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FORMING ENTREPRENEURIAL TEAMS: MIXING BUSINESS AND FRIENDSHIP TO CREATE TRANSACTIVE MEMORY SYSTEMS FOR ENHANCED SUCCESS

Successfully navigating through critical uncertainties during the incipient stages requires new ventures to develop learning systems, and building the right team may be key in this process. Drawing on prior work indicating that entrepreneurial teams form using either an interpersonal-attraction strategy (relationships with similar others in a close network) or a resource-seeking strategy (instrumental focus on complementary skills), we theorize that a dual formation strategy, although challenging to execute, is critical for early performance. Using dual formation strategies from the onset fosters the development of stronger transactive memory systems, because close relationships facilitate smooth coordination among founders specializing in complementary tasks. Transactive memory systems thus mediate the relationship between formation strategies and early entrepreneurial success. Findings from two field observational studies and a field intervention study support our theory: teams formed based on a dual strategy raised greater seed funding on Kickstarter – a leading crowdfunding platform (Study 1), were more successful in a prestigious entrepreneurial competition (Study 2), and gained more profits from selling their initial products (Study 3). Our research advances knowledge on entrepreneurial team formation and offers practical recommendations to facilitate this process at such nascent, but critical stages.

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"[Success]...depends on three things: the general qualities of the founders, their specific expertise in this domain, and the relationship between them."

(Paul Graham (2020), cofounder of Y-Combinator, a leading U.S. seed accelerator).

As new ventures navigate through uncertainties and unforeseen challenges, they need to learn and adapt to meet stakeholder needs for entrepreneurial success (Ott, Eisenhardt, & Bingham, 2017; Pillai, Goldfarb, & Kirsch, 2020). Rather than being helmed by solo founders – akin to a 'one-person show' – most new ventures are created by teams (Wasserman, 2012). As such, new ventures operate more like an 'orchestra,' requiring an integrative system of specialized knowledge, skills, and capabilities coordinated and synthesized across multiple cofounders. Creating such an 'orchestra' refers to *entrepreneurial team formation* – the process through which founders establish a team to start a new venture. Lazar et al. (2020) note that entrepreneurial teams often form using either an *interpersonal attraction* strategy, which enables interpersonal fit by seeking similar and close partners (Francis & Sandberg, 2000; Ruef, Aldrich, & Carter, 2003), or a *resource seeking* strategy, which enables complementary fit by bringing together partners with requisite specialized knowledge (Clarysse & Moray, 2004; Mosey & Wright, 2007). Budding research documents a potential reliance on a *dual* strategy (Forbes, Borchert, Zellmer-Bruhn, & Sapienza, 2006; Grossman, Yli-Renko, & Janakiraman, 2012; Vissa, 2011), that may be associated with superior performance (Shah, Agarwal, & Echambadi, 2019). Yet, this work provides rather limited insights on how using single versus dual formation strategies may accelerate or impede the team's ability to develop learning systems for superior performance early on.

This research gap arises, in part, because most studies to date have examined entrepreneurial teams retrospectively (Lazar et al., 2020), and were thus unable to observe the extent to which teams were formed using a dual (versus single) strategy from the onset. In addition,

the (more macro) entrepreneurship lens utilized in most prior studies has overlooked the micro underpinnings of how founding teams' initial formation strategies may impact their ability to develop a learning system for internal coordination and utilization of specialized knowledge. For example, even though scholars have examined different types of learning processes in new ventures (Camuffo, Cordova, Gambardella, & Spina, 2020; Ott et al., 2017), they have not examined how learning systems may themselves be influenced by how the founding teams were formed. Addressing the research gap by uncovering micro mechanisms is especially important because initial team dynamics appear to leave long term, indelible marks upon new ventures (Knight, Greer, & De Jong, 2020), and learning mechanisms, in particular, are critical for early-stage entrepreneurial success (Cohen, Bingham, & Hallen, 2019; Contigiani & Levinthal, 2019).

In this research, we theorize and find that a dual formation strategy results in superior venture performance relative to either interpersonal attraction or resource seeking formation strategy due to the mediating role of emergent learning systems. We begin with highlighting the challenges in pursuing a dual strategy, given constraints in founders' cognitive attention or available networks (Aldrich & Kim, 2007; Kanfer & Ackerman, 1989). We articulate reasons why a dual strategy is valuable, rare, and difficult to imitate, thus contributing to new venture performance as reflected by successful navigation of critical early milestones such as raising seed funding, accessing mentorship in competitive accelerator programs, and making initial sales and profits. We then incorporate insights from team-learning theory into entrepreneurial team formation research to posit that the initial formation strategy shapes team learning repertoires, and these, in turn, impact early entrepreneurial success. Specifically, we integrate the concept of *transactive memory systems* – a shared system for encoding, storing, and retrieving information, which includes the knowledge of 'who knows and does what on the team' and transaction

processes among members (Ren & Argote, 2011; Wegner, 1987). We posit that the emergence of such systems to navigate uncertainties experienced by new ventures is a key reason why using dual formation strategies from the onset, while difficult to execute, results in superior performance. Thus, we offer transactive memory systems as a new mechanism to explain the effect of initial strategies on early entrepreneurial success. Empirically, we use multiple methods across diverse settings that allow us to examine critical early-stage performance indicators. Specifically, we find support for our hypotheses across two observational field studies and an intervention study.

Our research makes several meaningful contributions to the literature. First, we extend a recent framework proposed by Lazar et al. (2020) by developing and testing new theory on the challenges of new venture teams pursuing the dual (relative to singular) strategy, and the benefits of doing so for team learning. We suggest that although initially combining both formation strategies may be difficult to execute, the benefits of doing so are significant, as they allow for the emergence of team learning systems that foster early success. Importantly, by linking early formation strategies and venture performance, we answer a call for research (Agarwal, 2019) to address the limitations of prior work that primarily examined entrepreneurial team formation retrospectively, and thus may be subject to a significant selection and survivor bias.

Second, while extensive work has focused on strategic and resource-related factors influencing new venture performance (Camuffo et al., 2020; Pillai et al., 2020), budding research stresses the role of startup team dynamics and their effect on entrepreneurial success (Knight et al., 2020). Here, we embrace the integration of micro and macro lenses to provide a novel explanation: we suggest that selecting cofounders using the dual strategy facilitates the emergence of transactive memory systems early on in the team's lifespan, which are crucial for early entrepreneurial success. In so doing, we also extend research on antecedents of transactive memory

systems, which to date has overlooked early formation processes in both the entrepreneurship (Dai, Roundy, Chok, Ding, & Byun, 2016; Zheng, 2012; Zheng & Mai, 2013) and the broader teams literature (Ren & Argote, 2011). Indeed, the formation of new venture teams has been marked as a promising context to study transactive memory systems because "researchers can chart the development of those systems from the start of the firm" (Ren & Argote, 2011: 222).

Lastly, we contribute to the broader research on the developmental process of new venture teams (Vohora, Wright, & Lockett, 2004). We establish that the benefits of the dual strategy to the emergence of transactive memory systems generate a competitive advantage in terms of critical milestones associated with early entrepreneurial success vis-a-vis other teams who use a singular strategy. We also show that transactive memory systems contribute to entrepreneurial success above and beyond affective and structural alternative mechanisms (i.e., entrepreneurial passion and power structure). Relatedly, our investigation suggests that although teams may switch from one formation strategy to another over time, the initial use of dual strategies matters for transactive memory systems and performance. Overall, we offer timely and novel theoretical, empirical, and practical insights into how and why early team formation influences entrepreneurial success.

FORMING NEW VENTURE TEAMS

Scholars increasingly acknowledge the importance of the initial phase of team formation, in which founders select partners and build their teams (Lazar et al., 2020). This decision is particularly important because the founding team is the unit of individuals who pursue the new business idea, are involved in its subsequent management, and share ownership over the business from its initial to later stages (Bird, 1989). The initial partners define their roles in the new venture and establish communication systems that determine subsequent ability to learn, adapt, and navigate within a dynamic entrepreneurial environment (Cohen, 2013). In this highly uncertain

phase, new venture teams invest significant efforts in achieving initial milestones – each critical for their early success and survival – such as raising initial funds (Jiang, Yin, & Liu, 2019), winning entrepreneurial competitions and entering prestigious accelerator programs (Cohen & Hochberg, 2014), and cumulating initial profits from sales of their product (Camuffo et al., 2020; Shah et al., 2019). These milestones are not only critical for providing new ventures access to scarce resources during their nascent stage – they also serve as signals of legitimacy to facilitate scaling up for growth (Cohen et al., 2019).

Initial Entrepreneurial Team Formation Strategies and Early Entrepreneurial Success

As the opening quote by Graham (2020) suggests, early entrepreneurial success depends on the founding teams' collective expertise and relationships. Thus, entrepreneurial team formation is a critical antecedent to early entrepreneurial success (Lazar et al., 2020). Here, existing research documents that regardless of whether new venture teams originate due to a search process enacted by a lead founder or an initial group, there are two dominant formation strategies. The interpersonal-attraction strategy represents a *relational search* process by which founders take advantage of their close and immediate network (e.g., family and friends), where homophily and attraction govern the initiation of cofounder ties based on homogeneity and strong relationships (Aldrich & Kim, 2007; Ruef et al., 2003). Alternatively, the resource-seeking strategy reflects a *rational search* process within a more distributed network for cofounders who have complementary knowledge and skills, where economic instrumentality is key to establishing cofounder ties (Davidsson & Honig, 2003; Mosey & Wright, 2007).

A recent literature review notes that most studies identified one formation strategy or the other, implicitly assuming that founders utilize a singular strategy without articulating reasons why (Lazar et al., 2020). We build on resource scarcity and bounded rationality to develop the

theoretical rationale for why founders may engage in a singular strategy. We begin by noting that team formation occurs within a highly uncertain setting that is fraught with resource scarcity even as resource needs and stakes are high (Wasserman, 2012). This context requires aspiring founders to access, interpret, and process information to recognize and realize an opportunity, even as they face network constraints and may be boundedly rational (Cohen et al., 2019).

Pursuing the dual formation strategy exacerbates these challenges because of inherent differences in network search and use of criteria in each component strategy. First off, potential cofounders who embody strong pre-existing relationships and also possess requisite complementary resources may be rare, particularly if searching in a homogenous and/or limited network. For example, aspiring founders from academia with scientific knowledge often do not have pre-existing strong ties with individuals who have complementary industry knowledge (Clarysse & Moray, 2004; Mosey & Wright, 2007). Hence, a dual strategy is not necessarily feasible for all entrepreneurs if individuals with the best complementary skills are not present in their close network *or* they do not have access to such potential cofounders. Second, founders may search for partners in both their immediate and distributed networks simultaneously; yet, when resources are limited, allocating resources toward achieving one strategy reduces available resources for pursuing the other strategy (Kanfer & Ackerman, 1989). Aspiring founders may simply not have the needed cognitive attention, time, and funding to search for and identify cofounders with attention to both interpersonal attraction and resource seeking. In these situations, inherent differences in goals and criteria involved in pursuing both strategies create competing demands. Increasing interpersonal fit requires search in one's close network of friends and family members, and primacy on socializing with others based on like characteristics. In contrast, increasing complementary fit requires search for partners in one's broader network, and primacy

on functional criteria needed for the venture to accomplish its early-stage tasks. Although the strategies are not mutually exclusive, related research suggests that when confronted with competing demands and scarce resources, individuals experience tensions and often resort to choosing one strategy and maintaining a consistent commitment to it (Miron-Spektor, Ingram, Keller, Smith, & Lewis, 2018). In light of these challenges, we assume that the incidence of the use of a dual formation strategy will be much lower than a single strategy alone.

While rare and difficult to enact, the use of dual formation strategies may be advantageous because it is more likely to ensure both interpersonal and complementary fit among founding members from the onset (Lazar et al., 2020). For example, Shah et al. (2019) documented potential benefits for employee spinouts (new ventures where founding teams draw from the established firms in the same industry) in the disk drive industry whose cofounders aligned on both workplace values and knowledge complementarities. Other studies have documented that in contrast, when founding teams were initially formed using an interpersonal attraction strategy, they failed when experiencing crisis during critical milestones (e.g., obtaining funding, creating legitimacy, achieving first sales), and those who survived often switched to a resource seeking strategy (Clarysse & Moray, 2004; Vohora et al., 2004). Building on this literature, we emphasize that while some new ventures may switch strategies and eventually optimize their team composition, this is a risky path that may impair success. Starting with one strategy alone may lead to group faultlines and deficiencies (Vohora et al., 2004) which may weed out of new ventures during the phases of initial venture financing, entry into incubators and accelerators, and an inability to create viable products and sales. Additionally, switching strategies entails costs associated with redefining structural features (e.g., roles), work practices and processes, and socialization of new members into the shared system (Weber & Camerer, 2003), all of which have been documented to

undermine performance within the teams literature (Rao & Argote, 2005). Thus, cofounder selection based on both demands is rare, difficult, and costly to achieve, and yet it is likely to be advantageous relative to relying solely on interpersonal attraction or complementary skills.

Specifically, when founders start with focusing on interpersonal attraction *alone*, they put primacy on socializing with others based on like characteristics. Although this is helpful for mutual understanding among members (Francis & Sandberg, 2000), their proximal network ties are more likely to provide overlapping information (Burt, 1997) rather than complementary knowledge for executing a comprehensive set of tasks, which may cause a struggle to define distinctive roles and assign tasks (Jung, Vissa, & Pich, 2017). In contrast, if the initial focus is on resource seeking, founding teams may address instrumental needs, but the potential benefits of diverse knowledge may not be realized due to interpersonal challenges, miscommunication, and conflicts that could arise due to lack of prior relational capital (Francis & Sandberg, 2000).

If instead, founders consider both the instrumental and relational aspects when forming their team, the team will have a significant advantage from the onset. Related research outside of entrepreneurial contexts supports this premise. For example, scientific teams where members had prior collaborative relationships were better able to harness the benefits of their intellectual diversity, leading to higher acceptance rates of grant applications (Snellman, Dahlander, Askin, & Solal, 2020). This resonates with findings that multiplex ties in the workplace (i.e., capturing both mutual relations and unique expertise) can benefit performance (Methot, Lepine, Podsakoff, & Christian, 2016). More broadly, team studies suggest that engaging in seemingly opposing strategies improves performance (Gebert, Boerner, & Kearney, 2010; Miron-Spektor & Paletz, 2020). For instance, teams that developed specialized roles and shared language from the initial work together outperformed teams that advanced one of these elements alone (Reagans, Miron-

Spektor, & Argote, 2016). Building on these insights in the teams literature and extending work on entrepreneurial team formation (Lazar et al., 2020), we argue that combining both strategies early on will enhance entrepreneurial success relative to relying on one strategy alone. The dual strategy provides value, is rare and difficult to imitate (if not adopted at the onset), and thus a source of early competitive advantage.

Hypothesis 1: Founding teams that utilize a dual formation strategy from the onset reach higher early entrepreneurial success relative to founding teams that engage in either one (or none) of interpersonal attraction and resource seeking strategy alone.

Team Formation Strategies and the Creation of Transactive Memory Systems

While the above rationale suggests that the initial formation strategy is crucial to early performance, it does not fully develop the micro-mechanisms at play. Here, entrepreneurship scholars have recognized that new ventures have to learn and adapt to meet stakeholder needs for entrepreneurial success (Ott et al., 2017; Pillai et al., 2020). The imperative to learn stems from new ventures' need to address unforeseen obstacles, adjust to constraints, and adapt over time according to market trends and needs recognized by potential investors, customers, or mentors (Cohen et al., 2019). Unless they develop learning systems quickly early on, entrepreneurial teams may lag behind and struggle to survive beyond initial stages. However, the literature is silent on how ventures helmed by teams (rather than solo founders) create learning systems to orchestrate their performance under conditions of resource scarcity and bounded rationality. We address this by explicitly linking the initial formation strategies to the development of team learning systems.

Within the team-learning literature, scholars have highlighted *transactive memory systems* as a key driver for team learning, defined as "the collective system that individuals in a close relationship use to encode, store, and retrieve knowledge" (Ren & Argote, 2011: 190). A specific

type of team mental models, transactive memory systems include both a structural component reflecting the links between individual memories which create a collective knowledge network, and transactive processes to enable encoding, storing, and retrieving of team members' memories (Wegner, Giuliano, & Hertel, 1985). These systems enable members to recognize their different expertise, accurately search for and locate required knowledge, and solve problems efficiently by matching tasks to members with relevant expertise (Moreland & Myaskovsky, 2000). They also permit members to develop deeper expertise in their specified areas so that as a collective, the team gains a larger pool of information for performing their various tasks (Lewis, 2003).

Existing research on transactive memory systems notes that it emerges through the *initial* shared experience of working together as a team. Here, scholars have documented that initial experience allows members to determine the fit of expertise and ascertain how to work as a collective unit (Reagans et al., 2016). When trained together from initial stages, teams can learn from observing each other and develop communication channels to share different perspectives and knowledge. These allow them to specialize, trust each other's expertise, and coordinate their activities effectively (Liang, Moreland, & Argote, 1995). However, less is known about how transactive memory systems may emerge as a result of team formation or selection processes. At the onset, entrepreneurial teams lack formal structure, task procedures, and a shared perspective of their work (Knipfer, Schreiner, Schmid, & Peus, 2018). We argue that engaging in the dual formation strategy enables founders to leverage the selection criteria of each strategy in their initial interactions to create stronger structural and process components of transactive memory systems.

Specifically, the use of resource seeking strategy alone ensures that teams have diverse expertise. Heightened awareness of these differences requires members to focus their efforts during their initial experiences towards surfacing and reconciling discrepancies in their perceptions

(Phillips & Loyd, 2006), to make it easier to identify "who knows what" and embed this shared understanding into a collective memory system. Yet, a lack of common ground may lead to entrenchment; as such, a team of experts may suffer from communication problems that hinder team members' ability to incorporate each other's perspectives and coordinate their actions (Dane, 2010). Such communication problems may result in early turnover, and/or require members to spend costly time and effort during their initial experiences to constructively address these issues and build effective transactive memory processes. In contrast, using interpersonal attraction strategy alone enables teams to build on prior experience and shared understanding so that their initial interactions within the newly formed entrepreneurial team is aided by their pre-existing mutual understanding and similarity. However, these teams will experience gaps in the memory structure and division of labor components of their transactive memory systems. Their homogeneity will create a lack of depth and breadth of requisite expertise and struggles in defining distinct roles and matching tasks with expertise. These initial experiences may result in crisis at critical milestones (Vohora et al., 2004), and require team members to spend costly time and effort to address structural gaps in their transactive memory systems.

However, when both interpersonal attraction and resource seeking strategies are used from the onset, initial experiences that are critical for transactive memory systems are jointly facilitated by complementary expertise *and* familiarity and shared understanding. During their initial experiences as a newly created founding team, members can leverage their knowledge of proximate close others who bring complementary expertise to quickly establish the role structure and fruitful relationships, and develop processes that facilitate trust and coordination (Lewis, 2004). Interpersonal attraction allows team members to share unique information and resolve potential conflicts in an environment of safety and trust, while resource seeking leverages expertise

of the various team members for improved accuracy of knowledge identification and development of capabilities. Thus, interpersonal attraction and resource seeking become mutually reinforcing, leading to a virtuous spiral in initial experiences for the swift creation of stronger transactive memory systems. Based on the above reasoning, we posit that forming teams based on the dual strategy facilitates the emergence of stronger transactive memory systems.

Hypothesis 2: Founding teams that utilize a dual formation strategy from the onset reach stronger transactive memory systems relative to founding teams that engage in either one (or none) of interpersonal attraction and resource seeking strategy alone.

The Mediating Role of Transactive Memory Systems in the Relationship Between Formation Strategies and Entrepreneurial Success

We now turn to the rationale for why stronger transactive memory systems are key for new venture success, based on the extensive research by micro scholars documenting that transactive memory systems improve team performance (Ren & Argote, 2011). Transactive memory systems enable teams to form distinct roles and accumulate deeper and broader knowledge, but also to integrate across members and tasks more effectively. This enables teams to better match members with tasks, thus utilizing members' unique contributions more effectively (Reagans et al., 2016). Teams with stronger transactive memory systems make fewer errors and better decisions, work faster, and find more creative solutions (Ren & Argote, 2011). These principles critically apply for the effects of transactive memory systems in new venture contexts, because founding teams are often synonymous with the new ventures and integral to their associated likelihood of success and failure (Wasserman, 2012). Indeed, entrepreneurship scholars have noted the importance of task position allocation and coordination among founders who possess complementary resources (Jung et al., 2017), and that sharing task perspectives among diverse founders advances entrepreneurial

performance (Beckman, 2006). Transactive memory systems can help entrepreneurial teams improvise (Zheng & Mai, 2013), spur the development of entrepreneurial orientations within the team (Dai et al., 2016), and facilitate perceptions of new venture growth (Zheng, 2012). Taken together, we suggest that teams with stronger transactive memory systems better utilize team members' expertise and coordinate their activities. As such, stronger transactive memory systems enable founding teams to strategize through an iteration between doing and thinking (Ott et al., 2017), so they can address challenges and leverage opportunities for early entrepreneurial success.

Hypothesis 3: Transactive memory systems positively influence early entrepreneurial success.

Building on the logic of preceding hypotheses, we argue that transactive memory systems mediate the relationship between formation strategies and early entrepreneurial success. A dual formation strategy accelerates the emergence of stronger transactive memory systems. The speed and efficiency through which stronger transactive memories are created in turn enhance success of entrepreneurial teams, given that they operate in a context fraught with uncertainty and resource scarcity. Specifically, early development of stronger transactive memory systems through use of dual strategy enables founding teams to create legitimacy and garner support from critical stakeholders to acquire initial financing, as well as position themselves favorably for entry into and performance in accelerators (Mosey & Wright, 2007). Relative to founding teams that utilize *either* interpersonal attraction *or* resource seeking that spend costly time and effort responding to crisis, those formed with a dual strategy can capitalize on their transactive memory systems to evolve rapidly through the various stages of new venture development (Vohora et al., 2004).

Hypothesis 4. Transactive memory systems mediate the effect of formation strategies on early entrepreneurial success.

OVERVIEW OF EMPIRICAL STUDIES

Recognizing the diversity of entrepreneurship contexts and success criteria, we test our theoretical model in three field studies using complementary observational and experimental designs across different settings and indicators of early entrepreneurial success. In Study 1, we test Hypothesis 1 using measures of formation strategies and early entrepreneurial success, with data extracted and coded from Kickstarter – a leading global crowdfunding platform where backers are also early customers. Because raising seed capital is a key indicator of initial entrepreneurial success, crowdfunding platforms represent a rich setting to test early venture performance (Mollick, 2014). In Study 2, we examine the relationships between formation strategies on early entrepreneurial success, and the underlying effect of transactive memory systems (Hypotheses 1-4) over time, using time-lagged data of nascent entrepreneurial teams in a leading technology entrepreneurship competition in Israel. Pre-seed entrepreneurial programs provide a fertile ground to study early-stage teams, even before they leave public traces (Cohen, 2013). In addition, as technology is a high-growth entrepreneurship domain (Wasserman, 2012), technology-based programs are key settings to study entrepreneurial endeavors. In Study 3, we test whether an intervention could help newly formed reap the benefits of a dual strategy. To do so, we conduct a pre-registered field experiment (randomized controlled trial) in a multi-section entrepreneurship course in a large East Coast U.S. university. We establish causality by testing whether manipulated formation strategies lead teams to develop stronger transactive memory systems, which in turn boost their early entrepreneurial success (Hypotheses 1-4). As recently noted, using experimental methods holds promise for advancing entrepreneurship research (Williams, Wood, Mitchell, & Urbig, 2019), and intervention studies could reveal the potential of facilitating early entrepreneurial endeavors (Camuffo et al., 2020; Clingingsmith & Shane, 2018). Finally, we also

consider alternative explanations for our theorized learning mechanism, such as entrepreneurial passion in Study 2, and a power structure (i.e., equity distribution among founders) in Study 3. Together, these studies test our theory across samples and methods, using data from a global platform and two major entrepreneurial hubs – the U.S. and Israel.

STUDY 1

Setting

In this field study, we used objective, unobtrusive, large-scale data retrieved from Kickstarter to examine whether team formation strategies influence crowdfunding outcomes. Crowdfunding is an emerging method of raising funds from many individuals (Mollick, 2014). Established in 2009, Kickstarter is a public-benefit corporation that maintains a global crowdfunding platform. With over $4.7 billion in pledges, Kickstarter has supported more than 176,300 projects in a variety of areas. Kickstarter campaigns are distributed across 15 general categories (e.g., fashion, technology), which are subdivided into 165 subordinate tags (e.g., apps, robots). In the Kickstarter model, founders set a goal (an amount of money sought) and a deadline (a period through which people can back the project). Individuals (backers) can back a project by pledging without reward, or in return for future products. Kickstarter operates under an 'all-or-nothing' model, whereby founders receive the funding if the project reaches its goal by the deadline. Many Kickstarter projects are early-stage ventures (Mollick, 2014).

Kickstarter campaigns include information about the product or service, and may, at the founders' discretion, include information about the development process, the timeline of production, and the founding team. The latter allows teams to disclose details about the founders and team formation. For example, the HEXO+ team, who invented an intelligent drone-based camera, described: "*Our team came together organically, thanks to our complementary skills…*

and the breadth of our combined expertise is something we still marvel at to this day". Similarly, the Smart Wallet team, which developed a fashionable wallet designed with built-in Bluetooth and GPS tracker, stated: "*It all started with two best friends and a lost wallet*".

Sample

We scraped all technology ventures launched and raised money on Kickstarter between April and December 2014 using the Urllib and the bs4 packages for Python. We focused on projects in the technology category because these mostly represent new ventures, compared to other creative endeavors (e.g., art, dance; Li, Chen, Kotha, & Fisher, 2017). Among the initial sample of 875 projects, 175 reported they were launched by a solo founder. Out of the remaining 700 projects, 206 teams (29.43%) included information about the team formation on their Kickstarter campaign; these comprised our final sample of ventures which collectively raised over $25 million, with an average of 830.72 backers and a $123.192K pledge per new venture.

Given that disclosure of team information is voluntary, we should expect that founders who disclosed this information thought it was beneficial. Interestingly, ventures who included team information in their campaign indeed raised more funding (M = 123.19K, SD = 241.82) relative to those who did not (M = 61.73K, SD = 157.16, $t_{(873)} = 4.27$, $p < .001$). As such, we suspect that entrepreneurs in our sample may be more impressive or savvy than those who did not disclose team information. Although we do not view the distribution of formation strategies observed in this sample as representative of that in the general population of technology startups, we seek to constructively replicate results with different samples and settings in Studies 2 and 3.

Measures

Formation strategies. Two independent judges (undergraduate research assistants), blind to the research objectives, read the campaigns and coded the basis for the cofounder-relation

initiation (see Appendix A for examples). Specifically, given the information included in the campaign, coders assessed whether cofounder relations were based on friendship, family ties, romantic ties (i.e., interpersonal attraction), or professional, entrepreneurial, and educational background (i.e., resource seeking; Cohen's Kappa = .91, $p < .01$). Before employing the evaluation by independent coders (Gino, Argote, Miron-Spektor, & Todorova, 2010), we trained coders using ten pilot campaigns. Based on the distinctions noted by Lazar et al. (2020), we classified these bases for cofounder-relation initiation as interpersonal attraction (friendship, family, and romantic relations), resource seeking (professional, entrepreneurial, and educational background), or dual strategies (a combination of more than one type across strategies). Two dummy variables were created, with interpersonal attraction as the omitted referent.

Early entrepreneurial success. We measured early entrepreneurial success as the funding amount in US dollars (Jiang et al., 2019; Li et al., 2017). While most campaigns were launched in the U.S., some projects originated in other countries and raised funds in other currencies (e.g., Euro). We converted these non-U.S. dollar currencies to U.S. dollars using the respective average exchange-rates in 2014 (Soublière & Gehman, 2019).[1] We describe and present funding amounts in units of $1000 (K$) for a more convenient interpretation of results.

Controls. We controlled for variables associated with crowdfunding outcomes. We controlled for campaign duration (in days) because longer campaigns may provide a wider timeframe to reach ambitious goals but may also signal lack of confidence (Jiang et al., 2019; Mollick, 2014). Because previous work suggested that geographic location may affect crowdfunding results, and that U.S.-based ventures may differ from foreign ones (Johnson, Stevenson, & Letwin, 2018; Li et al., 2017), we controlled for whether the venture was based in

[1] Average exchange rates of other currencies to US dollars in 2014 were 1.33 (Euro), 1.16 (CAD), 1.11 (AUD), 1.56 (GBP), 0.83 (NZD), 0.16 (DDK), and 0.13 (SEK).

the U.S. We also controlled for whether the project was promoted by Kickstarter (i.e., staff-pick), because "the promotion of featured projects by Kickstarter, which is not driven by financial remuneration but rather the preferences of the Kickstarter staff, is likely to help projects succeed" (Mollick, 2014), and was associated with higher pledges (Soublière & Gehman, 2019). As prior experience can benefit entrepreneurial performance (Wasserman, 2012), we also controlled for prior Kickstarter experience and prior entrepreneurial experience more generally. We measured prior Kickstarter experience by whether campaigns were launched by entrepreneurs who had at least one previous crowdfunding campaign documented on Kickstarter (as in Soublière & Gehman, 2019). Prior entrepreneurial experience was measured by whether entrepreneurs had prior experience in founding new ventures (Mosey & Wright, 2007), as reported in their campaign for at least one team member. Lastly, to control for the effect of the venture type tagged by Kickstarter (Johnson et al., 2018), we used a set of dummy variables (e.g., sound, flight), with 'technology' as the omitted referent. We evaluate the robustness of results to these controls by testing Hypothesis 1 with the inclusion and exclusion of control variables.

Results

Table 1 presents the means, standard deviations, and correlations between variables. Our classification of strategies revealed that the largest number of teams were founded based on the resource seeking strategy (n = 128 teams) following the interpersonal attraction strategy (n = 42 team). Fewer teams reflect the dual formation strategy (n = 36 teams). Thus, in line with our theoretical rationale regarding incidence of formation strategies, teams were significantly more likely to adopt one formation strategy (82.5% of teams adopted either resource seeking or interpersonal attraction strategy) than the dual strategy (17.5% of teams), $t_{(205)} = 12.26$, $p < .01$. Foreshadowing our analyses of Hypothesis 1, the dual strategy was positively correlated with

funding amount, and so was promotion of the venture by Kickstarter. Campaign duration and geographic location were not correlated with funding amount

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Insert Table 1 about here

To test whether teams formed based on different formation strategies differed in the funding amount, we performed a one-way analysis of variance (ANOVA). We revealed a significant difference between the mean funding amounts of teams formed with different formation strategies ($F_{(2,203)} = 6.82$, $p < .01$, $\eta^2 = .26$). A Tukey multiple-comparison honest significant difference (HSD) post-hoc test indicated that teams formed based on the dual strategy raised greater funding amount ($M = 232.16$, $SD = 383.76$) than those formed based on resource-seeking alone ($M = 121.50$, $SD = 217.96$, $t_{(162)} = 2.49$, $p < .05$) and those formed based on interpersonal-attraction alone ($M = 34.96$, $SD = 33.21$, $t_{(76)} = 3.70$, $p < .01$). Interestingly, teams formed based on resource-seeking alone were more successful in raising funds than those formed based on interpersonal attraction alone ($p = .10$). This pattern of results is plotted in Figure 1.

We also estimated an ordinary least squares (OLS) regression predicting the funding amount raised on Kickstarter, controlling for the aforementioned campaign and venture-related variables (see Table 2). We found that compared to forming the team based on interpersonal attraction alone, forming the team using the dual strategy was associated with a greater funding amount ($b = 148.05$, $SE = 55.72$, $p < .01$). Forming a team based on resource seeking alone was not associated with an increase in the funding amount compared to forming the team based on interpersonal attraction alone. These results are consistent with Hypothesis 1.

Insert Figure 1 and Table 2 about here

Robustness Tests

We assessed the robustness of results using alternative measures of entrepreneurial success, using the same set of controls shown in Table 2. Similar to Soublière and Gehman (2019), we first counted the number of backers who pledged their support to the campaign on Kickstarter to estimate entrepreneurial success. A Poisson regression revealed that teams formed based on the dual strategy had greater number of backers, compared to teams formed based on interpersonal attraction (Exp (b) = 2.18, $p < .001$) or resource seeking alone (Exp (b) = 1.58, $p < .001$). Second, because the goal set by the team can anchor the funding amount (e.g., these were significantly correlated at .48), and once teams reach their goals the campaign is considered successful by Kickstarter, we also measured the funding amount teams raised above and beyond the initial goal they set. Findings revealed a similar pattern: teams formed based on the dual strategy raised more funding above and beyond their initial goal relative to teams formed based on interpersonal attraction (b = 118.94, SE = 52.06, $p < .05$) or resource-seeking alone (b = 73.26, SE = 43.92, p = .10). Lastly, because team size has been generally positively associated with entrepreneurial performance (Klotz et al., 2014), research assistants coded the number of team members, when reported (data were available for 114 teams). Controlling for team size in our model yielded similar results; forming teams using the dual strategy was associated with a greater funding amount compared to forming the team based on interpersonal attraction (b = 107.80, SE = 49.51, $p < .05$) or resource seeking alone (b = 92.56, SE = 43.76, $p < .05$).

Discussion of Study 1 and Segue to Study 2

In Study 1 we found initial support for Hypotheses 1: although adoption of the dual formation strategy was less common, teams formed based on the dual strategy raised more money on Kickstarter compared to those formed based on either singular strategy alone. In Study 2, we

aim to replicate and extend Study 1 in several important ways. First, while the Kickstarter platform offers access to rich and unobtrusive data, the information included on Kickstarter campaigns is deliberately chosen by the team to generate *public* appeal for acquiring seed financing (e.g., going 'viral', targeting a mass market). To the extent that this information may be biased toward public exposure, in Study 2, we use data on entrepreneurial teams in a setting where such public traces are less relevant. Study 2 also allows us to examine the impact of formation strategies on an alternative measure of entrepreneurial success, based on a critical milestone that occurs well before teams begin to raise seed funds. Second, while Study 1 utilizes cross-sectional data, in Study 2 we test the relationship between formation strategies and entrepreneurial success over time. This allows us to embrace a process-view for testing anticipated outcomes of formation strategies over time, rather than using a static indicator. Moreover, while entrepreneurial success on Kickstarter (i.e., crowdfunding) is reliant on the judgement of layperson backers (often potential customers), in Study 2 we use evaluations of experts regarding whether teams should enter and survive in an entrepreneurial competition. Finally, Study 2 enables us to test our entire theoretical framework using observational data: in addition to constructively replicating support for Hypothesis 1, we test how formation strategies affect success through transactive memory systems (Hypotheses 2-4).

STUDY 2

Setting, Sample, and Procedures

In this field study, we used data from the leading technology-driven entrepreneurship competition in Israel. Operating since 2004, this prestigious competition has led to over 130 new ventures established by alumni, who raised more than $400 million. The annual competition invites early-stage teams to develop their ventures, which span across various domains (e.g., meditech, fintech, e-commerce). The competition lasts eight months, with four main phases and three judging

rounds. This allowed us to collect multi-source time-lagged data on entrepreneurial teams in their embryonic phase (see Appendix B1 for a summary of the competition timeline).

Our sample included 631 entrepreneurs in 242 pre-seed venture teams enrolled in the 2016 and 2017 cycles of the annual competition. For each cycle, the competition starts with the *prelims phase*, in which teams complete an application form wherein they elaborate on the need, the venture, the competitive advantage, the potential market, the business model, the team (i.e., who the team members are and how the team was formed), and demographic characteristics. Although the competition is designed for team-based new ventures, 18 new ventures were initiated by solo founders, and therefore were excluded from our sample. A reviewing committee then reads the application forms to assess the potential of the teams, and chooses 30 teams which will enter the *e-school*. The e-school phase includes workshops of various topics such as market analysis, business model, customer discovery, and legal issues. During this phase, teams are trained to pitch their ideas and provided with mentoring sessions by serial entrepreneurs and experts. In the last week of the e-school, entrepreneurs reported the transactive memory systems developed in their team. The e-school phase ends with the *semi-finals* event, in which teams pitch their idea to a judging panel comprising industry veterans. The panel evaluates each team on various criteria. Based on these, 12 teams are chosen to enter the *summer accelerator*. During this phase, each team is matched with a dedicated mentor specializing in the venture domain. Teams receive continuous guidance to advance their idea into a proof of concept or a working prototype. The summer accelerator ends with the *finals* event, wherein teams pitch their idea to the judging panel. The panel again evaluates each team on the same criteria. These evaluations form the basis for selecting the winning team, who is announced at the *demo-day* event, in which teams present their ventures to an audience of 120 investors and corporate key players.

Due to the funnel model of the competition, the competition rounds weed the number of teams from ~120 teams to 30 semi-finalists, and then 12 finalists each year. During the e-school phase, teams reported transactive memory systems, and we received data from 37 out of 60 teams (60.7% response rate). In four teams, there was only one respondent to the transactive memory system measure. Because team/firm-level data provided by a single key informant is commonly used in entrepreneurship research (e.g., Beckman, 2006), and cofounders of new venture teams are highly engaged in, and familiar with the team activity (Wasserman, 2012), we included these teams in our analyses. Excluding these teams did not change the nature of results.

Measures

Formation strategies. As in Study 1, two independent judges (undergraduate research assistants), blind to the research objectives, were trained, and read the applications to code the basis for cofounder-relation initiation (Cohen's Kappa = .87, $p < .001$). These were classified as interpersonal attraction, resource seeking, or dual strategy (for examples, see Appendix A). We created two dummy variables, with interpersonal attraction as the omitted referent.

Transactive memory systems. We measured transactive memory systems using 12 items from the scale developed by Lewis (2003) with a 7-point scale ranged from 1 "strongly disagree" to 7 "strongly agree (e.g., "Each team member has specialized knowledge of some aspect of our project", "Our team works together in a well-coordinated fashion"; $\alpha = .93$). This scale has been widely used in both laboratory and field settings (Ren & Argote, 2011), as well as in various contexts, including teams in organizations (Reagans, Argote, & Brooks, 2005), student-based teams (Reagans et al., 2016), and entrepreneurial teams (Zheng & Mai, 2013). Items formed a single score per individual, and then aggregated to the team-level, using average scores of members per team. Justifying aggregation to the team-level, inter-member agreement was high (median $r_{wg(j)}$

= .95; using a uniform expected variance distribution), and inter-member reliability was sufficiently strong (ICC(1) = .43, ICC(2) = .60, $F_{(36, 72)} = 2.50$, $p < .01$; Bliese, 2000).

Early entrepreneurial success. We measured early entrepreneurial success in terms of advancement to different phases of the competition, including whether teams (a) were selected to the competition (i.e., entered the e-school phase) and (b) survived in the competition (i.e., remained in the competition based upon the screening process; Camuffo et al., 2020). Selection for the competition is highly competitive, with only 25% of the applicants entering the e-school (a dummy variable was coded as "1" for entering the competition and "0" otherwise). Survival was measured through the number of months teams continued participating in the competition.

Controls. We controlled for variables associated with early performance of new venture teams. As in Study 1, we controlled for team size. We also controlled for proportion of women, because research showed mixed findings as to the performance of women-led teams, compared to men-led ones (Johnson et al., 2018; Kanze, Huang, Conley, & Higgins, 2018). We controlled for the competition cycle using a dummy variable (1 = 2017 and 0 = 2016). Lastly, we controlled for the effect of the venture type identified by the competition staff (Camuffo et al., 2020), using a set of dummy variables (e.g., e-commerce, meditech), with 'social' as the omitted referent.

Results

Table 3 presents the means, standard deviations, and correlations between variables. As in Study 1, fewer teams formed based on the dual strategy (n = 23) relative to either the interpersonal attraction (n = 76 teams) or the resource seeking (n = 125 teams) strategies, $t_{(223)} = 19.55$, $p < .01$. The dual strategy was positively correlated with the chance to enter the competition, as was the team size. Team formation based on the resource-seeking strategy alone was not correlated with the chance to enter the competition, nor was the gender makeup of the team. The use of a dual

strategy was positively correlated with higher levels of transactive memory systems, and these were associated with a greater chance to pass the semi-finals.

Insert Table 3 about here

Entering the competition. We first performed a chi-square test of independence to examine whether formation strategies were independent of the likelihood to enter the competition. Findings indicated that (a) among teams formed with an interpersonal-attraction strategy, 19.7% were selected for the competition; (b) among those with a resource-seeking strategy, 23.2% were selected for the competition, and (c) among teams who followed the dual strategy, 69.6% were selected for the competition ($x^2_{(2)} = 24.21$, Φ_c=.33, $p < .001$). Consistent with the rationale of Hypothesis 1, these results show that even though teams formed using a dual strategy had the lowest incidence, they were much more likely to be successful in the competition. Furthermore, a logistic regression predicting the likelihood to successfully pass the first judging round and enter the competition produced similar results. In line with Hypothesis 1, compared to forming a team based on interpersonal attraction alone, reliance on the dual strategy predicted an increased likelihood to enter the competition ($b = 2.11$, $p < .01$, $OR = 8.26$). Forming a team based on a resource-seeking alone was not associated with the likelihood to enter the competition, compared to interpersonal attraction alone ($b = .14$, $p = .74$, $OR = 1.16$; see Table 4a).

***Surviving the competition*.** We further examined the survival of teams in the competition. A Mantel-Cox (log-rank) test revealed a significant difference between the survival distributions of formation strategies ($x^2_{(2)} = 22.62$, $p < .001$). The Kaplan-Meyer survival plot is illustrated in Figure 2. To further test whether the dual strategy was associated with entrepreneurial success, we performed a survival model with the number of months in the competition representing the

duration of survival in the sample. Failure events for assessing the hazard rate were coded "1" if the team was eliminated from the competition (and "0" otherwise). A Cox (proportional-hazard) regression predicting team elimination from the competition revealed that compared to forming a team based on interpersonal-attraction alone, forming the team based on the dual strategy was associated with a lower hazard rate of being eliminated from the competition (b = -.67, $Wald_{(1)}$ = 4.65, $p < .05$; see Table 4a). These results are also in line with Hypothesis 1.

Insert Figure 2 and Table 4a and Table 4b about here

The mediating role of transactive memory systems. We further tested whether using the dual strategy (measured in the prelims phase) was associated with stronger transactive memory systems (measured in the e-school phase), which in turn were associated with higher likelihood of passing the semi-finals and entering the final competition phase (the summer accelerator phase). Because sample size for these analyses only included 37 teams (given the funnel model of the competition and response rate), we used more liberal tests and benchmarks (i.e., $p < .10$), and conducted these tests without control variables, to preserve sufficient statistical power. To test whether teams formed based on different formation strategies differed in their transactive memory systems, we first performed a one-way analysis of variance (ANOVA). We revealed a significant difference in transactive memory systems of teams formed with different formation strategies ($F_{(2,34)} = 4.89$, $p < .05$, $\eta^2 = .22$). A Least Significant Difference (LSD) multiple-comparison post-hoc test indicated that teams formed based on the dual strategy developed higher levels of transactive memory systems ($M = 6.35$, $SD = .41$) than those based on resource seeking alone ($M = 5.31$, $SD = .86$, $t_{(17)} = 3.09$, $p < .01$) or interpersonal attraction alone ($M = 5.59$, $SD = .99$, $t_{(25)} = 2.01$, $p = .05$). We next performed an ordinary least squares (OLS) regression to test the effect

of formation strategies on transactive memory systems. In support of Hypothesis 2, we found that compared to forming the team based on interpersonal attraction alone, using the dual strategy was associated with higher levels of transactive memory systems (b = .76, SE = .38, p = .05). Forming a team based on resource seeking alone was not associated with increased transactive memory systems compared to forming the team based on interpersonal attraction alone. We then assessed the effect of transactive memory systems on the likelihood to pass the semi-finals using a logistic regression. In line with Hypothesis 3, higher levels of transactive memory systems were associated with a greater likelihood of passing the semi-finals (b = 1.07, $p < .05$, OR = 2.92; see Table 4b). Lastly, to test for the mediating effect of transactive memory systems (Hypothesis 4), we used a Monte-Carlo-based simulation with parametric bootstrap including 20,000 replications (MacKinnon, Lockwood, & Williams Jason, 2004). We found a positive indirect effect of using the dual strategy on the likelihood to pass the semi-finals through transactive memory systems, with indirect effect = 0.82 (90% CI [.03, 1.93]), supporting Hypothesis 4.

Additional Analyses

We explored whether emotion-related (affective) mechanisms play a role in our model, as an alternative to the learning-related (cognitive) one. Specifically, as passion is at the heart of entrepreneurship, we focused on entrepreneurial passion – the "consciously accessible intense positive feelings experienced by engagement in entrepreneurial activities associated with roles that are meaningful and salient to the self-identity of the entrepreneur" (Cardon, Gregoire, Stevens, & Patel, 2013: 373). We used questionnaire items completed by entrepreneurs after their registration to the annual competition (data were available for 96 teams). Using the scale developed by Cardon et al. (2013), two items measured passion for *inventing* (e.g., "searching for new ideas for products/services to offer is enjoyable to me"; Spearman-Brown r = .83) and two items measured

passion for *founding* (e.g., "nurturing a new business through its emerging success is enjoyable"; Spearman-Brown r = .87). Passion for inventing and passion for founding did not significantly relate to the dual formation strategy (r = .01 and .10, n.s.), transactive memory systems (r = -.10 and .04, n.s.), or the probability for entering the competition (r = .01 and -.07, n.s.) and passing the semi-finals (r = .08 and .19, n.s.). Furthermore, the indirect effect of the dual formation strategy on the likelihood to enter the competition through passion for inventing was non-significant (b = -.01, SE = .09, 95% CI [-.24, 1.28]), nor was the indirect effect through passion for founding (b = -.08, SE = .17, 95% CI [-.55, 1.74].

Discussion of Study 2 and Segue to Study 3

Both Study 1 and Study 2 provided support for Hypothesis 1 and showed consistency across alternative measures of entrepreneurial success: although less commonly adopted, teams formed based on the dual strategy were more successful than teams formed based on either interpersonal attraction or resource seeking alone. Adding to Study 1, the longitudinal design of Study 2 revealed that the benefits of the dual strategy for entrepreneurial performance may last over time, and this may be explained by the development of transactive memory systems. While the use of observational data, robust set of controls, and examination of alternative explanations in Study 1 and Study 2 provide real-world support for the hypotheses, reliance on observational data limits the causal inferences we can draw from these findings. Accordingly, in Study 3 we undertake a field experiment (i.e., randomized control trial) wherein we perform an intervention by manipulating formation strategies and testing whether transactive memory systems underlie their effect on early entrepreneurial performance (Hypotheses 1-4). This allows us to replicate and complement Study 1 and Study 2 in important ways. First, the experimental design enables us to eliminate alternative explanations, such as *who* employs formation strategies and unique features

of the context. Second, it also addresses the issue of limited statistical power, given that dual strategies are less likely to be observed when teams are selected naturally. Third, while in Study 1 and Study 2 we could only compare the dual strategy to either interpersonal attraction or resource seeking, the use of intervention enables us to experimentally create a fully crossed (2x2) factorial design, where we manipulate high and low levels of both strategies to test both main and interactive effects. Finally, testing our theory in a setting of experiential entrepreneurship courses enables us to examine consistency and use alternative measures of entrepreneurial success (e.g., profits from initial sales). Importantly, this context represents increasingly popular platforms where cofounders are paired up and matched by external stakeholders (Cohen 2013).

STUDY 3

Setting and Sample

As in recent interventions to the early entrepreneurship processes (Camuffo et al., 2020; Clingingsmith & Shane, 2018), we used an educational entrepreneurship setting to influence nascent teams. We conducted a field experiment in a multi-section entrepreneurship course held in an Eastern U.S. university. This course is part of a broader entrepreneurial program at this university, which serves as an important basis for enhanced entrepreneurial education geared at promoting new venture success. Indeed, the university is ranked at the Crunchbase top-ten public research institutions graduating the most fundable founders. A key feature of the course is the *experiential element* – students engage in a business competition wherein they propose ideas, establish teams, and start real businesses. In both undergraduate and online-MBA versions of the course, students pursued a sequence of activities to engage in learning-by-doing, such as building a business model and discovering customer needs following the Lean startup methodology. Students in the undergraduate course operated a business for seven weeks, as part of a 14-week-

long semester. This course was delivered in both blended and traditional formats, for which structure and materials were consistent. In the seven-week-long online-MBA course, students operated a two-hour pop-up business, and class tasks included preparation for this event. In requiring that the students start a real business, the class creates an uncertain environment where students grapple with unstructured entrepreneurial problems: identify a customer problem, iterate and pivot to find a value proposition, create a minimum viable product, identify and obtain customers, produce the product or service, make pricing decisions, and pitch to potential investors.

Our sample included 287 participants in 94 teams in undergraduate (n = 138 students, 44 teams; M_{age} = 21.29, SD_{age} = 2.36, 29.7% women) and online-MBA entrepreneurship courses (n = 155 students, 50 teams; M_{age} = 32.79, SD_{age} = 7.09, 45.8% women). We conducted the experiment in 19 sections (7 undergraduate; 12 online MBA) instructed by four instructors in the fall and spring semesters of the 2018-2019 academic year. We assigned students to teams using a 2 (interpersonal attraction: high versus low) x 2 (resource seeking: high versus low) between-subject design. We used double-blind randomization: neither instructors nor students knew which formation strategy was applied. The first author assembled three-member teams independently and communicated it to instructors. Students received extra course credits for their participation. All teams started *real* businesses (e.g., customized 3D-printed products, real-time advertisement services), 96.8% of which earned profits averaged at $783.83.

Procedures

This field experiment was pre-registered on AsPredicted (#26932). Appendix B2 summarizes the timeline for the field experiment procedures. In all sections, we asked students to provide their resumes upon registration to the course. Students then completed a network assessment task, and reported their skills and demographic variables. All students individually

pitched their ideas for a new venture. In the traditional undergraduate sections, pitches were done live, and students voted anonymously for (up to three) highest-potential ideas. In the blended undergraduate and online-MBA sections, students submitted recorded video pitches, and students could 'add' one vote to any idea. Students were not allowed to vote for their own ideas. The target number of winning ideas was pre-determined based on the number of three-member teams in each section (the largest integer was set as the number of teams, with remainder students assigned to four-member teams). In the case of a tie for the last winning idea, we used an automatic randomizer to select the winning idea(s). Teams were built around the winning ideas by assigning members to the student who pitched the winning idea based on different formation strategies, as described in greater detail below. After working for three weeks, we assessed teams' transactive memory systems. We measured performance in the last week of each course.

Five students dropped the course after teams were assigned. In these cases, the team kept on working as a two or three-member team. This mirrors the reality of new venture teams, as early departures are highly common (Wasserman, 2012). We reached 99.7% and 95.5% response rates in the measurements of demographics and transactive memory systems, respectively. In two teams, there was only one respondent to the transactive memory system measure. As in Study 2, we included these teams in our analyses; excluding these teams did not change the results.

Manipulations and Measures

Interpersonal attraction manipulation. In a network-assessment task based on Burt's 'network items' (1984), students assessed their relationships with others within their section. Specifically, the instructions read: "*This exercise is designed to identify the pattern of your network. Your 'network' refers to the set of your relationships with other students. In the following step, we will introduce the students who are taking this class with you. You will be asked to assess*

your relationship with each of the students." Students were presented with the names of their peers in random order and indicated whether they knew each student. For those familiar students, participants indicated the closeness of the relationship on a scale of 1 "very distant" to 7 "very close." We randomly assigned founders to higher versus lower interpersonal attraction. Specifically, based on the network assessment task, we paired founders with students they either had a strong relationship with (higher interpersonal attraction) or which they did not know (lower interpersonal attraction; Aldrich & Kim, 2007). To be included in the higher interpersonal-attraction level, founding teams had to include a) at least three members who knew each other, and (b) with whom they had a close relationship (an above-median score). In rare cases where founders did not meet one of the above criteria, they were moved to the lower interpersonal-attraction condition. This may resemble reality, as founders are assumed to not use interpersonal attraction unless primarily relying on their close network to form cofounder relations (Aldrich & Kim, 2007).

Resource seeking manipulation. Two coders blind to the research goals (undergraduate research-assistants from a different university) independently read the students' resumes and indicated the extent to which they agree that each student possessed skills in four different domains (on a 7-point Likert scale ranging from 1 "strongly disagree" to 7 "strongly agree). Specifically, the coders evaluated proficiency in general management, marketing-sales, finance, and technical skills.[2] These skills were pre-identified as important for new-venture performance in the course (Chen & Gong, 2018). We trained coders using ten pilot resumes. Inter-coder reliability for each of the four skills was sufficiently high (ICC(1) ranged between .78 and .97; ICC(2) ranged between .88 and .98; all F values were significant with *p*-values lower than .001, Bliese, 2000). We

[2] A preliminary version included five different skills, with marketing and sales as two separate proficiencies. Because data from the first undergraduate section (n = 33 students; 11 teams) indicated that marketing and sales were strongly correlated (r = .77, $p < .001$, where all other correlations were equal to or lower than .40), we relate to marketing-sales as the same skill.

randomly assigned founders to higher versus lower resource-seeking, by considering the highest-ranked skill as the *dominant skill* each student could provide (Chen & Gong, 2018). We paired founders with students who possess either *different* dominant skills, creating teams in which members provide complementary skills (high resource-seeking) or the *same* dominant skill, creating teams in which members provide one overlapping skill.

Transactive memory systems. As in Study 2, we measured transactive memory systems using 12 items from the scale developed by Lewis (2003; $\alpha = .92$). Items formed a single score per individual, and then aggregated to the team-level, using average scores of members per team. Justifying aggregation to the team-level, inter-member agreement was high (median $r_{wg(j)} = .96$; using a uniform expected variance distribution), and inter-member reliability was sufficiently strong (ICC(1) = .25, ICC(2) = .49, $F_{(93, 181)} = 1.96$, $p < .05$; Bliese, 2000).

Early entrepreneurial success. We measured entrepreneurial success using the team profits in U.S. dollars. Teams sold a minimum viable product (i.e., a version of a product aimed to satisfy early customers and provide feedback for future development) for a predefined period.

Controls. We controlled for variables related to early entrepreneurial performance. As in Study 2, we controlled for proportion of women and team size. We also controlled for the mean age, given mixed evidence on the effect of age on entrepreneurial performance (Klotz, Hmieleski, Bradley, & Busenitz, 2014). To control for entrepreneurial experience (Mosey & Wright, 2007), we used the proportion of members who had prior experience in founding new ventures. Lastly, we used a set of dummy variables to control for course type, academic semester, and instructors.

Results

***Manipulation checks*.** To verify that our interpersonal-attraction manipulation was valid, we asked students to report the interpersonal attraction to other team members on a 7-point scale

ranging from 1 "strongly disagree" to 7 "strongly agree". We used three items adapted from Casciaro and Lobo (2008): "My team members are enjoyable to work with"; "I personally like my team members"; "I find the interactions with my team members pleasant" (α = .96). Participants in the higher interpersonal attraction conditions felt more interpersonally attracted to their team members (M = 5.87, SD = 1.03) compared to those in the lower interpersonal attraction condition (M = 5.49, SD = 1.24, $t_{(271)}$ = 2.72, p < .01, Cohen's d = .33).[3] Aggregating individual scores to the team level yielded similar results ($t_{(92)}$ = 2.28, p < .05, Cohen's d = .49).

To verify that our resource-seeking manipulation was valid, we asked students to report their own proficiency in the four skills using the same items used for the coder ratings. Here too, we used the highest-ranked skill as the dominant skill each student could provide (Chen & Gong, 2018). We calculated the proportion of unique non-overlapping skills within each team. For each team, the proportion was calculated as the number of skills recognized as unique values (i.e., the number of different complementary skills; Chen & Gong, 2018) divided by the number of team members. The highest value of "1" represents teams within which members provided non-overlapping complementary skills whereas lower values indicate greater overlap of skills. Teams in the higher resource-seeking condition possessed more complementary skills (M = .94, SD = .13) compared to those in the lower resource-seeking condition (M = .51, SD = .25, $t_{(51)}$ = 9.76, p < .001; Cohen's d = 2.16; degrees of freedom are corrected following Levene's test).

Hypotheses testing. Table 5 displays the descriptive statistics and correlations of variables in this study. Transactive memory systems positively correlated with team profits. Interestingly,

[3] We also tested whether interpersonal attraction is indeed a 'latent' construct which can manifest in related ways. Specifically, the higher interpersonal attraction condition was correlated with familiarity (i.e., "I have known members of my team from previous interactions"; r = .56, p = .00), closeness of relationships (i.e., "I have close personal relationships with my team members"; r = .15, p = .01), and task-related liking (i.e., "I wanted to work with my team members"; r = .31. p = .00), as reported by participants after being assigned to the different conditions.

online MBA teams had higher levels of transactive memory systems compared to undergraduate-level ones. This may be because MBA students are more mature in their careers, and learning who knows what in a team is easier when members have more identified expertise.

Insert Table 5 about here

We first tested for the interaction between the interpersonal attraction and resource seeking formation strategies on team profits by performing a two-way analysis of variance (ANOVA). Unlike in Studies 1 and 2, the interaction effect between the two formation strategies did not directly predict team profits ($F_{(1,93)} = 1.02$, $p = .32$), failing to support Hypothesis 1.

We then tested whether formation strategies influence team profits indirectly through the transactive memory systems. To test the interactive effect of formation strategies on transactive memory systems, we used a two-way analysis of variance (ANOVA). In support of Hypothesis 2, we found a significant interaction between interpersonal attraction and resource seeking on transactive memory systems ($F_{(1,93)} = 5.64$, $p < .05$, $\eta^2 = .06$). Specifically, higher interpersonal attraction led to stronger transactive memory systems ($M = 5.84$, $SD = .53$) comparing to lower interpersonal attraction ($M = 5.24$, $SD = .79$) only when resource seeking was also high ($t_{(50)} = 3.31$, $p < .01$). However, there was no significant difference in the effect of higher and lower interpersonal attraction when resource seeking was low ($t_{(37)} = 0.51$, $p = .61$). Similarly, higher resource-seeking increased transactive memory systems ($M = 5.84$, $SD = .53$) comparing to lower resource-seeking ($M = 5.27$, $SD = .65$) only when interpersonal attraction was also high ($t_{(38)} = 3.01$, $p < .01$). However, there was no significant difference in the effect of higher and lower resource-seeking when interpersonal attraction was low ($t_{(52)} = 0.63$, $p = .53$; see Figure 3).

Table 6 presents the moderated mediation regression results. In line with Hypothesis 3, transactive memory systems positively predicted team profits (b = 363.33, SE = 194.28, p = .06; results of a model with no controls were b = 428.64, SE = 174.90, p < .05). To test the interactive effect of formation strategies on team performance through transactive memory systems, we used the PROCESS macro for SPSS (model 7) with 95 percent bias-corrected confidence intervals. In support of Hypothesis 4, transactive memory systems mediated the interactive effect of formation strategies on team profits (b = 243.58, SE = 177.20, 95% CI [18.11, 772.04]. The conditional indirect effect of interpersonal attraction on team profits through transactive memory systems was positive and significant when resource seeking was high (b = 218.65, SE = 129.87, 95% CI [48.24, 608.59]). However, the conditional indirect effect was non-significant when resource seeking was low (b = -24.93, SE = 96.81, 95% CI [-257.79, 149.76]). Hence, transactive memory systems served as a mechanism underlying the effect of formation strategies on early entrepreneurial success when both interpersonal attraction and resource seeking were high.

Insert Figure 3 and Table 6 about here

Robustness Tests

To test the robustness of our model controlling for the potential effect of the section, we re-tested our model by performing hierarchical linear modeling (HLM) using the lme4 package for R. Data structure included teams nested within sections, within course types. A model with random intercepts only revealed non-significant ICCs for both course type (ICC = 0.66, Z = 0.62, p = .54) and section (ICC = 0.22, Z = 0.33, p = .74), indicating that these effects were negligible. Formation strategies interacted to affect transactive memory systems (γ = 0.62, p < .05), which was associated with team profits (γ = 329.03, p = .05). Second, as participants in this setting were students, we also controlled for prior entrepreneurial experience in a more conservative measure,

using the proportion of members who had experience in hackathons or accelerators. Including these two controls in our model yielded similar results: transactive memory systems mediated the interactive effect of formation strategies on team profits (b = 235.80, SE = 171.91, 95% CI [2.29, 713.09]). Moreover, to control for the initial support of the idea, we counted the number of votes ideas received using the online-MBA sub-sample, for which these data were available. Including this control also produced similar results (b = 516.41, SE = 364.36, 95% CI [39.49, 1564.34]). Lastly, to test for the potential effect of the course type in a more conservative way, we standardized team profits within course types (i.e., undergraduate and online-MBA) and re-tested our model. Consistently with our main results, transactive memory systems mediated the interactive effect of formation strategies on team profits (b = .19, SE = .14, 95% CI [.02, .62]).

We also wanted to test whether power structure accounts for effects in our model, as an alternative explanation for our learning-based theorizing. We collected all the archived founder agreement forms and coded the equity share (in percentage) of each team member (these were available for 87 out of 94 teams). As expected, the equity shares of students associated with the winning idea was greater (M = 35.25, SD = 9.69) than those of other team members (M = 29.11, SD = 8.48, $t_{(268)}$ = 5.32, p < .001). We then calculated the variance of team equity splits per team. Controlling for variance in equity distribution yielded similar results: transactive memory systems mediated the interactive effect of formation strategies on team profits (b = 222.95, SE = 187.01, 95% CI [1.14, 814.81]). In addition, formation strategies did not interact to affect variance in equity distribution ($F_{(1,83)}$ = .69, n.s.). In line with prior research, which suggested that unequal equity-distribution leads to superior performance (Hellmann & Wasserman, 2017), we found a positive association between the variance in equity splits and team profits (b = 28.60, SE = 17.10, p < .10). However, the indirect effect of the interaction between formation strategies did not relate to team

profit when including variance in equity splits as a mediator (instead of transactive memory systems; $b = 18.72$, $SE = 91.70$, 95% CI [-113.45, 239.35]).

Discussion of Study 3

Findings in Study 3 support the mediating role of transactive memory systems. Specifically, we found that the dual strategy increased transactive memory systems within the team, which in turn boosted entrepreneurial success. Unlike in Studies 1 and 2, we only detected an indirect effect of formation strategies on entrepreneurial success. We assume this may be due to low statistical power. Nevertheless, results indicate that early formation strategies shaped team outcomes even when teams were not formed naturally, implying that facilitation to the early formation process holds significant promise. Supporting our model, results of this study establish a causal relationship between initial formation strategies, team learning and success over time.

GENERAL DISCUSSION

While there is robust evidence that founding teams are key to new venture performance, investment decisions, and long-term survival (Knight et al., 2020), scholars have only recently begun to examine how founding teams are formed in the first place (Lazar et al., 2020). We add to this budding literature by developing and testing new theory on how and why formation strategies influence early success. Our theory integrates macro (entrepreneurship) and micro (teams) literature to identify the emergence of transactive memory systems as an important mechanism through which such strategies impact entrepreneurial success.

We triangulate across three complementary field studies to establish both consistency (across contexts and measures of entrepreneurial success) and causality. The use of field studies enhanced the external validity of our inferences, while the use of an experimental design ensured internal validity of the hypothesized effects. Specifically, in Study 1, we used large-scale data from

Kickstarter to establish that although teams formed with a dual strategy had the lowest incidence (only 17.5%), these teams almost doubled their seed funding amount. In Study 2, we used a time-lagged design at a prestigious competition and found that the use of a dual strategy was the most rare (only 10.3%), but these teams almost tripled their chance to enter the competition, and improved their survival rate. Transactive memory systems explained this effect. In Study 3, manipulated dual strategy led to stronger transactive memory systems, and these were associated with greater initial profits. Taken together, the replication of our main findings across designs, measures, and samples indicates the robustness of our model and its relevance to different contexts.

Theoretical Implications

Our research makes contributions to several research streams. First, in entrepreneurship literature, we extend current knowledge on the nascent and antecedent phase of entrepreneurial team formation (cf. review in Lazar et al., 2020) to highlight its importance for early-stage entrepreneurial success. While mainstream research on founding teams has focused on the input-process-output framework – investigating team composition, processes, and performance (e.g., Klotz et al., 2014), we examine the causal role played by entrepreneurial team formation in this framework to embrace the fundamental endogeneity of observed team composition (Agarwal, 2019). In making a pivotal shift away from prior thinking of such teams as established rather than formed entities, we show how formation strategies shape not only team composition but also team processes (i.e., transactive memory systems) for subsequent outcomes.

Second, our theory and findings also contribute to the teams literature by providing important new insights for research streams on other self-initiated teams in organizations (e.g., research teams, ad-hoc project teams, and teams leading corporate entrepreneurship efforts). For example, recent work on intra-organization research collaborations posits that researchers are

likely to form *new* ties with unfamiliar others who possess desirable expertise and maintain *persistent* ties with familiar others who reflect quality relationships (Dahlander & McFarland, 2013). We advance such evidence by suggesting that to form successful long-term collaborations, the short-term resource-based search of potential partners should also be coupled with interpersonal attraction. Moreover, findings in Study 3 hint to the intriguing possibility that formation strategies may be effective even outside of self-initiation by a lead person or small group, inasmuch as the use of the strategies by an external party provides consistent evidence.

Third, our integration of literature streams on team learning and entrepreneurial team formation allows us to contribute insights to each of them. For the entrepreneurial team formation literature, we deepen the theoretical rationale linking formation strategies to entrepreneurial success by highlighting the valuable, rare, and difficult to imitate features of a dual formation strategy, and developing new theory for transactive memory systems as a critical micro mechanism. We add to prior research in this area on other learning processes (e.g., reflexivity; Knipfer et al., 2018), along with work examining transactive memory systems as an input that facilitate response to surprises (Zheng & Mai, 2013) and entrepreneurial orientations (Dai et al., 2016). Our study sheds light on antecedents of such systems by documenting that the emergence of transactive memory systems largely depends on formation strategies. Across different settings, we also show that teams with stronger transactive memory systems are associated with superior performance at critical early milestones for the new venture, thus lending support to the importance of team learning at the initial stages of the entrepreneurial journey (Cohen, 2013).

For the team learning literature, our findings offer a new explanation for the emergence of transactive memory systems. While prior studies attributed the emergence of transactive memory systems to joint training (Liang et al., 1995), direct task experience (Gino et al., 2010), and

members' demographics, competence, and personality, there are mixed findings regarding whether prior familiarity between members enables the emergence such systems (Ren & Argote, 2011). Our findings reconcile these inconsistencies by showing that the effect of familiarity on transactive memory systems is contingent on whether team members also have different expertise. Thus, we stress the importance of team formation to the emergence of transactive memory systems. Importantly, we test the emergence of transactive memory systems in the field and over time, thus extending prior work that was largely experimental (Ren & Argote, 2011).

Finally, in adopting a temporal perspective and delving into the very incipient stages of teams, we contribute to the above micro and macro literature streams to demonstrate how initial selection choices have a proximal impact on the ability to establish success in early and critical milestones. In so doing, we complement studies that examine later-stage success by addressing potential retrospective or survivor bias – our empirical tests provide support for conjectures from qualitative studies (Shah et al., 2019; Vohora et al., 2004) that founding teams that are successful in the long run have to first navigate through critical junctures during nascent phases. Moreover, in studying early indicators of entrepreneurial success, we shed new light on early predictors such as formation strategies and emergence of transactive memory systems. We document their effect on early-stage success, and conjecture that these early predictors may also have long-lasting effects on success during subsequent stages of venture growth and evolution. In so doing, we connect literature on the importance of learning for new ventures (Contigiani & Levinthal, 2019; Ott et al., 2017) to how learning systems may be created in new ventures for entrepreneurial success.

Limitations and Future Research

The limitations of our research also open up avenues for future research. First, while both Study 1 and Study 2 provided support for a positive direct effect of a dual formation strategy on

early entrepreneurial success, in Study 3, the use of a dual strategy influenced success only indirectly through transactive memory systems. A possible explanation for the differences may be that while Studies 1 and 2 tracked teams that were formed in a natural setting, the intervention Study 3 had a more constrained variance due to features of the setting and the experimental assignment itself. Related evidence shows, for example, that self-selection created high-performing teams as compared to teams that were assigned randomly or by a matching algorithm (Chen & Gong, 2018). However, these features and settings deserve additional attention of their own right, given the rise of entrepreneurial programs facilitating team formation and training new venture teams. External facilitation at early stages may include mentors advising/intervening in member-selection decisions (Cohen, 2013; Cohen et al., 2019). Hence, it is important to understand the role of self- versus facilitated selection, and separate these effects from benefits of training (Camuffo et al., 2020; Clingingsmith & Shane, 2018). Future research could discern between selection and training components of these programs, and the manner in which self- and facilitated selection strategies interact with subsequent training in determining entrepreneurial success. Here, an interesting question is whether the effect of selection is stronger in contexts where founders have greater control over navigating the journey, and whether more structured contexts facilitate compensation of possible disadvantages caused by initial member selection.

Second, in Study 1 there was a tradeoff between richness of data and potential selection-bias of teams, given that our sample could only include teams that reported their formation strategy as part of their campaign. Our use of such teams is consistent with prior crowdfunding-based studies that examine entrepreneurial passion (by coding campaign videos; Li et al., 2017) or founders' gender (Greenberg & Mollick, 2017). Moreover, we addressed this limitation in Study 2 (data were uniformly collected) and Study 3 (strategies were manipulated). Nonetheless, we cannot

rule out the potential that in Study 1, teams that advertised a formation strategy may not have actually employed it, or that teams who advertised formation strategies consisted of more savvy founders (i.e., by describing their formation, entrepreneurs signal the importance attributed to the team, which by itself may impact investment decisions). Interestingly, while our analysis revealed that on average, teams that reported their formation strategy raised more seed funding than teams that did not, fewer teams reported the dual strategy relative to a singular strategy. We also found similar results in Study 2 and Study 3, in which evaluators (e.g., expert judges or early customers) were not aware of the formation strategy used by the team. These findings run counter to the notion that dual strategies are used as mere signals. Moreover, given that the dual strategy is rare and hard to execute, it cannot be easily faked or otherwise employed as an impression-management tactic, and early stakeholders' positive responses are likely recognition of teams' actual formation strategies (Clingingsmith & Shane, 2018). Still, future research may discern the extent to which advertised strategies deviate from actual strategies, and the intriguing question of whether and how the mere description of the team formation might affect external perceptions of the venture. Given the growing interest in the effect of signaling in investment settings (Kanze et al., 2018), the use of formation strategies may well be a signal worthy of further examination.

Third, our research offers transactive memory systems as a key mechanism to explain the effect of formation strategies on early success, yet other team processes may also play an important role at this stage. For example, given that transactive memory systems are a specific type of team mental models, future research is necessary to reveal whether and how additional aspects, such as shared mental models regarding teamwork (Mathieu, Heffner, Goodwin, Salas, & Cannon-Bowers, 2000), also relate to formation strategies. This line of research can further shed light on the important consequences of the initial formation on team cognition. In this regard, future

research can also embrace new methods and unobtrusive measures of team cognition (e.g., textual data; Nadkarni & Barr, 2008) in order to fully capture the richness of the phenomenon and its different manifestations. Additional research is needed for exploring whether formation strategies influence not only internal team dynamics but also selection and dynamics with key external stakeholders. Related research has shown, for example, that social capital is key for interaction with external advisors and investors (Mosey & Wright, 2007). Endeavors in this direction can test how formation strategies influence external ties, and whether external relations (e.g., with mentors, investors) can complement the initial selection by adding close relations or expertise.

Fourth, as suggested in Lazar et al. (2020), a dual strategy may be employed within every member (i.e., each member is chosen with attention to interpersonal attraction *and* resource seeking), or between members (i.e., one member is added due to interpersonal attraction and another member due to resource seeking). Yet, our studies did not unpack such differential use of dual strategy. Future research may test whether building teams where every cofounder represents simultaneous use of both strategies accelerates the emergence of transactive memory systems and improves performance more than teams where some cofounders represent use of one strategy, and others represent the other. These differences may manifest in alternative mechanisms for performance implications, such as whether mixing and matching strategies across members create team faultlines and/or require greater attention to developing cohesion. Relatedly, while our research suggests that relying on a dual strategy *from the onset* is beneficial, we also find evidence that this is most challenging to implement. Shedding light on this puzzle, future research may explore the dynamism of the formation process, namely shifting between strategies to complement one another *over time* (Lazar et al., 2020). This line of research can also reveal whether there is an

ideal temporal use of strategies. In this regard, future work can test the long-term effects of initial formation strategies on entrepreneurial teams at more advanced growth (post-startup) stages.

Lastly, exploring the antecedents to formation strategies is a promising future endeavor. For example, our theoretical model abstracted away from team origins – whether formation strategies are employed by a lead entrepreneur or by an initial, pre-existing group. Future work can examine potential interactions in *who* selects, and based on *which* strategy, for emergence of team processes and subsequent performance. For example, future research can examine how the characteristics of the founders, such as their personality, gender, and prior experience, impact their selection decisions, and consequent team dynamics. This may additionally shed light on the role of power dynamics in new venture teams. For instance, related research established that power hierarchies function as heuristics which can help teams manage conflicts (Greer & van Kleef, 2010) but harm performance if held constant and misalign members' competence (Tarakci, Greer, & Groenen, 2016). Here, future endeavors can test how lead founders structure power in the team, and how selection influences equality in power structure and dynamics.

Practical Implications

Even though new ventures represent engines of technological disruption and economic growth, they are also more likely to fail prematurely. Accordingly, our study of how and why formation strategies impact early entrepreneurial success has important practical implications. First, our study highlights that *aspiring entrepreneurs* must pay early and close attention to team assembly, rather than assuming that the benefits of attending to this issue at a later time will outweigh its costs. In doing so, founders need to overcome the tendency to engage in either a relational or a rational search for partners, and proactively address limitations in their existing networks to identify others who match both criteria. By combining the strategies, founders can

facilitate learning and performance early on. Second, we also inform practice for *educational programs* and *entrepreneurial platforms*, such as pre-seed hackathons and accelerators. Here, we suggest that in addition to traditional training that focuses on business models and customer discovery, programs should educate new venture teams about the process of partner selection, and integrate it with existing relevant endeavors, such as cofounder pair-up events. Such programs should also facilitate the development of learning processes. Lastly, we offer insights to *investors* who wish to identify promising new ventures. Above and beyond the attention aimed at recognizing high-potential ideas, investors should carefully consider the way teams form, and prioritize those wherein members have both close relations and diverse knowledge, because these teams have the highest potential to learn and succeed as they encounter early milestones.

CONCLUSION

Our research opens a new window into understanding how and why early strategies of forming new venture teams influence entrepreneurial success, during the pre-startup stage. Integrating team-learning and entrepreneurial team formation bodies of literature, we suggest that forming teams with attention to both interpersonal attraction and resource seeking facilitated the development of transactive memory systems within the team, which enables continuous entrepreneurial success. Extending prior research, we illuminate the importance of the initial member-selection process to subsequent team learning and entrepreneurial performance.

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TABLE 1. Means, Standard Deviations, and Correlations Between Variables in Study 1

	M	*s.d.*	1	2	3	4	5	6	7	8
1. Funding amount ($K)[a]	123.19	241.82								
Formation strategy[b]										
2. Resource seeking	0.62	0.49	-.01							
3. Dual	0.17	0.38	.21**	---						
4. Campaign duration	34.52	5.6	.09	.08	-.06					
5. US-based[c]	0.73	0.45	.01	-.01	.02	.09				
6. Kickstarter promotion[c]	0.50	0.50	.22**	.09	.02	-.03	-.06			
7. Prior Kickstarter experience[c]	0.29	0.45	.03	.10	-.07	.02	.05	-.06		
8. Prior entrepreneurial experience[c]	0.16	0.36	.10	-.14	.19**	.01	.08	-.01	.35***	
Venture type[d]										
9. Hardware	0.22	0.41	.20**	.10	.01	.07	-.05	.12†	-.10	-.03
10. Software	0.05	0.22	-.08	.04	-.04	-.01	.04	-.01	.11	-.10
11. Web	0.04	0.19	-.09	-.05	-.03	-.11	.01	-.10	-.02	-.09
12. Sound	0.01	0.12	.01	.10	-.06	.05	-.02	.04	-.07	-.05
13. Flight	0.01	0.07	-.02	.05	-.04	-.04	-.11	.07	-.04	-.03
14. Space exploration	0.01	0.12	-.06	.10	-.06	-.05	.07	.04	-.08	.06
15. Gadgets	0.11	0.32	-.01	-.01	-.01	.02	.04	-.02	.15*	-.02
16. Apps	0.06	0.24	-.11	-.05	-.07	-.03	.02	-.10	-.16*	-.06
17. DIY electronics	0.06	0.23	-.09	-.06	.05	-.02	.06	-.04	.07	.24**
18. 3D printing	0.07	0.25	.12†	-.15*	.18**	-.10	-.05	.04	.04	.04
19. Camera equipment	0.04	0.19	.07	.01	.11	.02	.07	-.01	-.02	-.02
20. Fabrication tools	0.01	0.12	-.04	-.07	-.06	-.05	.07	.04	-.08	-.05
21. Robots	0.03	0.17	-.05	.02	-.01	-.11	.04	-.01	-.02	-.07
22. Makerspace	0.01	0.12	-.06	.01	-.06	.10	-.02	-.12†	.10	.17*
23. Wearables	0.07	0.25	-.03	.05	.03	.08	-.01	.04	-.04	.10

N = 206 teams; [a] Funding amounts are in displayed in $1000 ($K); [b] Dummy-coded: omitted referent = interpersonal attraction; [c] Dummy coded: 1 = yes, 0 = no; [d] Dummy coded: omitted referent = technology; † $p < .10$ * $p < .05$ ** $p < .01$; two-tailed

TABLE 2. OLS Regression Results Predicting Funding Amounts in Study 1

	Model 1	Model 2
	b (s.e.)	*b (s.e.)*
Formation strategy[a]		
Resource seeking	86.55 (41.83)*	58.71 (43.56)
Dual	197.20 (53.43)***	148.05 (55.72)**
Controls		
Campaign duration		2.56 (1.96)
US-based[b]		9.96 (37.65)
Kickstarter promotion[b]		83.97 (33.62)*
Prior Kickstarter experience[b]		11.91 (41.46)
Prior entrepreneurial experience[b]		60.33 (53.04)
Venture type[c]		
Hardware		75.30 (51.37)
Software		-77.66 (83.05)
Web		-44.65 (91.23)
Sound		10.71 (140.44)
Flight		-82.16 (237.43)
Space exploration		-125.06 (140.44)
Gadgets		-1.89 (61.29)
Apps		-57.67 (75.74)
DIY electronics		-107.42 (78.76)
3D printing		86.33 (73.67)
Camera equipment		52.01 (91.40)
Fabrication tools		-26.86 (141.52)
Robots		-47.91 (102.90)
Makerspace		-96.48 (143.10)
Wearables		-59.65 (93.51)
R-squared	.06	.18
Δ R-squared		.12

Note. Funding amounts are in displayed in $1000 ($K); [a] Dummy coded: omitted referent = interpersonal attraction; [b] Dummy coded: 1 = yes, 0 = no; [c] Dummy coded: omitted referent = technology ; * $p < .05$ ** $p < .01$ *** $p < .001$; two-tailed

TABLE 3. Means, Standard Deviations, and Correlations Between Variables in Study 2

	M	*s.d.*	1	2	3	4	5	6	7	8
1. Passed the first round[a]	0.27	0.44								
2. Passed the second round[a]	0.40	0.49								
Formation strategy[b]										
3. Resource seeking	0.56	0.50	-.09	-.11						
4. Dual	0.10	0.30	.33**	.20	---					
5. Transactive memory systems	5.64	0.90	---	.51**	-.36*	.45**	(.93)			
6. Team size	2.73	1.03	.25***	-.08·	.08	.24***	.15			
7. Proportion of women	0.17	0.27	.08	.11	-.01	.04	.25	.09		
8. Competition cycle[c]	0.54	0.50	-.05	.00	-.06	-.04	-.17	.10	-.03	
Venture type[d]										
9. Software	0.12	0.33	-.11	-.08	.01	.01	.04	-.10	-.08	-.01
10. E-commerce	0.06	0.25	-.03	-.03	-.03	-.03	.14·	.05	-.03	-.02
11. Cleantech	0.05	0.23	-.03	.04	.02	-.01	.14	-.07	-.10	-.10
12. IoT	0.08	0.27	.28***	.02	.02	.01	-.01	.07	-.01	.10
13. Fintech	0.05	0.21	.11	.00	-.07	-.07	-.03	.01	-.09	-.02
14. Meditech	0.11	0.32	.28***	.20	-.07	.20**	.09	.16*	.07	-.03
15. Other	0.44	0.50	-.20**	-.14	.01	-.07	-.15	-.04	.07	.10

N = 242 teams (first round), 60 teams (second round); [a] Dummy coded: 1 = yes, 0 = no; [b] Dummy coded: omitted referent = interpersonal attraction; [c] Dummy coded: 1 = 2017, 0 = 2016; [d] Dummy coded: omitted referent = social; * $p < .05$ ** $p < .01$ *** $p < .001$; two-tailed

TABLE 4a. Logistic and Cox Regressions Assessing Entry to and Survival in the Competition in Study 2

	Logistic regression[a]				Cox regression[b]			
	Model 1		Model 2		Model 1		Model 2	
	b (s.e.)	Wald χ^2	*b (s.e.)*	Wald χ^2	*b (s.e.)*	Wald χ^2	*b (s.e.)*	Wald χ^2
Formation strategy[c]								
Resource seeking	0.21 (0.36)	0.33	0.14 (0.43)	0.11	-0.04 (0.15)	0.08	-0.06 (0.16)	0.13
Dual	2.23 (0.54)***	17.23	2.11 (0.63)**	11.12	-0.75 (0.30)*	6.46	-0.67 (0.31)*	4.65
Controls								
Team size			0.36 (0.19)	3.64			-0.04 (0.07)	0.23
Proportion of women			0.73 (0.68)	1.15			-0.20 (0.28)	0.54
Competition cycle[d]			-0.53 (0.39)	1.86			0.06 (0.15)	0.16
Venture type[e]								
Software			1.13 (1.22)	0.85			-0.14 (0.31)	0.19
E-commerce			1.57 (1.28)	1.51			-0.21 (0.37)	0.32
Cleantech			1.62 (1.36)	1.43			-0.24 (0.43)	0.34
IoT			3.99 (1.22)**	10.76			-0.84 (0.39)*	4.80
Fintech			3.36 (1.27)**	6.89			-0.69 (0.44)	2.46
Meditech			3.23 (1.16)**	7.73			-0.74 (0.35)*	4.44
Other			1.34 (1.11)	1.48			-0.16 (0.26)	0.38
Δ -2 log-likelihood			48.32***				13.42	

[a] Predicting the likelihood to enter the competition; [b] Predicting team elimination from the competition over time; [c] Dummy coded: omitted referent = interpersonal attraction; [d] Dummy coded: 1 = 2017, 0 = 2016; [e] Dummy coded: omitted referent = social; * $p < .05$ ** $p < .01$ *** $p < .001$; two-tailed

TABLE 4b. Mediation Analysis of Transactive Memory Systems in Study 2

	Transactive memory systems	Likelihood of passing the semi-finals			
		Model 1		Model 2	
	b (s.e.)	*b (s.e.)*	Wald χ^2	*b (s.e.)*	Wald χ^2
Formation strategy[a]					
Resource seeking	-0.28 (0.32)	0.22 (0.79)	0.08	0.57 (0.90)	0.40
Dual	0.76 (0.38)†	21.20 (13397.66)	0.00	20.48 (13187.44)	0.00
Mediator					
Transactive memory systems				1.07 (0.52)*	4.25
R-squared/Nagelkerke R-squared	.22	.31		.45	
Δ -2 log-likelihood				5.11*	

Note. As the sample size was limited to 37 teams, we did not include control variables in this analysis; [a] Dummy coded: omitted referent = interpersonal attraction; $^{\dagger}p < .10$ $^{*}p < .05$; two-tailed

TABLE 5. Means, Standard Deviations, and Correlations Between Variables in Study 3

	M	*s.d.*	1	2	3	4	5	6	7	8	9	10
1. Team profits	783.83	1174.29										
2. Interpersonal attraction[a]	0.43	0.50	-.09									
3. Resource seeking[a]	0.59	0.50	-.03	---								
4. Transactive memory systems	5.39	0.72	.24*	.18†	.09	(.92)						
5. Team size	3.06	0.38	.08	.03	.08	.12						
6. Proportion of women	0.39	0.31	-.10	.04	-.14	-.03	.04					
7. Age	27.38	6.48	.06	.06	-.01	.26*	.07	.33**				
8. Prior experience in founding a venture	0.18	0.24	-.02	-.05	.16	.06	.12	-.08	.11			
9. Course type[b]	0.53	0.50	.05	.03	.03	.33**	.05	.26*	.89***	.06		
10. Academic semester[c]	0.25	0.43	.12	.01	-.07	-.13	.10	-.25*	-53***	-.13	-.61***	
Instructor[d]												
11. Instructor A	0.40	0.49	.25*	.08	-.05	-.02	.03	-.13	-.24*	-.21*	-.23*	.69***
12. Instructor B	0.16	0.37	.14	-.02	.01	.26*	.01	.01	.45***	.14	.41***	-.25*
13. Instructor C	0.35	0.48	-.28**	-.09	.08	-.10	-.12	.04	-.27**	.05	-.25*	-.42***

N = 94 teams; Note. Reliability coefficient is displayed along the diagonal; [a] Dummy-coded: 1 = high, 0 = low; [b] Dummy-coded: 1 = online MBA, 0 = undergraduate; [c] Dummy-coded: 1 = spring, 0 = fall; [d] Dummy-coded: omitted referent = instructor D; † $p < .10$ * $p < .05$ ** $p < .01$; *** $p < .001$; two-tailed

TABLE 6. OLS Regression Results Predicting Team Profits in Study 3

	Transactive memory systems			Team profits		
	Model 1 *b* (s.e.)	Model 2 *b* (s.e.)	Model 3 *b* (s.e.)	Model 1 *b* (s.e.)	Model 2 *b* (s.e.)	Model 3 *b* (s.e.)
Conditions						
Interpersonal attraction[a]	0.29 (0.15)†	-0.11 (0.22)	-0.07 (0.22)	-521.47 (379.30)	-475.08 (369.65)	-671.81 (382.78)†
Resource seeking[a]	0.18 (0.15)	-0.14 (0.20)	-0.17 (0.20)	-346.36 (340.88)	-287.74 (332.64)	-391.52 (342.08)
Interpersonal attraction x resource seeking		0.71 (0.30)*	0.63 (0.31)*	509.76 (505.95)	207.57 (507.65)	446.41 (540.50)
Mediator						
Transactive memory systems					428.64 (174.90)*	366.33 (190.45)†
Controls						
Team size			0.14 (0.19)			185.49 (324.28)
Proportion of women			-0.19 (0.24)			-322.02 (415.78)
Age			-0.01 (0.03)			31.26 (42.49)
Prior experience in founding a venture			0.24 (0.31)			25.59 (533.51)
Course type[b]			0.72 (0.35)*			-761.13 (617.60)
Academic semester[c]			0.35 (0.33)			-669.41 (571.48)
Instructor[d]						
Instructor A			0.47 (0.30)			884.99 (518.75)
Instructor B			0.71 (0.30)*			507.47 (523.25)
Instructor C			0.59 (0.31)†			-331.32 (538.28)
R-squared	.05	.10	.28	.02	.08	.21
Δ R-squared		.05*	.18*		.06*	.13

[a] Dummy-coded: 1 = high, 0 = low; [b] Dummy-coded: 1 = online MBA, 0 = undergraduate; [c] Dummy-coded: 1 = spring, 0 = fall; [d] Dummy-coded: omitted referent = instructor D; † $p < .10$ * $p < .05$; two-tailed

FIGURE 1. Funding Amount per Formation Strategy in Study 1

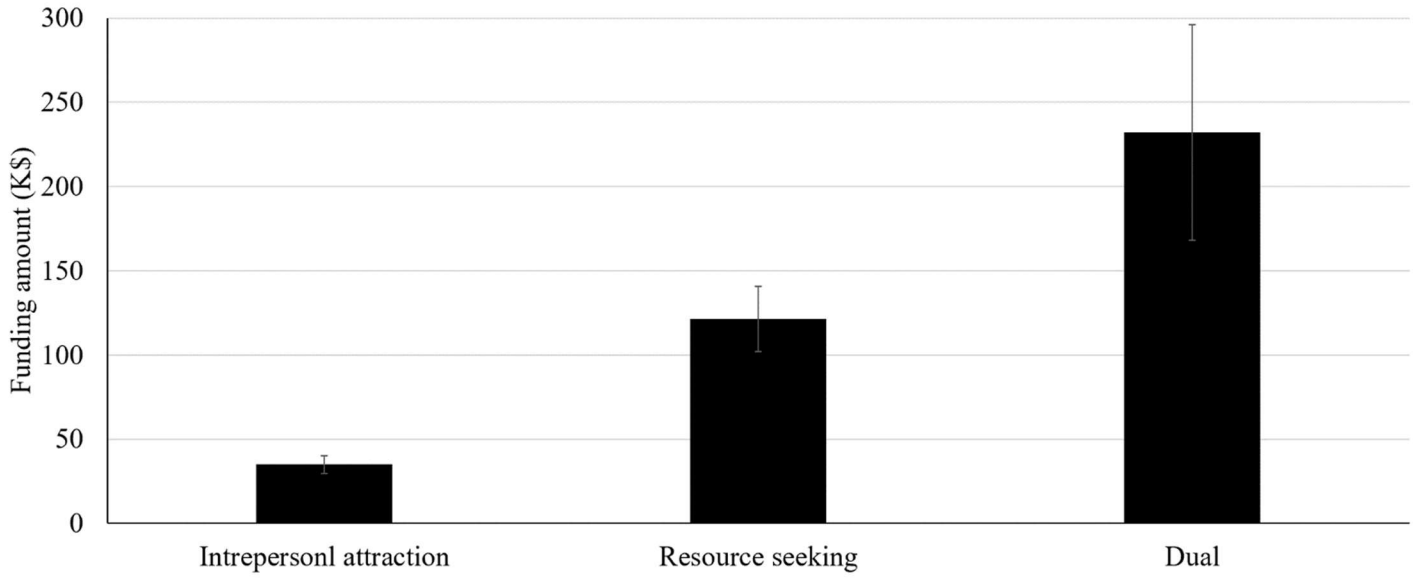


FIGURE 2. Kaplan-Meyer Survival Plot per Formation Strategy in Study 2

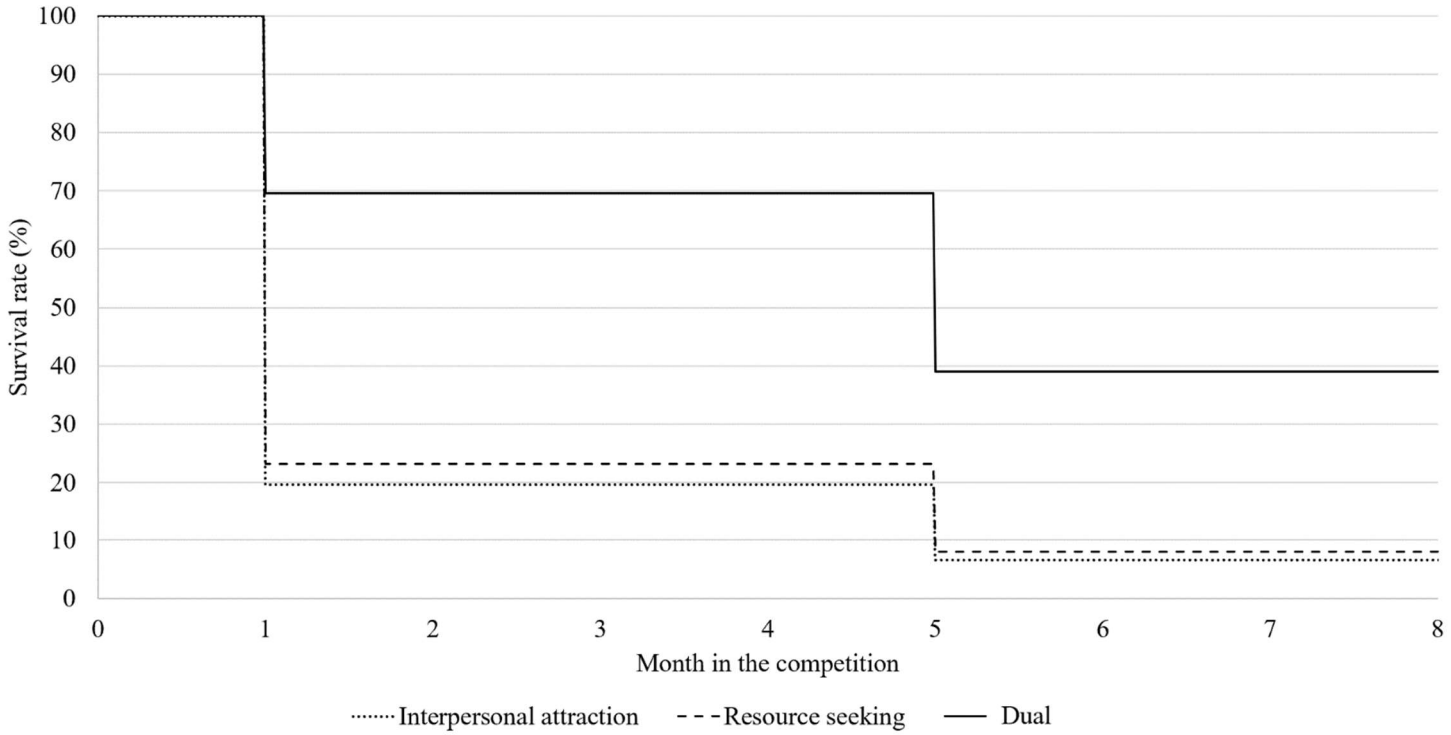
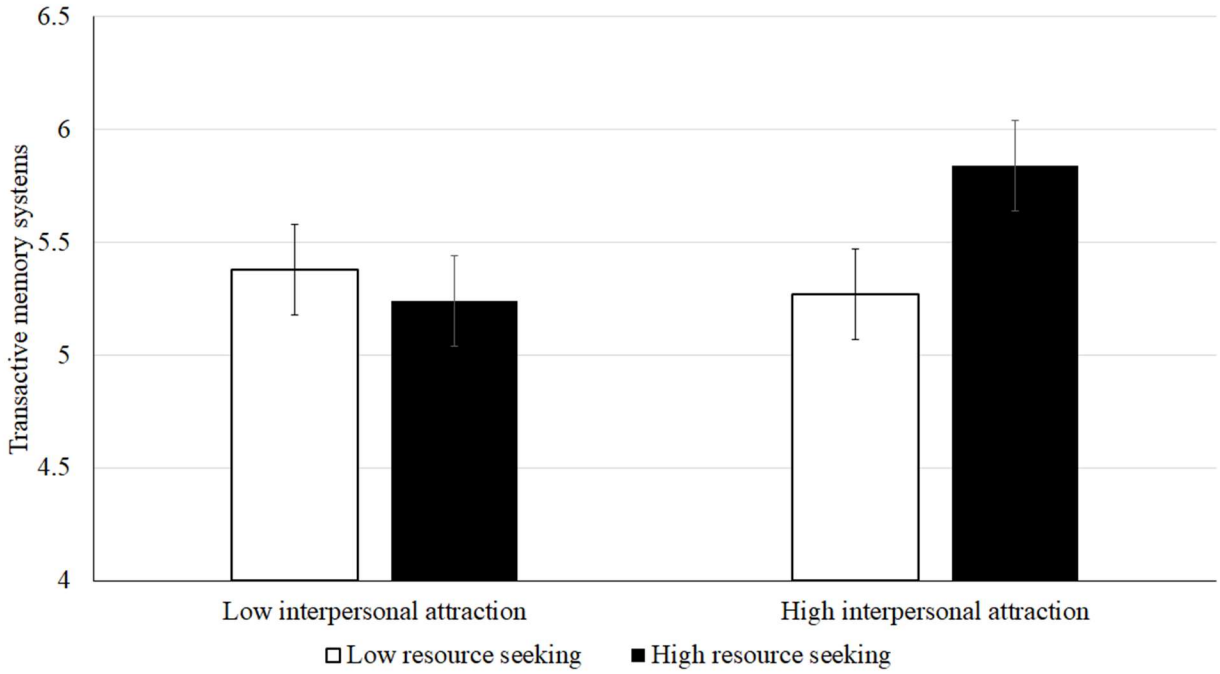


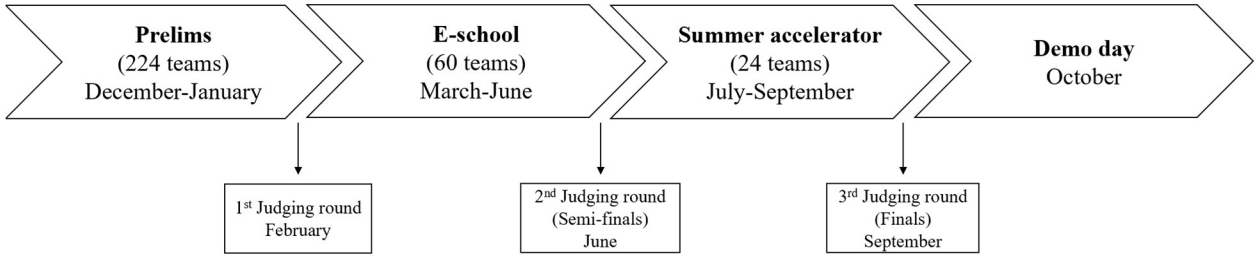
FIGURE 3. Interaction Between Formation Strategies on Transactive Memory Systems in Study 3



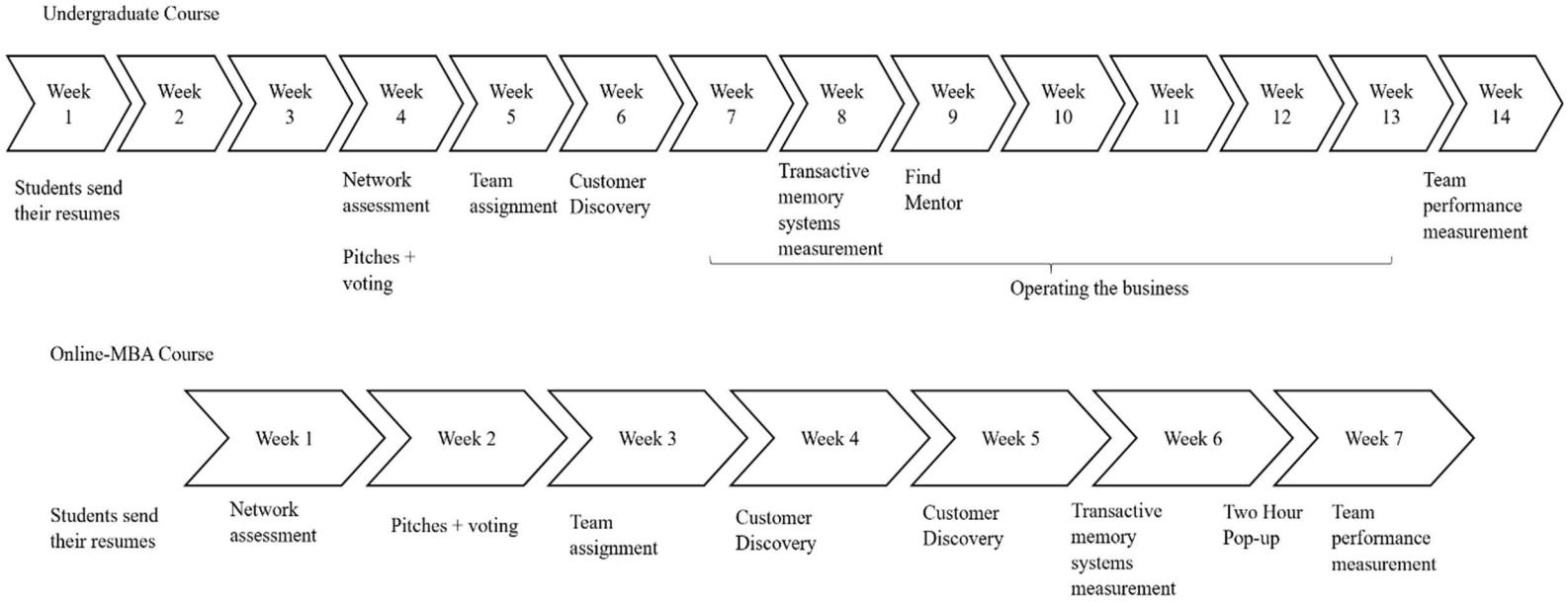
Appendix A. Formation strategy coding; Study 1 and Study 2

Formation Strategy	*Examples; Study 1*	*Coded Basis for Cofounder Relation Initiation*
Interpersonal attraction	"We are a team of three friends with childhood roots"; "My friend from high school and I are building..."	Friendship relations
	"...was founded in 2013 by two brothers"; "As cousins, D. and I are great at collaborating"	Family relations
	"The project is a joined one, with my wonderful wife"; "…is a unique creation designed by my wife and myself"	Romantic relations
Resource seeking	"Y. has 8+ years of engineering experience in the semiconductor industry... G. has 10+ years in technology development in the electronics industry... and marketing strategist K. joined to be our marketing consultant"; "One of us was a math geek and one of us was an artist"	Professional background
	"J. and K. are about to start their 2nd year in Small Business & Retail Management… and Y. is about to start his 3rd year… studying Mechanical Engineering"; "Wanting to add someone with some Electrical Engineering experience… called on the talent of a [university] freshmen, P."	Educational background
	"I study physics...he is an entrepreneur with a degree in computer programming and currently works as a software developer"; "J. recently led product teams at Facebook and LinkedIn… K. is a Hacker… and co-founded a Princeton University TigerLabs start-up".	Entrepreneurial background; professional background; educational background
Dual	"M. is a renowned EETimes editor specializing in Microcontrollers…M. talked to his chum D., a robotics expert"	Friendship relations; professional background
	"We [my husband and I] asked an electrical engineer friend to partner with us and design the hardware. Then we asked a sales friend to partner with us to help with sales and marketing"	Friendship relations; romantic relations; professional background
	"H. is an experienced TV camera operator… L. is our friend… a gifted sound guy … M. is H.'s brother and the master welder who is turning our designs into beautiful and bulletproof stainless-steel boxes".	Friendship relations; family relations; professional background
	Examples; Study 2	
Interpersonal attraction	"My partners L. and O. are good friends"; "We are a group of close friends"	Friendship relations
	"We are twin brothers"	Family relations
	"Y. and A are a couple, I. is A.'s brother"	Romantic relations; family relations
Resource seeking	"M. is a computer science student and an expert in security… N. is a machine-learning expert and the initiator of the idea … we met at a pre-gathering of a hackathon pre-gathering"	Professional background; educational background
	"We met on Facebook; A.G. is a civil engineer student and A.S. is an alumnus in art.	Educational background
Dual	"T.Y. and A. have been together for nine years… T.B. joined forces in the legendary 3DS (three-day startup) competition… her skills added the missing piece in understanding human factors"	Romantic relations; professional background
	"G. and A. are good friends since junior high school. We have been looking for a technology partner for some time and had very good recommendations about T."	Friendship relations; professional background

Appendix B1. The entrepreneurial competition outline; Study 2



Appendix B2. The entrepreneurship course outline; Study 3



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