristic allows one to measure how similar the members of a

[7] We also re-estimated our analysis results using mixed-effects models to account for any potential nested structures in the data. These results are consistent with those presented in Table 5 and Table 6, and they are available upon request from the authors.

Table 5
Effect of the intervention on the characteristics of new team members.

	(12)	(13)	(14)	(15)	(16)	(17)
Dependent variable	STEM New Members	Economics New Members	Other New Members	Av_Man_Exp New_Members	Av_Ent_Exp New_Members	Av_Ind_Exp New_Members
Model	OLS Panel	OLS Panel	OLS Panel	OLS Panel	OLS Panel	OLS Panel
Intervention	0.018	−0.003	0.008	0.303**	0.049	0.310***
	(0.036)	(0.004)	(0.034)	(0.126)	(0.098)	(0.109)
Constant	0.094***	0.032***	0.054	−0.033	0.273	0.133
	(0.021)	(0.011)	(0.058)	(0.087)	(0.180)	(0.210)
Observations	1817	1817	1817	1817	1817	1817
Number of ids	132	132	132	132	132	132
FE for Instructors	Yes	Yes	Yes	Yes	Yes	Yes
FE for Interviews	Yes	Yes	Yes	Yes	Yes	Yes
Clustered Errors	Intervention Instructor	Intervention Instructor	Intervention Instructor	Intervention Instructor	Intervention Instructor	Intervention Instructor

Note: The early-stage startups that dropped out of the program were labeled as missing after the week they dropped out. The clustered standard errors are in parentheses. *P*-values: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 6
Effect of the intervention on the characteristics of the remaining team members.

	(18)	(19)	(20)	(21)	(22)	(23)
Dependent variable	STEM Remaining Members	Economics Remaining Members	Other Remaining Members	Av_Man_Exp Remaining Members	Av_Ent_Exp Remaining Members	Av_Ind_Exp Remaining Members
Model	OLS Panel	OLS Panel	OLS Panel	OLS Panel	OLS Panel	OLS Panel
Intervention	−0.133***	0.038	0.105*	−0.235	0.117	−0.238
	(0.041)	(0.024)	(0.056)	(0.469)	(0.648)	(0.446)
Constant	0.407***	0.040	0.523***	1.384**	2.712*	3.479***
	(0.040)	(0.062)	(0.111)	(0.621)	(1.488)	(0.216)
Observations	1817	1817	1817	1817	1817	1817
Number of ids	132	132	132	132	132	132
FE for Instructors	Yes	Yes	Yes	Yes	Yes	Yes
FE for Interviews	Yes	Yes	Yes	Yes	Yes	Yes
Clustered Errors	Intervention Instructor	Intervention Instructor	Intervention Instructor	Intervention Instructor	Intervention Instructor	Intervention Instructor

Note: The early-stage startups that dropped out from the program, that is, terminated their idea, were labeled as missing after the week they dropped out. The clustered standard errors are in parentheses. P-values: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

group are, with respect to a given characteristic. More precisely, a higher standard deviation indicates greater variability among group members, which means they differ more as far as a specific characteristic is concerned. Conversely, a lower standard deviation suggests that members are more alike with respect to that characteristic. Building on this, we regressed the intervention on the standard deviation of prior characteristics used in earlier models, with the expectation that if the E-a-S entrepreneurs used an interpersonal attraction strategy, their teams would exhibit lower within-team variance in the social and demographic dimensions.

As far as personal ties are concerned, we investigated whether new team members were added on the basis of shared prior experiences, such as common educational path or employment (Agarwal and Shah, 2014; Zellmer-Bruhn et al., 2021), or of informal relationships, such as friendship, family, or romantic ties (Lazar et al., 2022). We introduced four new variables to operationalize these mechanisms. First, we created the *Proportion of Shared Education* variable, which captures the proportion of newly added members who share the same educational path as at least one existing team member. Similarly, the *Proportion of Shared Employment* variable measures the proportion of new members who previously worked with at least one existing member of the team. In parallel, we developed the *Proportion of Informal Relations* variable. This variable represents the proportion of new members who had a pre-existing informal relationship, for example, friendship, family, or romantic ties, with at least one member of the entrepreneurial team. Finally, we created the *Proportion of Personal Experience or Informal Ties* composite variable, which represents the proportion of new members who shared at least one such connection (educational, professional, or informal) with existing team members. These variables were constructed using data collected across 18 observation points, and they were complemented with information extracted from the audio recordings of interviews conducted with the teams and information collected from the LinkedIn profiles of both the original and the newly added team members. The descriptive statistics of the dependent variables are shown in Table 7.

4.3.2. Empirical results pertaining to the use of an interpersonal attraction strategy

Table 8 presents the regression results. Models (24) and (26) show that the intervention had a positive and significant effect on the standard deviation of the share of STEM, with an average increase of 36%, compared to the standard deviation of the control group. In a similar way, the intervention had a positive and significant effect on the standard deviation of the share of "Other" backgrounds, with an average increase of 19%, compared to the standard deviation of the control group. These results indicate that the *E*-a-S entrepreneurs built teams that were more diverse, in terms of STEM education and "Other" education, than the control. Indeed, the intervention effect corresponds to a shift toward more heterogeneous configurations, where the mixes of STEM and non-STEM profiles and the mix of Other and non-Other profiles are more balanced. On the other hand, no significant differences

Table 7
Descriptive statistics of the dependent variables.

		Treatment Group					Control Group				
Variable	Definition	N	Mean	SD	Min	Max	N	Mean	SD	Min	Max
SD_STEM	Standard deviation of the STEM members at each point of observation	852	0.190	0.274	0	0.707	965	0.137	0.249	0	0.707
SD_Economics	Standard deviation of the Economics members at each point of observation	852	0.163	0.265	0	0.707	965	0.150	0.260	0	0.707
SD_Other	Standard deviation of the "Other" members at each point of observation	852	0.218	0.283	0	0.707	965	0.195	0.278	0	0.707
SD_Man_Exp	Standard deviation of the average years of managerial experience at each point of observation	852	1.643	3.409	0	20	965	1.446	3.419	0	21.920
SD_Ent_Exp	Standard deviation of the average years of entrepreneurial experience at each point of observation	852	2.156	5.066	0	28.284	965	1.649	3.108	0	14.142
SD_Ind_Exp	Standard deviation of the average years of industry experience at each point of observation	852	1.786	3.853	0	17.500	965	1.527	2.578	0	15.556
SD_Edu_Leve	Standard deviation of the average level of education at each point of observation	852	0.474	0.512	0	1.767	965	0.469	0.497	0	2.121
SD_Woman	Standard deviation of the number of women at each point of observation	852	0.201	0.275	0	0.707	965	0.242	0.296	0	0.707
SD_Age	Standard deviation of the average age at each point of observation	852	3.332	5.209	0	22.854	965	2.883	4.402	0	23.334
Proportion of Shared Education	Proportion of new members added who shared an educational path with at least one member of the team on the total number of the new members added at each time	852	0.040	0.185	0	1	965	0.043	0.191	0	1
Proportion of Shared Employmen	Proportion of new members added who shared employment with at least one member of the team on the total number of new members added at each time	852	0.026	0.144	0	1	965	0	0	0	0
Proportion of Informal Ties	Proportion of new members added who had pre-existing informal relations (like friendship, family, romantic ties) with at least one member of the team on the total number of new members added at each time	852	0.056	0.226	0	1	965	0.047	0.176	0	1
Proportion of Personal Experience or Informal Ties	Proportion of new members added who shared at least one connection (educational, professional, or informal) with at least one member of the team on the total number of new members added at each time	852	0.083	0.261	0	1	965	0.061	0.216	0	1

can be observed for the variability of managerial, entrepreneurial, or industry experience (Models 27–29), or for age or education level (Models 30 and 32).[8] Interestingly, Model (31) reveals a negative and significant effect of the intervention on the standard deviation of gender composition, with an average decrease of 19%, compared to the standard deviation of the control group. This implies that the E-a-S entrepreneurs were more likely to form teams that were either predominantly male or predominantly female and suggests that the E-a-S entrepreneurs may have introduced more gender homogeneity than their non-E-a-S counterparts. In other words, the 36% and 19% increases in standard deviation for STEM and "Other" backgrounds indicate that E-a-S entrepreneurs form teams with more internally varied mixes of technical and non-technical expertise. Conversely, the 19% reduction in standard deviation of gender suggests that gender composition becomes more internally uniform: teams concentrate toward predominantly male or predominantly female configurations. Finally, Models (32), (33), (34), (35), and (36) show the effect of the intervention on the dimensions related to the informal and formal ties between newly added team members and the existing members of the entrepreneurial team. According to these models, the E-a-S entrepreneurs do not appear to have selected new members on the basis of informal or formal ties in a different way from the non–*E*-a-S entrepreneurs. Taken together, these results suggest that the E-a-S entrepreneurs did not adopt a different interpersonal attraction strategy concerning human capital characteristics and personal ties from that of the non-E-a-S entrepreneurs: while they formed entrepreneurial teams that were more diverse in terms of background, there still is some evidence that interpersonal dynamics may still have played a role in gender composition. This implies that *E*-a-S framework did not fully preclude the influence of social heuristics in certain dimensions of team formation. Overall, these findings reinforce the notion that scientific reasoning leads entrepreneurs to structure their teams differently, especially by encouraging greater diversity in resource-related traits. At the same time, social considerations, such as gender, may still play a role in shaping the composition of a team, albeit in a less pronounced form.

4.4. Additional analyses and robustness checks

Appendix C contains information on the additional analyses and robustness checks we conducted to further investigate the findings of our analysis. In Section C.1, we verified whether the epistemological distinction between the treatment and control groups was effectively internalized. More precisely, we present additional analysis on the entrepreneurs' scientific intensity in decision-making. Section C.2 presents the power analysis we performed to ensure the robustness of our empirical results, while Section C.3 presents further investigations of the treatment effect on the participants' attrition rate in the experiment. Finally, Section C.4 assesses the robustness of the empirical analysis, when controlling for the educational diversity of the entrepreneurial team.

5. Discussion and conclusions

This study, which has followed a question-driven approach, has examined whether the *E*-a-S framework influences how entrepreneurs reconfigure their teams, going beyond its effects on pivoting and the termination of ideas identified by previous literature (Camuffo et al., 2024; Gambardella and Messinese, 2025). We have found that the entrepreneurs who trained in the *E*-a-S framework restructured their teams in a different way from the entrepreneurs who did not use such a

[8] We also re-estimated our analysis results using mixed-effects models to account for any potential nested structures in the data. These results are consistent with those presented in Table 8, and they are available upon request from the authors.

Table 8
Intervention on the standard deviation of the characteristics of the team.

	(24)	(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)	(33)	(34)	(35)	(36)
Dependent variable	SD_STEM	SD_Economics	SD_Other	SD_Man_Exp	SD_Ent_Exp	SD_Ind_Exp	SD_Edu_Leve	SD_Woman	SD_Age	Proportion of Shared Education	Proportion of Shared Employment	Proportion of Informal Ties	Proportion of Personal Experience or Informal Ties
Model	OLS Panel	OLS Panel	OLS Panel	OLS Panel	OLS Panel	OLS Panel	OLS Panel	OLS Panel	OLS Panel	OLS - Panel	OLS - Panel	OLS - Panel	OLS - Panel
Intervention	0.049**	0.020	0.038**	0.071	0.383	0.336	0.014	−0.046**	0.618	0.019	0.020	0.008	0.021
	(0.022)	(0.020)	(0.015)	(0.444)	(0.652)	(0.302)	(0.072)	(0.020)	(0.907)	(0.024)	(0.013)	(0.022)	(0.023)
Constant	0.140***	0.044	0.140***	1.045***	2.291**	2.313***	0.412***	0.245***	4.214**	0.080***	−0.016	0.050	0.099**
	(0.017)	(0.043)	(0.014)	(0.338)	(1.140)	(0.139)	(0.053)	(0.189)	(1.834)	(0.018)	(0.014)	(0.030)	(0.018)
Observations	1817	1817	1817	1817	1817	1817	1817	1817	1817	1817	1817	1817	1817
Number of ids	132	132	132	132	132	132	132	132	132	132	132	132	132
FE for Instructors	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
FE for Interviews	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Clustered Errors	Intervention Instructor	Intervention Instructor	Intervention Instructor	Intervention Instructor	Intervention Instructor	Intervention Instructor	Intervention Instructor	Intervention Instructor	Intervention Instructor	Intervention Instructor	Intervention Instructor	Intervention Instructor	Intervention Instructor

Note: The early-stage startups that dropped out of the program were labeled as missing after the week they dropped out. The clustered standard errors are in parentheses.
P-values: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

framework. The treated entrepreneurs added more new members with managerial and industry-specific experience than the control group. On the other hand, the E-a-S entrepreneurs seem to have let members from their entrepreneurial team go on the basis of their educational background; that is, they removed team members with technical backgrounds and preserved members with unconventional.

backgrounds. These patterns indicate that the *E*-a-S entrepreneurs applied a structured and evidence-driven logic to the design of their teams, which recalls the analytically oriented process of entrepreneurial team evolution typical of entrepreneurs who follow a resource-seeking strategy (Lazar et al., 2022). Moreover, this behavior highlights a mechanism that shows that the *E*-a-S entrepreneurs adjusted their entrepreneurial teams by leveraging the resources that members can contribute (Wuebker et al., 2023). More precisely, our analyses indicate that the E-a-S entrepreneurs added individuals with greater managerial experience and industry-specific experience than the non–E-a-S entrepreneurs. These selection criteria can be explained by considering the creation and revision of the theory of value. Moreover, these selection criteria recall the adoption of a causal reasoning approach when reconfiguring an entrepreneurial team. Indeed, managerial and industry experience provide valuable and unique sources of information to an entrepreneurial team (Marvel et al., 2016). For instance, managerial experience has been shown to facilitate the transfer of previously learned managerial routines into a new venture (Reese et al., 2021). Industry experience, meanwhile, allows entrepreneurs to exploit prior, often tacit, knowledge regarding sector-specific dynamics, thus offering unique and contextually relevant insights for the development of an entrepreneurial idea (Hashai and Zahra, 2022). Building on this, the development of a theory of value encourages *E*-a-S entrepreneurs to prioritize team members who possess such valuable expertise, given the contribution these individuals can make to the advancement of a venture. Therefore, E-a-S entrepreneurs favor adding members who provide rare and specialized knowledge (Wuebker et al., 2023), which can also help them to refine and deepen their theory of value. By contrast, increasing the stock of experience within a team may mean enlarging the team itself, which could lead to a redundancy of competencies (Reese et al., 2021), higher coordination costs (Forbes et al., 2006), and social friction (Gray et al., 2024). However, as our findings show, the *E*-a-S entrepreneurs appear to have increased the size of their teams only through small and targeted adjustments. Building on this, the observed pattern of removing members on the basis of their educational background may be interpreted as an attempt to avoid redundancy in competencies, while preserving access to critical information.

Indeed, it emerges that the *E*-a-S entrepreneurs removed members from their teams on the basis of their educational background. They opted to dismiss members with STEM degrees, but they retained those with more specific backgrounds. This mechanism serves to eliminate redundant technical competencies while creating space for new members. In other words, the E-a-S entrepreneurs appear to have let go individuals whose educational backgrounds were less specific, such as those with technical backgrounds. Conversely, they tended to retain members with more domain-specific backgrounds, who could have provided more privileged and high-value knowledge to the team. This selection and removal mechanism is aligned with previous work on E-a-S and the use of a theory of value. Indeed, E-a-S entrepreneurs are able to recognize the need for more specific resources to advance their entrepreneurial ideas (Felin et al., 2024a). Such resources may include knowledge related to "how to perform" certain tasks, knowledge that may not necessarily emerge from experimentation but can instead be incorporated through the selection of new team members. Moreover, the evolution and refinement of a theory of value can help entrepreneurs identify which resources are the most useful and unique for the advancement of their idea, thereby leading them to prioritize such resources (Wuebker et al., 2023).

However, when investigating the entrepreneurial team formation process from a psychological and sociological perspective (Frese and

Gielnik, 2014; Simmel, 1955), it appears that *E*-a-S entrepreneurs do not display a different pattern from non-E-a-S entrepreneurs when it comes to the influence of similarities or personal ties with existing team members in decisions about who to add to or remove from their entrepreneurial teams.

The coexistence of resource-seeking and interpersonal attraction strategies has been interpreted as an optimal balance between functional and relational criteria in the entrepreneurial team formation literature (Forbes et al., 2006; Lazar et al., 2020; Lazar et al., 2022), leading to a "dual-strategy" approach being adopted. But our findings suggest that *E*-a-S entrepreneurs systematically diverge from this balance. By introducing a causal decision framework that emphasizes theory creation, hypothesis formulation, testing, and belief updates (Camuffo et al., 2024; Zellweger and Zenger, 2022), the *E*-a-S framework encourages entrepreneurs to treat the composition of their team as a problem of causal alignment between their theory of value and the resources in their entrepreneurial team (Zellweger and Zenger, 2022; Wuebker et al., 2023) and not to emphasize possible considerations pertaining to social compatibility (Gray et al., 2024). Indeed, team members are selected and retained according to the extent to which their expertise validates or extends the venture's evolving theory of value (Camuffo et al., 2020; Felin et al., 2024a). On the other hand, it seems there are no differences regarding the use of social ties or homophily as selection criteria compared to the control group, except for some minor differences in terms of gender. This evidence further supports the idea that the *E*-a-S approach sustains an entrepreneurial logic that is aimed at "predicting to control" as opposed to the logic of "controlling not to predict" that underlies effectual reasoning (Sarasvathy, 2024). In other words, the focus of such a causal approach on guiding the prediction and evolution of an entrepreneurial idea by creating a theory of value seems to show that entrepreneurs focus on evolving their team on the basis of the resources they need, and they neglect the possible implications of social relations between members. All in all, this seems to suggest the extension of this logic not only to entrepreneurial dynamics pertaining to the business idea—such as pivoting, terminating the business, and/or generating revenues—but also to the entrepreneurial team formation process (Felin et al., 2024a; Wuebker et al., 2023). *E*-a-S entrepreneurs generate predictive insights through the iterative testing of hypotheses about their theory of value, which also informs the adjustments of their organizational configurations.

However, our results should not be interpreted as an indication of either the superiority of the *E*-a-S approach or a prescriptive preference for resource-seeking strategy over other team formation strategies. The differences we have observed only reflect a difference in the decision logic between entrepreneurs who adopt or do not adopt an *E*-a-S approach; they do not reflect differences in performance outcomes or normative desirability. E-a-S entrepreneurs appear to privilege analytical reasoning and predictive alignment when they reconfigure their teams, although much of the prior literature highlights the potential complementarity of a resource-seeking strategy and an interpersonal attraction strategy (Forbes et al., 2006; Lazar et al., 2020; Lazar et a., 2024). Importantly, our evidence also reveals that predictive reasoning does not entirely displace the social foundations of team building (i.e., the potential use of interpersonal strategies in team formation), as portrayed by the evidence on gender homophily. This dynamic echoes prior work that showed that an interpersonal attraction strategy and a resource-seeking strategy are not mutually exclusive and can instead interact sequentially as ventures mature (Vissa, 2011; Lazar et al., 2020; Lazar et al., 2022).

5.1. Theoretical implications

Our study contributes to the emerging literature on entrepreneurs as scientists (Camuffo et al., 2020; Felin et al., 2024a; Zellweger and Zenger, 2022, 2023) by showing that the *E*-a-S framework influences not only strategic decisions related to a business idea, but also foundational decisions regarding how teams are formed and composed. This type of impact extends the scope of E-a-S literature, which has so far primarily focused on how entrepreneurs validate ideas, pivot, and/or terminate ventures (Camuffo et al., 2020, 2024; Coali et al., 2024; Novelli and Spina, 2024; Battaglia et al., 2024). Our findings suggest that training based on the E-a-S framework influences the logic entrepreneurs apply when building teams, thereby opening a new line of inquiry into the multiple organizational domains that scientific reasoning can shape in early-stage ventures.

From a theoretical standpoint, these findings add to the growing conversation on the role systematic decision-making frameworks, such as causal approaches and effectual approaches, play in shaping entrepreneurial behavior and action (Sarasvathy, 2024). Most prior studies have emphasized outcomes linked to the venture idea or market fit (Camuffo et al., 2024; Novelli and Spina, 2024). Our results instead indicate that the *E*-a-S framework, which mixes causal logics with experimental rigor, also shapes how an entrepreneurial team composition is reconfigured, which is a key dimension of the resource-based view (Barney, 1991) and a well-studied predictor of entrepreneurial success (Colombo and Grilli, 2005; Jin et al., 2017; Reese et al., 2021). Moreover, this study shows how E-a-S entrepreneurs follow different patterns from non-E-a-S entrepreneurs when selecting members for their entrepreneurial teams. By drawing on the resource-based view (Barney, 1991), the observation that entrepreneurs trained in *E*-a-S add members who bring managerial or industry-specific experience to their teams, and that they selectively reconfigure their original teams to reduce technical skills, highlights that team formation may itself be informed by structured reasoning and theory-based assessments (Wuebker et al., 2023). This insight resonates with recent work on the revision of entrepreneurial beliefs (Zellweger and Zenger, 2022): Entrepreneurial teams that adopt the *E*-a-S framework do not simply react to feedback from their customers, they instead actively generate theories about what their teams need, theories they then test through real-world experiments (Felin et al., 2024a). This dynamic process of belief formation and revision allows entrepreneurs to refine their understanding of the resources they require to effectively execute their business models, particularly in terms of the resources of the team. In this sense, team formation becomes an experimental domain: entrepreneurs hypothesize what capabilities will improve the progress of their venture, and they validate this hypothesis by adding or retaining team members accordingly. For example, entrepreneurs' emphasis on experience, and on managerial and industry-specific experiences in particular, supports this interpretation. The selective replacement of team members in favor of more experienced entrepreneurs might therefore be driven by the need to increase the preparedness of the startup to confront the market (Toft-Kehler et al., 2014). In this vein, our results suggest that, although technical team members might be essential in the early stages of venture development to design and develop products and services (Toole and Czarnitzki, 2009), at more advanced stages, *E*-a-S entrepreneurs may recognize the difficulties of market development (Felin et al., 2024a; Wuebker et al., 2023) and better understand the need to prioritize experiential knowledge of the sector over technical expertise. Complicating this suggestion, in our case, the entrepreneurs who learned the *E*-a-S framework did not resort to selection criteria, such as homophily or personal ties, in a different way from the control group. This is an intriguing result, and it shows how the focus of the E-a-S approach on developing the theory of value by including resources in the entrepreneurial team does not result in a reduction of its emphasis on social and personal criteria when adding or removing team members.

Second, this study advances the theory of entrepreneurial team formation strategies in early-stage startups. Previous literature shows how entrepreneurs can rely on two distinct research strategies when they are evolving their entrepreneurial teams. From an economic perspective, entrepreneurs can follow an analytical process that leads them to select entrepreneurial team members on the basis of the resources they bring to those teams (Agarwal and Shah, 2014; Shah et al., 2019).

Alternatively, entrepreneurs can use a relational approach, selecting entrepreneurial team members on the basis of homophily with existing team members or personal ties (Zellmer-Bruhn et al., 2021). According to previous literature, entrepreneurs can use both of these strategies to evolve their teams; this combined approach leads to better performances (Lazar et al., 2022). However, the use of these strategies can be influenced by both external and internal factors (Lazar et al., 2020). In this paper, we show how the use of these strategies can be affected by the decision-making approach used by entrepreneurs. More precisely, we show how using a causal approach to develop an entrepreneurial idea, such as the *E*-a-S framework, can push entrepreneurs to focus more on a resource-seeking strategy. Indeed, the focus on predicting the resources needed to develop an entrepreneurial idea can favor a resource-seeking strategy to reconfigure an entrepreneurial team (Gray et al., 2024). As this logic does not emphasize the social aspect of selecting team members, it can lead entrepreneurs to deemphasize shared social relations when they evolve their teams. Adopting a formalized decision-making process can shift the balance between these two strategies, pushing entrepreneurs to focus only on one or the other when selecting members of their entrepreneurial team. This is an interesting result, and it shows how decision-making approaches can lead to suboptimal results, as stated in the literature, when reconfiguring an entrepreneurial team (Lazar et al., 2022).

Finally, we contribute to the literature on team formation in early-stage ventures (Agarwal and Shah, 2014; Lazar et al., 2022; Zellmer-Bruhn et al., 2021) by showing the malleability of team-building behavior to targeted interventions. Although prior work has acknowledged the endogenous nature of team development (Jin et al., 2017), few empirical studies have shown how team composition can be shaped by structured training programs. Our findings indicate that exposing entrepreneurs to specific methods, such as the *E*-a-S framework, through training programs not only changes how they evolve their ideas (Santamaria et al., 2024), but also how they act when composing the social and cognitive architecture of their teams.

5.2. Practical implications

Our findings offer valuable insights into how initiatives aimed at supporting early-stage startups could be designed more effectively (Battaglia et al., 2024; McKenzie and Woodruff, 2014; Stojcic, 2024). As universities, government bodies, and other public institutions increasingly recognize the role of entrepreneurial education in fostering economic growth (Buffart et al., 2020), the documented benefits of training programs grounded in the *E*-a-S framework are becoming particularly salient (Camuffo et al., 2020, 2024; Coali et al., 2024; Gambardella and Messinese, 2025). This study shows that the E-a-S framework not only shapes how entrepreneurs make decisions, but also influences how they reconfigure their entrepreneurial teams during and after their training. Rather than relying extensively on opportunistic mechanisms, E-a-S entrepreneurs appear to engage in structured team formation, which suggests they align their team composition with their evolving theories of value (Felin et al., 2024a; Wuebker et al., 2023). Although our current analysis has not assessed long-term performance outcomes, it provides relevant practical insights. First, this paper suggests that E-a-S entrepreneurs exhibit early-stage agility, and they modify their teams in ways that reflect the shifting demands of their business models, that is, they add or remove members through a resource-seeking strategy (Forbes et al., 2006; Iacobucci and Rosa, 2010; Matlay and Westhead, 2005). At the same time, these findings raise important questions about the long-term stability of such dynamically assembled teams (Forbes et al., 2006; Shah et al., 2019), and about their capacity to deal with uncertainty within evolving entrepreneurial ecosystems (Zellmer-Bruhn et al., 2021). Second, the results of the study have implications for university-based entrepreneurship education. Traditional entrepreneurship education often focuses on idea generation, customer discovery, and product-market fit (Bacigalupo et al., 2016; Morris et al., 2023). Although the long-term effects of adopting the E-a-S framework to team formation are not yet known, our findings highlight how entrepreneurship education can affect team dynamics, including those pertaining to how to reconfigure teams as ventures evolve. Building on this, educators should consider this dimension when designing and teaching such courses. For instance, educators might help entrepreneurs recognize that team composition should not be static, but should evolve in parallel with the development of the business model. On the other hand, educators might calibrate their training programs to overcome the potential pitfalls associated with decision-making frameworks. For instance, in the case of the E-a-S framework, educators could complement this training with specific elements related to social aspects and homophily when reconfiguring an entrepreneurial team, thereby supporting the use of an interpersonal attraction strategy and more closely aligning entrepreneurial team formation with what is suggested in the literature (Lazar et al., 2022). Finally, our results have implications at a higher macroeconomic level: indeed, the positive and significant effect we detected between the adoption of the E-a-S framework and the size of entrepreneurial teams could suggest that the decision-making logics used by early-stage ventures might have an impact on overall employment levels.[9]

5.3. Limitations and future research

Our findings open several avenues for future research on how the E-a-S framework can shape the dynamics of entrepreneurial teams. First, this study shows the tendency of E-a-S entrepreneurs to incorporate new resources into their teams. These results, considered together with their demonstrated superior performance in prior studies (Camuffo et al., 2020), raise important questions about the causal mechanisms that underlie these outcomes. Exposure to the E-a-S framework endows entrepreneurs with a heightened ability to assess the quality of ideas, thus enabling them to make faster and more accurate decisions regarding terminations or pivots. However, these pivotal moments may, in turn, also be closely linked to changes in team structure. For example, a decision to pivot may coincide with the addition of new team members, whose expertise may be aligned with the revised direction of a venture. Conversely, the logic of experimentation may itself encourage entrepreneurs to seek out complementary resources, thereby actively reshaping their team in response to newly identified strategic needs (Wuebker et al., 2023). However, whether superior performance is driven by the cognitive capabilities fostered by E-a-S-based training, by strategic reconfiguration of the team, or by an interaction between the two, remains an open and relevant question.

Second, the long-term implications of these reconfiguration dynamics, at both the team and venture levels, are not yet fully understood. Although this study has focused on early-stage decision processes, it is plausible that the accumulation of human capital within an E-a-S team has ripple effects on other dimensions of venture development, including access to social, financial, and/or symbolic resources (Vissa and Chacar, 2009). As entrepreneurs become more resource-oriented in their selection of members, they may position themselves more favorably within broader entrepreneurial ecosystems and networks. For instance, the inclusion of a strategically chosen team member could also bring resources in terms of network positionality, facilitating access to capital or bolstering legitimacy with key stakeholders (Gofman and Jin, 2024). Future research should examine how these interactional dynamics unfold over time and whether they contribute toward attaining sustainable performance advantages.

Finally, we acknowledge that our empirical setting, that is, early-stage startups operating within the Italian entrepreneurial ecosystem, may limit the generalizability of the findings. Cultural norms and institutional contexts are likely to shape how entrepreneurial teams

[9] We thank an anonymous reviewer for raising this point.

form and evolve (Vissa, 2011). It is therefore important to extend this line of inquiry to other cultural contexts to assess the robustness of the E-a-S logic under different environmental conditions. Such comparative research could help uncover whether the patterns we observed in this research are broadly applicable or context-specific, and whether certain ecosystems are more conducive to the adoption of structured, resource-oriented team formation strategies.

CRediT authorship contribution statement

Daniele Battaglia: Conceptualization, Formal analysis, Methodology, Investigation, Writing – original draft, Writing – review & editing, Project administration. **Alessandra Colombelli:** Conceptualization, Methodology, Formal analysis, Supervision, Writing – review & editing. **Andrea Panelli:** Conceptualization, Data curation, Methodology, Investigation, Formal analysis, Writing – original draft, Writing – review & editing. **Emilio Paolucci:** Conceptualization, Methodology, Writing – original draft, Writing – review & editing, Supervision, Funding acquisition, Project administration. **Elisabetta Raguseo:** Conceptualization, Methodology, Investigation, Writing – original draft, Writing – review & editing.

Declaration of Generative AI and AI-assisted technologies in the writing process

During the preparation of this work the author(s) used ChatGPT to proofread the text. After using this tool/service, the author(s) reviewed and edited the content as needed and take(s) full responsibility for the content of the published article.

Declaration of competing interest

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests:

Emilio Paolucci reports financial support was provided by The Italian Ministry of University and Research. If there are other authors, they declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.respol.2026.105461.

Data availability

The data that has been used is confidential.

References

Agarwal, R., Bacco, F., Camuffo, A., Coali, A., Gambardella, A., Msangi, H., Sonka, S., Temu, A., Waized, B., Wormald, A., 2025. Does a Theory-of-Value Add Value? Evidence from a Randomized Control Trial with Tanzanian Entrepreneurs. Organ. Sci. 36 (2), 601–625. https://doi.org/10.1287/orsc.2023.17590.

Agarwal, R., Shah, S.K., 2014. Knowledge sources of entrepreneurship: Firm formation by academic, user and employee innovators. Res. Policy 43 (7), 1109–1133. https://doi.org/10.1016/j.respol.2014.04.012.

Aldrich, H.E., Kim, P.H., 2007. Small worlds, infinite possibilities? How social networks affect entrepreneurial team formation and search. Strateg. Entrep. J. 1 (1–2), 147–165. https://doi.org/10.1002/sej.8.

Bacigalupo, M., Kampylis, P., Punie, Y., Van den Brande, G., Van den Brande, G., 2016. EntreComp: The entrepreneurship competence framework (No. EUR 27939 EN). Publication Office of the European Union.

Barney, J., 1991. Firm Resources and Sustained Competitive Advantage. J. Manag. 17 (1), 99–120. https://doi.org/10.1177/014920639101700108.

Battaglia, D., Colombelli, A., Panelli, A., Paolucci, E., & Raguseo, E. (2024). Assessing the importance of managerial and entrepreneurial experience in entrepreneurial training programs. J. Small Bus. Manag., 1–29. doi:https://doi.org/10.1080/00472778.2024.2434553.

Beckman, C.M., Burton, M.D., O'Reilly, C., 2007. Early teams: The impact of team demography on VC financing and going public. J. Bus. Ventur. 22 (2), 147–173. https://doi.org/10.1016/j.jbusvent.2006.02.001.

Bell, S.T., Villado, A.J., Lukasik, M.A., Belau, L., Briggs, A.L., 2011. Getting Specific about Demographic Diversity Variable and Team Performance Relationships: A Meta-Analysis. J. Manag. 37 (3), 709–743. https://doi.org/10.1177/0149206310365001.

Bingham, C.B., Eisenhardt, K.M., 2011. Rational heuristics: The 'simple rules' that strategists learn from process experience. Strateg. Manag. J. 32 (13), 1437–1464. https://doi.org/10.1002/smj.965.

Boone, S., Andries, P., Clarysse, B., 2020. Does team entrepreneurial passion matter for relationship conflict and team performance? On the importance of fit between passion focus and venture development stage. J. Bus. Ventur. 35 (5), 105984. https://doi.org/10.1016/j.jbusvent.2019.105984.

Brattström, A., 2024. Task Re-allocation in New Venture Teams: A Team Conflict Perspective. Entrep. Theory Pract. 48 (1), 205–245. https://doi.org/10.1177/10422587231154505.

Brinckmann, J., Grichnik, D., Kapsa, D., 2010. Should entrepreneurs plan or just storm the castle? A meta-analysis on contextual factors impacting the business planning–performance relationship in small firms. J. Bus. Ventur. 25 (1), 24–40. https://doi.org/10.1016/j.jbusvent.2008.10.007.

Buffart, M., Croidieu, G., Kim, P.H., Bowman, R., 2020. Even winners need to learn: How government entrepreneurship programs can support innovative ventures. Innovative start-ups and policy initiatives 49 (10), 104052. https://doi.org/10.1016/j.respol.2020.104052.

Camuffo, A., Cordova, A., Gambardella, A., Spina, C., 2020. A scientific approach to entrepreneurial decision making: Evidence from a randomized control trial. Manag. Sci. 66 (2), 564–586. https://doi.org/10.1287/mnsc.2018.3249.

Camuffo, A., Gambardella, A., Messinese, D., Novelli, E., Paolucci, E., Spina, C., 2024. A scientific approach to entrepreneurial decision-making: Large-scale replication and extension. Strateg. Manag. J. 45 (6), 1209–1237. https://doi.org/10.1002/smj.3580.

Carter, N.M., Gartner, W.B., Reynolds, P.D., 1996. Exploring start-up event sequences. J. Bus. Ventur. 11 (3), 151–166. https://doi.org/10.1016/0883-9026(95)00129-8.

Clarysse, B., Moray, N., 2004. A process study of entrepreneurial team formation: The case of a research-based spin-off. Technoentrepreneurship 19 (1), 55–79. https://doi.org/10.1016/S0883-9026(02)00113-1.

Coali, A., Gambardella, A., Novelli, E., 2024. Scientific decision-making, project selection and longer-term outcomes. Res. Policy 53 (6), 105022. https://doi.org/10.1016/j.respol.2024.105022.

Colombo, M.G., Grilli, L., 2005. Founders' human capital and the growth of new technology-based firms: A competence-based view. Res. Policy 34 (6), 795–816. https://doi.org/10.1016/j.respol.2005.03.010.

Csaszar, F.A., Laureiro-Martínez, D., 2018. Individual and Organizational Antecedents of Strategic Foresight: A Representational Approach. Strategy Science 3 (3), 513–532. https://doi.org/10.1287/stsc.2018.0063.

Davidsson, P., Honig, B., 2003. The role of social and human capital among nascent entrepreneurs. J. Bus. Ventur. 18 (3), 301–331. https://doi.org/10.1016/S0883-9026(02)00097-6.

Delmar, F., Shane, S., 2003. Does business planning facilitate the development of new ventures? Strateg. Manag. J. 24 (12), 1165–1185. https://doi.org/10.1002/smj.349.

Der Foo, M., Kam Wong, P., Ong, A., 2005. Do others think you have a viable business idea? Team diversity and judges' evaluation of ideas in a business plan competition. J. Bus. Ventur. 20 (3), 385–402. https://doi.org/10.1016/j.jbusvent.2004.04.001.

Dew, N., Read, S., Sarasvathy, S.D., Wiltbank, R., 2009. Effectual versus predictive logics in entrepreneurial decision-making: Differences between experts and novices. J. Bus. Ventur. 24 (4), 287–309. https://doi.org/10.1016/j.jbusvent.2008.02.002.

Duflo, E., Banerjee, A., 2017. Handbook of Field Experiments. North Holland. https://books.google.it/books?id=msAxDQAAQBAJ.

Ehrig, T., Schmidt, J., 2022. Theory-based learning and experimentation: How strategists can systematically generate knowledge at the edge between the known and the unknown. Strateg. Manag. J. 43 (7), 1287–1318. https://doi.org/10.1002/smj.3381.

Eisenhardt, K.M., Schoonhoven, C.B., 1990. Organizational Growth: Linking Founding Team, Strategy, Environment, and Growth Among U.S. Semiconductor Ventures, 1978-1988. Adm. Sci. Q. 35 (3), 504. https://doi.org/10.2307/2393315.

Felin, T., Gambardella, A., Novelli, E., Zenger, T., 2024a. A Scientific Method for Startups. J. Manag. 50 (8), 3080–3104. https://doi.org/10.1177/01492063231226136.

Felin, T., Gambardella, A., Zenger, T., 2024b. Theory-Based Decisions: Foundations and Introduction. Strategy Science 9 (4), 297–310. https://doi.org/10.1287/stsc.2024.intro.v9.n4.

Felin, T., Zenger, T.R., 2009. Entrepreneurs as theorists: On the origins of collective beliefs and novel strategies. Strateg. Entrep. J. 3 (2), 127–146. https://doi.org/10.1002/sej.67.

Felin, T., Zenger, T.R., 2017. The Theory-Based View: Economic Actors as Theorists. Strategy Science 2 (4), 258–271. https://doi.org/10.1287/stsc.2017.0048.

Forbes, D. P., Borchert, P. S., Zellmer–Bruhn, M. E., & Sapienza, H. J. (2006). Entrepreneurial Team Formation: An Exploration of New Member Addition. Entrep. Theory Pract., 30(2), 225–248. doi:https://doi.org/10.1111/j.1540-6520.2006.00119.x.

Frese, M., & Gielnik, M. M. (2014). The psychology of entrepreneurship. In *Annu. Rev. Organ. Psych. Organ. Behav.* (Vol. 1, Fascicolo Volume 1, 2014, pp. 413–438). Annual Reviews. doi:https://doi.org/10.1146/annurev-orgpsych-031413-091326.

Gambardella, A., Messinese, D., 2025. Design-based and theory-based approaches to strategic decisions. Organ. Sci., orsc.2023.18245 https://doi.org/10.1287/orsc.2023.18245.

Gofman, M., Jin, Z., 2024. Artificial Intelligence, Education, and Entrepreneurship. J. Financ. 79 (1), 631–667. https://doi.org/10.1111/jofi.13302.

Graebner, M.E., Knott, A.M., Lieberman, M.B., Mitchell, W., 2023. Empirical inquiry without hypotheses: A question-driven, phenomenon-based approach to strategic management research. Strateg. Manag. J. 44 (1), 3–10. https://doi.org/10.1002/smj.3393.

Gray, S.M., Howell, T., Sackett, E., 2024. Talking Past Each Other: Construal Level, Utilitarian Motives, and Entrepreneurial Team Formation. Organ. Sci. 35 (5), 1745–1769. https://doi.org/10.1287/orsc.2022.16693.

Gregori, P., Parastuty, Z., 2021. Investigating the process of entrepreneurial team member exits: A systematic review and future research directions. Rev. Manag. Sci. 15 (4), 847–878. https://doi.org/10.1007/s11846-020-00377-1.

Gruber, M., MacMillan, I.C., Thompson, J.D., 2012. From Minds to Markets: How Human Capital Endowments Shape Market Opportunity Identification of Technology Start-Ups. J. Manag. 38 (5), 1421–1449. https://doi.org/10.1177/0149206310386228.

Harrison, D.A., Klein, K.J., 2007. What's the difference? Diversity constructs as separation, variety, or disparity in organizations. Acad. Manag. Rev. 32 (4), 1199–1228. https://doi.org/10.5465/amr.2007.26586096.

Hashai, N., Zahra, S., 2022. Founder team prior work experience: An asset or a liability for startup growth? Strateg. Entrep. J. 16 (1), 155–184. https://doi.org/10.1002/sej.1406.

Iacobucci, D., Rosa, P., 2010. The Growth of Business Groups by Habitual Entrepreneurs: The Role of Entrepreneurial Teams. Entrep. Theory Pract. 34 (2), 351–377. https://doi.org/10.1111/j.1540-6520.2010.00378.x.

Jin, L., Madison, K., Kraiczy, N.D., Kellermanns, F.W., Crook, T.R., Xi, J., 2017. Entrepreneurial team composition characteristics and new venture performance: a meta–analysis. Entrep. Theory Pract. 41 (5), 743–771. https://doi.org/10.1111/etap.12232.

Jung, H., Vissa, B., Pich, M., 2017. How Do Entrepreneurial Founding Teams Allocate Task Positions? Acad. Manag. J. 60 (1), 264–294. https://doi.org/10.5465/amj.2014.0813.

Kerr, W.R., Nanda, R., Rhodes-Kropf, M., 2014. Entrepreneurship as experimentation. J. Econ. Perspect. 28 (3), 25–48. https://doi.org/10.1257/jep.28.3.25.

Kotha, R., Vissa, B., Lin, Y., Corboz, A.V., 2023. Do ambitious entrepreneurs benefit more from training? Strateg. Manag. J. 44 (2), 549–575. https://doi.org/10.1002/smj.3438.

Kristinsson, K., Candi, M., Sæmundsson, R.J., 2016. The Relationship between Founder Team Diversity and Innovation Performance: The Moderating Role of Causation Logic. Long Range Plan. 49 (4), 464–476. https://doi.org/10.1016/j.lrp.2015.12.013.

Lazar, M., Miron-Spektor, E., Agarwal, R., Erez, M., Goldfarb, B., Chen, G., 2020. Entrepreneurial Team Formation. Acad. Manag. Ann. 14 (1), 29–59. https://doi.org/10.5465/annals.2017.0131.

Lazar, M., Miron-Spektor, E., Chen, G., Goldfarb, B., Erez, M., Agarwal, R., 2022. Forming Entrepreneurial Teams: Mixing Business and Friendship to Create Transactive Memory Systems for Enhanced Success. Acad. Manag. J. 65 (4), 1110–1138. https://doi.org/10.5465/amj.2020.0393.

Leatherbee, M., Katila, R., 2020. The lean startup method: Early-stage teams and hypothesis-based probing of business ideas. Strateg. Entrep. J. 14 (4), 570–593. https://doi.org/10.1002/sej.1373.

Marvel, M.R., Davis, J.L., Sproul, C.R., 2016. Human Capital and Entrepreneurship Research: A Critical Review and Future Directions. Enterp. Theory Pract. 40 (3), 599–626. https://doi.org/10.1111/etap.12136.

Matlay, H., Westhead, P., 2005. Virtual Teams and the Rise of e-Entrepreneurship in Europe. Int. Small Bus. J. 23 (3), 279–302. https://doi.org/10.1177/0266242605052074.

McKenzie, D., Woodruff, C., 2014. What are we learning from business training and entrepreneurship evaluations around the developing world? World Bank Res. Obs. 29 (1), 48–82. https://doi.org/10.1093/wbro/lkt007.

McPherson, M., Smith-Lovin, L., & Cook, J. M. (2001). Birds of a feather: homophily in social networks. *Annu. Rev. Sociol.*, *27*, 415–444. JSTOR.

Morris, S., Carlos, C., Kistruck, G.M., Lount, R.B., Thomas, T.E., 2023. The impact of growth mindset training on entrepreneurial action among necessity entrepreneurs: Evidence from a randomized control trial. Strateg. Entrep. J. 17 (3), 671–692. https://doi.org/10.1002/sej.1472.

Mosey, S., Wright, M., 2007. From human capital to social capital: a longitudinal study of technology–based academic entrepreneurs. Entrep. Theory Pract. 31 (6), 909–935. https://doi.org/10.1111/j.1540-6520.2007.00203.x.

Novelli, E., Spina, C., 2024. Making business model decisions like scientists: Strategic commitment, uncertainty, and economic performance. Strateg. Manag. J. 45 (13), 2642–2695. https://doi.org/10.1002/smj.3636.

Ott, T.E., Eisenhardt, K.M., Bingham, C.B., 2017. Strategy Formation in Entrepreneurial Settings: Past Insights and Future Directions. Strateg. Entrep. J. 11 (3), 306–325. https://doi.org/10.1002/sej.1257.

Parker, S.C., 2009. Can cognitive biases explain venture team homophily? Strateg. Entrep. J. 3 (1), 67–83. https://doi.org/10.1002/sej.55.

Protogerou, A., Caloghirou, Y., Vonortas, N.S., 2017. Determinants of young firms' innovative performance: Empirical evidence from Europe. Res. Policy 46 (7), 1312–1326. https://doi.org/10.1016/j.respol.2017.05.011.

Read, S., Dew, N., Sarasvathy, S.D., Song, M., Wiltbank, R., 2009. Marketing under Uncertainty: The Logic of an Effectual Approach. J. Mark. 73 (3), 1–18. https://doi.org/10.1509/jmkg.73.3.001.

Reese, D., Rieger, V., Engelen, A., 2021. Should competencies be broadly shared in new ventures' founding teams? Strateg. Entrep. J. 15 (4), 568–589. https://doi.org/10.1002/sej.1356.

Ries, E., 2011. The lean startup: How Today's entrepreneurs use continuous innovation to create radically successful businesses. Crown Currency.

Ruef, M., 2010. Entrepreneurial groups. In: Historical Foundations of Entrepreneurship Research. Edward Elgar Publishing.

Santamaria, S., Abolfathi, N., Mahmood, I.P., 2024. Demand pull versus resource push training approaches to entrepreneurship: A field experiment. Strateg. Manag. J. 45 (3), 564–587. https://doi.org/10.1002/smj.3560.

Sarasvathy, S.D., 2001. Causation and Effectuation: Toward a Theoretical Shift from Economic Inevitability to Entrepreneurial Contingency. Acad. Manag. Rev. 26 (2), 243–263.

Sarasvathy, S.D., 2024. Lean Hypotheses and Effectual Commitments: An Integrative Framework Delineating the Methods of Science and Entrepreneurship. J. Manag. 50 (8), 3035–3063. https://doi.org/10.1177/01492063241236445.

Sarasvathy, S.D., Dew, N., 2005. New market creation through transformation. J. Evol. Econ. 15 (5), 533–565. https://doi.org/10.1007/s00191-005-0264-x.

Shah, S.K., Agarwal, R., Echambadi, R., 2019. Jewels in the crown: Exploring the motivations and team building processes of employee entrepreneurs. Strateg. Manag. J. 40 (9), 1417–1452. https://doi.org/10.1002/smj.3027.

Simmel, G. (1955). Conflict and The web of group-affiliations. (p. 193). Free Press.

Stojcic, N., 2024. Innovation failure, training for innovative activities and public support for innovation: Multi-annual evidence from emerging European innovation systems. Res. Policy 53 (8), 105059. https://doi.org/10.1016/j.respol.2024.105059.

Toft-Kehler, R., Wennberg, K., Kim, P.H., Kim, P.H., 2014. Practice makes perfect: Entrepreneurial-experience curves and venture performance. J. Bus. Ventur. 29 (4), 453–470. https://doi.org/10.1016/j.jbusvent.2013.07.001.

Toole, A.A., Czarnitzki, D., 2009. Exploring the Relationship Between Scientist Human Capital and Firm Performance: The Case of Biomedical Academic Entrepreneurs in the SBIR Program. Manag. Sci. 55 (1), 101–114. https://doi.org/10.1287/mnsc.1080.0913.

Tryba, A., Patzelt, H., Breugst, N., 2023. Knowledge diversity and venture growth: the contingent effects of early planning and experimentation. Br. J. Manag. 34 (1), 343–362. https://doi.org/10.1111/1467-8551.12600.

Tzabbar, D., Margolis, J., 2017. Beyond the Startup Stage: The Founding Team's Human Capital, New Venture's Stage of Life, Founder–CEO Duality, and Breakthrough Innovation. Organ. Sci. 28 (5), 857–872. https://doi.org/10.1287/orsc.2017.1152.

Ucbasaran, D., Lockett, A., Wright, M., Westhead, P., 2003. Entrepreneurial Founder Teams: Factors Associated with Member Entry and Exit. Entrep. Theory Pract. 28 (2), 107–128. https://doi.org/10.1046/j.1540-6520.2003.00034.x.

Vaghely, I.P., Julien, P.A., 2010. Are opportunities recognized or constructed?. An information perspective on entrepreneurial opportunity identification. J. Bus. Ventur. 25 (1), 73–86. https://doi.org/10.1016/j.jbusvent.2008.06.004.

Vissa, B., 2011. A matching theory of entrepreneurs' tie formation intentions and initiation of economic exchange. Acad. Manag. J. 54 (1), 137–158. https://doi.org/10.5465/amj.2011.59215084.

Vissa, B., Chacar, A.S., 2009. Leveraging ties: The contingent value of entrepreneurial teams' external advice networks on Indian software venture performance. Strateg. Manag. J. 30 (11), 1179–1191. https://doi.org/10.1002/smj.785.

Vohora, A., Wright, M., Lockett, A., 2004. Critical junctures in the development of university high-tech spinout companies. Res. Policy 33 (1), 147–175. https://doi.org/10.1016/S0048-7333(03)00107-0.

Wasserman, N. (2012). The Founder's Dilemmas. Princeton University Press; JSTOR. doi:https://doi.org/10.2307/j.ctvcm4hqc.

Wiltbank, R., Dew, N., Read, S., Sarasvathy, S.D., 2006. What to do next? The case for non-predictive strategy. Strateg. Manag. J. 27 (10), 981–998. https://doi.org/10.1002/smj.555.

Wuebker, R., Zenger, T., Felin, T., 2023. The theory-based view: Entrepreneurial microfoundations, resources, and choices. Strateg. Manag. J. 44 (12), 2922–2949. https://doi.org/10.1002/smj.3535.

Zahra, S.A., Gruber, M., Combs, J.G., 2024. Contextualizing Lean Startup and Alternative Approaches for New Venture Creation: Introducing the Special Issue. J. Manag. 50 (8), 2997–3007. https://doi.org/10.1177/01492063241264228.

Zellmer-Bruhn, M.E., Forbes, D.P., Sapienza, H.J., Borchert, P.S., 2021. Lab, Gig or Enterprise? How scientist-inventors form nascent startup teams. J. Bus. Ventur. 36 (1), 106074. https://doi.org/10.1016/j.jbusvent.2020.106074.

Zellweger, T., Zenger, T., 2022. Entrepreneurs as scientists, Bayesian inference, and belief revision. J. Bus. Ventur. Insights 18, e00350. https://doi.org/10.1016/j.jbvi.2022.e00350.

Zellweger, T., Zenger, T., 2023. Entrepreneurs as Scientists: A Pragmatist Approach to Producing Value Out of Uncertainty. Acad. Manag. Rev. 48 (3), 379–408. https://doi.org/10.5465/amr.2020.0503.